

What We Do

Allegan County GIS
www.allegancounty.org/gis

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Part I

Service

Chapter One

Applications

1.1 APPLICATIONS FOR TREASURER DEPT.

Forfeiture Data Collector Application

HeaderGoldA	_____
HeaderGoldB	_____
HeaderGoldC	_____
HeaderGoldD	_____
HeaderGoldE	_____
HeaderOrangeA	_____
HeaderOrangeB	_____
HeaderOrangeC	_____
HeaderOrangeD	_____
HeaderOrangeE	_____
HeaderBlueA1	_____
HeaderBlueA2	_____
HeaderBlueA3	_____
HeaderBlueB	_____
HeaderBlueC	_____
HeaderBlueD	_____
HeaderBlueE	_____

PROBLEM AND ANALYSIS

Background

Treasurer department has an annual responsibility to properly document the tax forfeiture process. The LIS Department built an application in MS Access and MapInfo that consumed a daily export from BSA and was deployed to the field on a laptop. A digital camera was used for site photos and later imported into the laptop.

Statement of Problem

The current Tax Forfeiture workflow is built on MapInfo software and MS Access and executed on a laptop pc. Both MapInfo and MS Access are no longer supported in county workflows. ESRI software can be used to rebuild the workflow. *Forfeiture Data Collector Application, (Forfeiture App)* must be recreated in the ESRI framework.

Analysis

Forfeiture App will facilitate: *Mobile data collection on a handheld device,; (Mobile Interface)* and an *in office workflow to complete data processing, (Pre and PostProcessing)*

Mobile Interface will:

- Synchronize with data in the office (online)
- Collect data and photos of forfeiture sites (offline)
- Synchronize the collected data with data in the office (online)

Pre and Post Processing will:

- Produce and print a form for each site visited with required data and images

DESIGN

Overview

The key data set, is referred to here as: **Forfeiture Parcels**

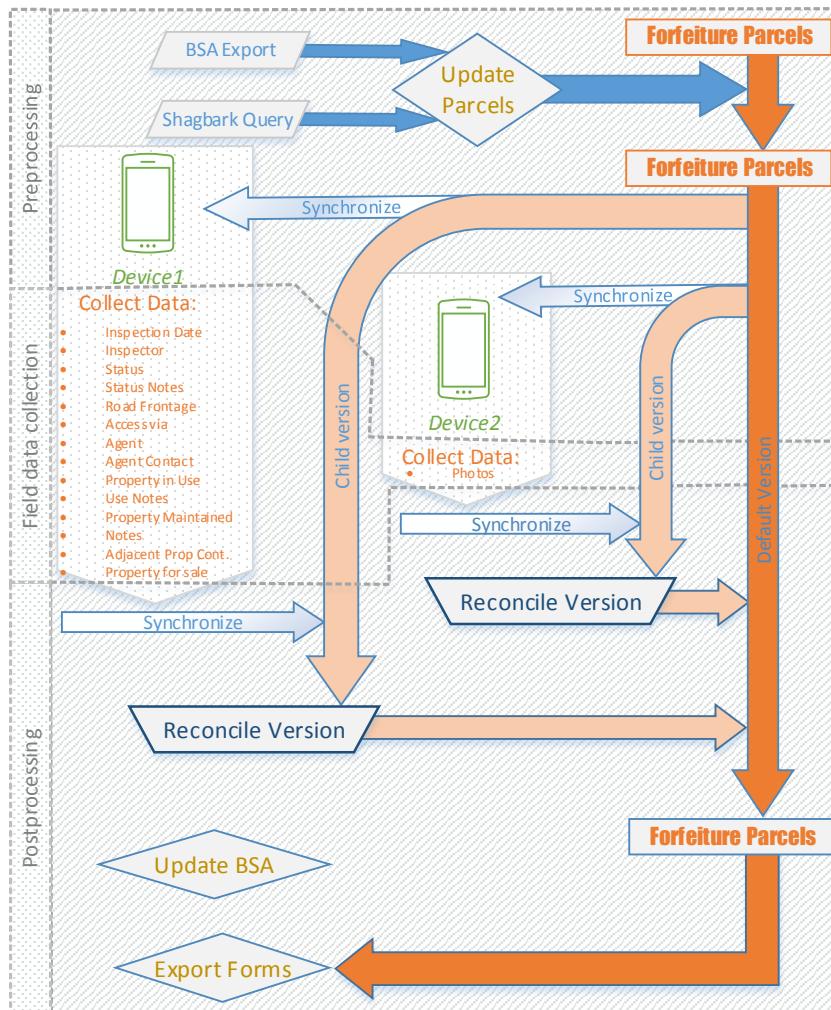


Figure 1.1: Project Design

Forfeiture App Summary

There are three parts to the daily routine:

1. Preprocessing (in the office):
 - Export current forfeiture list from BSA
 - Update Forfeiture Parcels with BSA export
 - Update Forfeiture Parcels with contaminated sites information
 - Synchronize Forfeiture Parcels to Mobile Interface
2. Field data collection with Mobile Interface:
 - Aids in navigation
 - Provides a Checklist of data points for each site
 - Attaches photos for each site
 - Save results for synchronization in post-processing
3. Post-processing (in the office)
 - Synchronize data and images collected in Mobile Interface to Forfeiture Parcels
 - Export form for each site
 - Print form for each site
 - Update BSA data

Technologies Used in The Forfeiture App

BSA Data

Details of parcels in the forfeiture process are managed in BSA Delinquent Tax.net. The Treasurer office does a BSA export of the parcels in need of a site visit in the preprocessing.

ArcGIS Desktop

Tools are designed to preprocess and post-process forfeiture parcel data for fieldwork. The user will execute a preprocess script tool that prepares the data for field deployment. After fieldwork, a post process script tool syncronizes data from the fieldwork with the live data on the Allegan County network.

ArcGIS Collector

A free mobile application developed and tested on Android is deployed to the field for data collection. The application is configured

to work offline (without an internet or cellular connection) by syncronizing before and after fieldwork. The user collects the necessary information on each forfeiture parcel in the field disconnected, and then uploads the changes when reconnected.

Enterprise Geodatabase

Live data from a publishing geodatabase (ACPub), running on SQL Server database server (acintsql01) provides access to Forfeiture Parcels

ArcGIS Portal

Forfeiture Parcels is served as a feature service (REST service) named TaxReversion-Parcels. A webmap on Portal, called the Forfeiture Field Map consumes the TaxReversionParcels exposing the data to editing. The Forfeiture Field Map is configured to work in the ArcGIS Collector App.

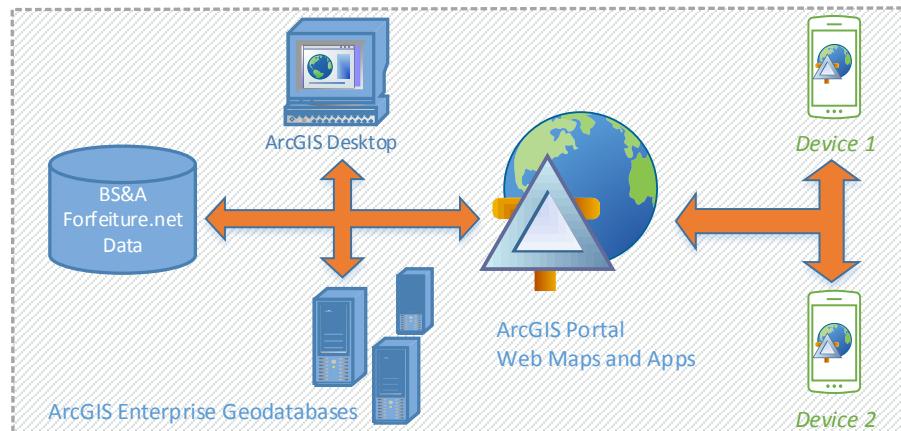


Figure 1.2: Technology Design

DATA DETAILS

The data is located in a geodatabase called ACPUB. ACPUB is on SQL Server ACINTSQL01.

Forfeiture Parcels Data



Figure 1.3: Live Data Location

Contamination Data

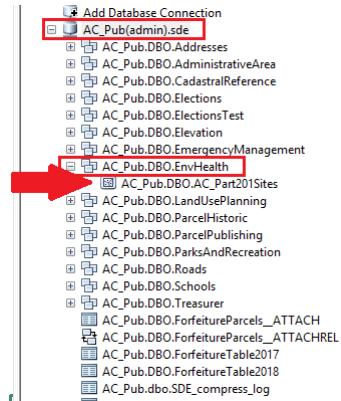


Figure 1.4: Contamination Feature Class

ForfeitureParcels Feature Class

Attribute Details			
Field Name	Field Alias	Entry Type	Note
PropertyNumber	Property Number	Prefilled	NA
Need2Print	Print Today	Dropdown	Yes or No
InspectionDate	Inspection Date	Autofill or Dropdown	NA
Inspector	Inspector	Dropdown	NA
Address	Address	Prefilled	NA
Status	Status	Dropdown	NA
StatusNotes	Status Notes	Open Entry	120Char
Roadfrontage	Road Frontage	Dropdown	Yes or No
AccessVia	Access Via	Open Entry	30Char
Agent	Agent	Open Entry	30Char
AgentContact	Agent Contact	Open Entry	30Char
PictureComments	Picture Comments	Open Entry	50Char
PropertyInUse	Property In Use	Dropdown	Yes or No
UseNotes	Use Notes	Open Entry	120Char
PropertyMaintained	Property Maintained	Dropdown	Yes or No
PropMaintNotes	Property Maintained Notes	Open Entry	120Char
PropertyContaminated	Property Contaminated	Prefilled	Preprocessing
PropertyContaminatedNotes	PropertyContaminatedNotes	Prefilled	Preprocessing
AdjacentPropertyContaminated	Adjacent Property Contaminated	Prefilled	Preprocessing
AdjPropertyContaminatedNotes	Adj Property Contaminated Notes	Prefilled	Preprocessing
PropertyForSale	Property For Sale	Dropdown	Yes or No
GlobalID	GlobalID	NA	NA
PostedDate	Posted Date	Dropdown	Date
Posted	Posted	Prefilled	NA
InList	In List	Prefilled	Preprocessing
PostedInList	Posted In List	Prefilled	Preprocessing
Acres	Acres	Prefilled	NA
Class	Class	Prefilled	NA

Table 1.1: Dataset Details

Webmap Details

The Forfeiture Field Map is made up of a basemap and a feature layer.

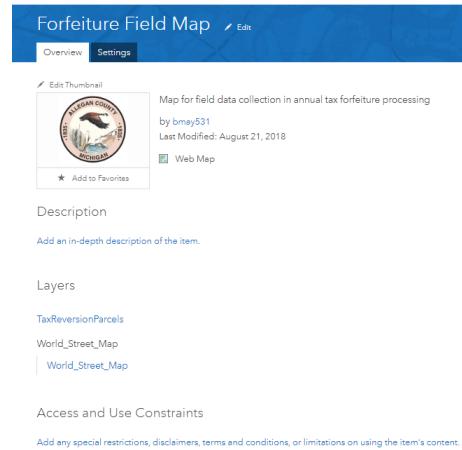


Figure 1.5: Web Map Details

Feature Layer Details

TaxReversionParcels has been configured for offline use.

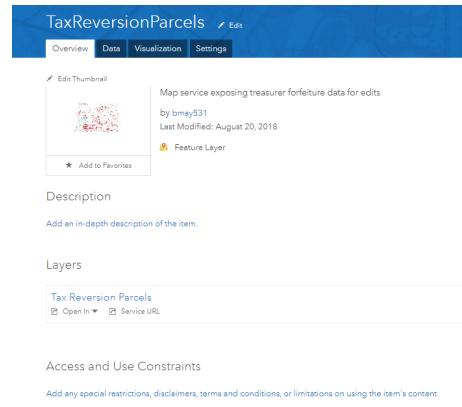


Figure 1.6: Feature Layer Details

Basemap Details

- A tiled basemap service is used
 - The infoserv user credentials are used for sharing
- The url for the shared service is:

https://tiledbasemaps.arcgis.com/arcgis/rest/services/World_Street_Map/MapServer

The screenshot shows the ArcGIS Online interface for the 'World Street Map (for Export)' layer. At the top, there's a navigation bar with links for ArcGIS, Pricing, Map, Scene, and Help. On the right, there are sign-in options and a search bar. Below the header, the title 'World Street Map (for Export)' is displayed, along with a small thumbnail image of a map. To the right of the title, there are three buttons: 'Open in Map Viewer' (selected), 'Open in Scene Viewer', and 'Open in ArcGIS Desktop'. Under the title, there's a detailed description of the layer, mentioning it presents highway-level data for the world and street-level data for many areas around the world. It's a 'Tile Layer by Esri' created on Oct 15, 2013, and updated on Aug 15, 2018, with a view count of 39,772. It's marked as 'Authoritative'. To the right of the description, there's a 'Details' section showing the source as 'Map Service', size as 1 ks, and a five-star rating. Below that are social sharing icons for Facebook, Twitter, and LinkedIn. Further down, there's an 'Owner' section showing 'Esri' and a 'Managed by' section showing 'esri'. At the bottom, there's a 'Tags' section listing various geographical terms like 'World', 'Global', 'Europe', etc.

Figure 1.7: Basemap Source Description

HARD COPY RECORD

screenshots: arcmap map arcmap tools portal screenshots sql server mgt screen
shots phone screenshots

ArcGIS Server

ADMINISTRATIVE MANUAL

Annual Setup

A new dataset for forfeiture parcels must be created each year. The forfeiture information comes from BSA Forfeitures.net and the parcel geometry and other attributes comes from ACParcelsCombined.

To get the BSA Forfeiture data, create a table query for a certain year.

First, clear the features from the existing ForfeitureParcels dataset

- Use the Delete Feature Tools
- In the tool:
 - Select ACPub.DBO.ForfeitureParcels

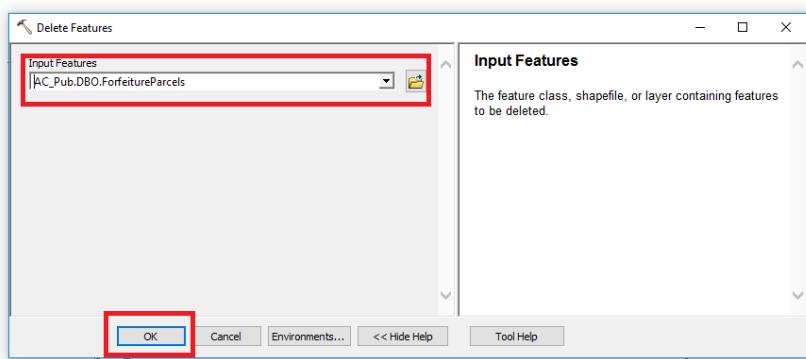


Figure 1.8: Delete Features

Press OK

Add Query Layer

- In ArcMap ⇒ Open the New Query Layer Dialog
- File ⇒ Add Data ⇒ Add Query Layer
- Select your connection

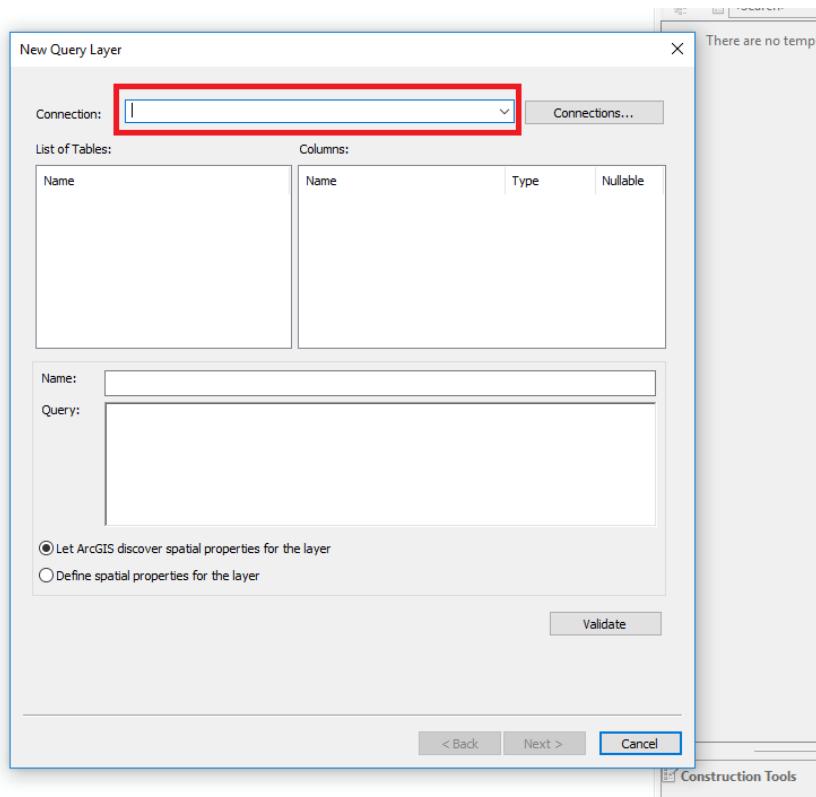


Figure 1.9: New Query Layer Dialog

Query Text:

```
SELECT [parcelnumber] FROM [D005ALLEGAN].[dbo].[Forfeitures]  
WHERE forf_year = 2019
```

Details of the Query Layer

- Choose connection
- Name the query
- Enter SQL query

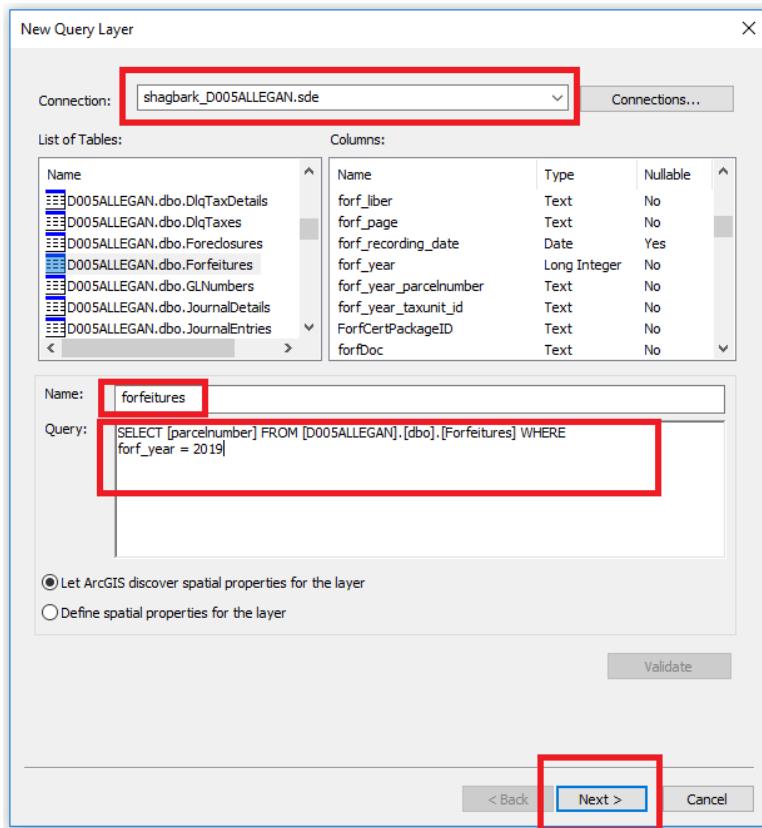


Figure 1.10: Forfeiture Query Layer Details

- Press Next

Select a Unique Identifier

➤ Press Finish

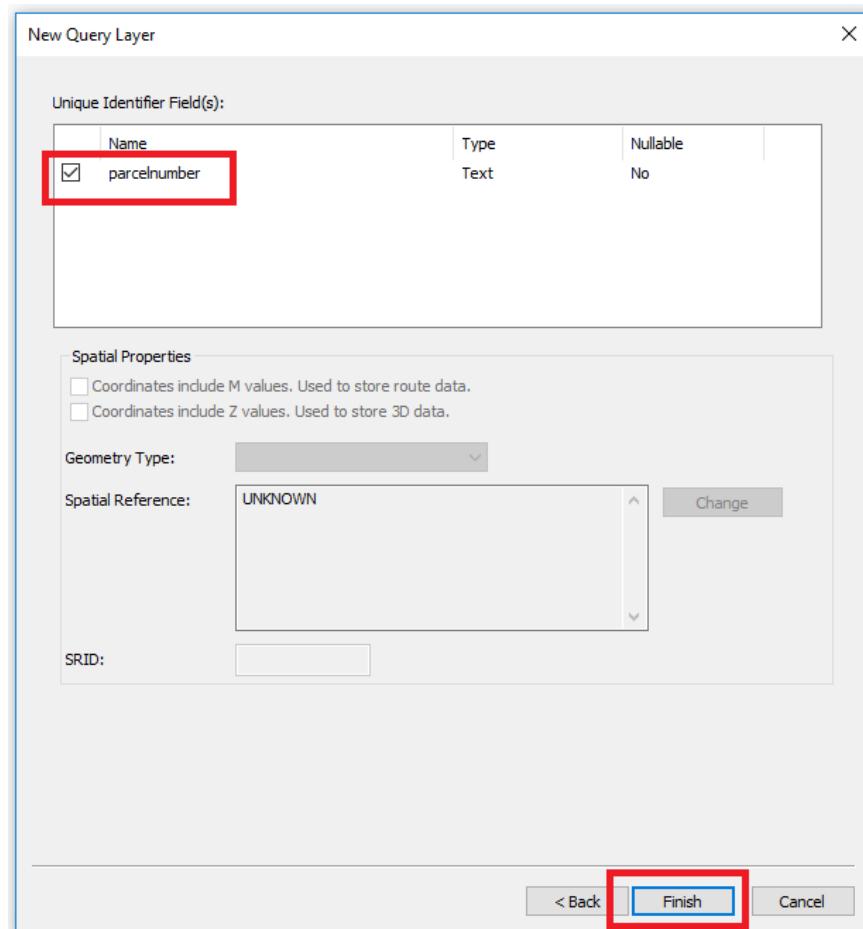


Figure 1.11: Query Layer Unique ID

Table is added to the map

--Reference layer--

Table

D005ALLEGAN.DBO.forfeitures

parcelnumber	ESRI_OID
01-007-012-00	1
01-008-005-00	2
01-016-031-10	3
01-019-001-13	4
01-019-005-97	5
01-025-017-00	6
01-026-020-00	7
01-030-014-10	8
01-030-019-00	9
01-031-031-00	10
01-034-009-00	11
01-034-014-10	12
01-034-055-00	13
01-034-067-00	14
01-034-087-00	15
01-034-108-00	16
01-035-015-00	17
01-035-020-20	18
01-035-030-00	19
01-035-044-00	20
01-035-044-10	21
01-120-004-00	22
01-120-010-00	23
01-120-031-00	24
01-120-032-00	25
01-220-010-00	26
01-250-001-00	27
01-300-004-00	28
01-320-020-00	29
01-320-021-00	30
01-370-016-00	31
01-740-009-00	32
02-001-012-31	33
02-003-018-00	34
02-005-004-20	35
02-007-005-00	36

(0 out of 836 Selected)

D005ALLEGAN.DBO.forfeitures

Figure 1.12: Forfeiture Table Added

Add Parcels Layer to the map

Add ACParcelsCombined to the map to provide parcel geometry and attributes

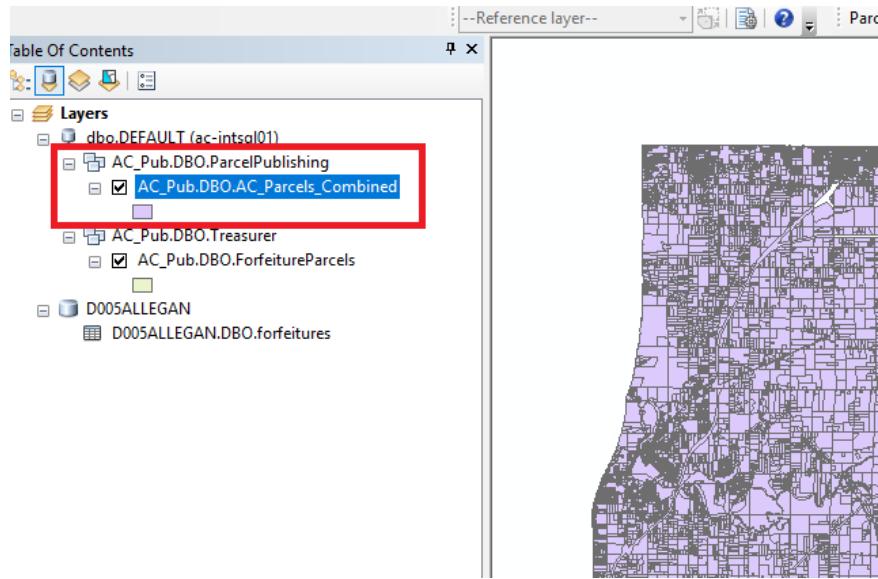


Figure 1.13: Parcels Layer Added

Create Join

Create new join to ACParcelsCombined of forfeitures based on parcel numbers

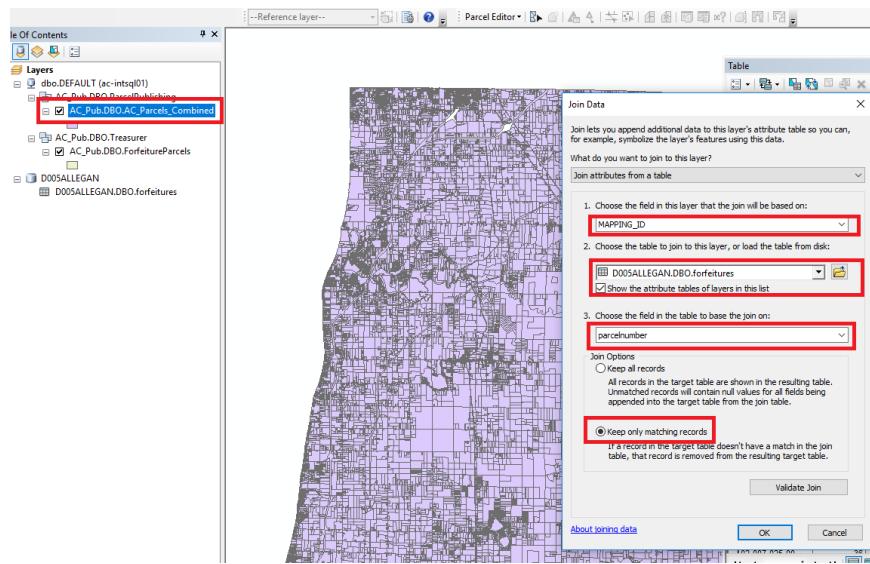


Figure 1.14: Join Parcels

Export Joined Features to a temp location

- Right click → on joined feature class in TOC and choose export

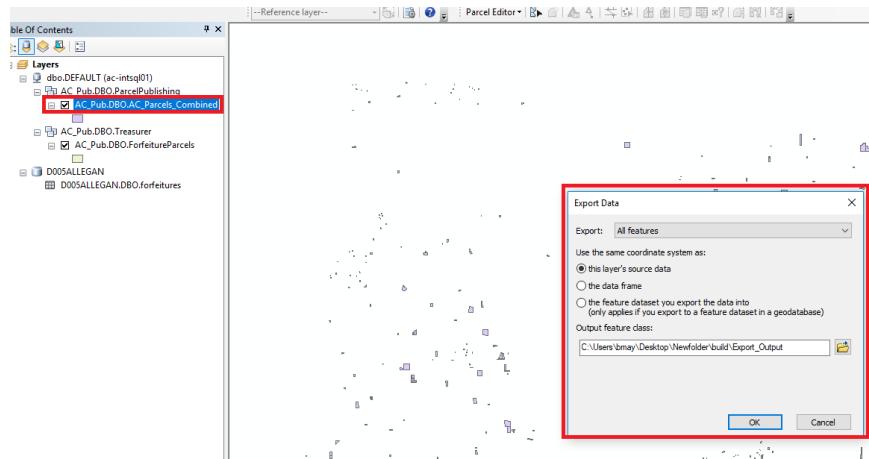


Figure 1.15: Export Joined Features

- choose location and press OK

Load data from temp location to forfeitureParcels

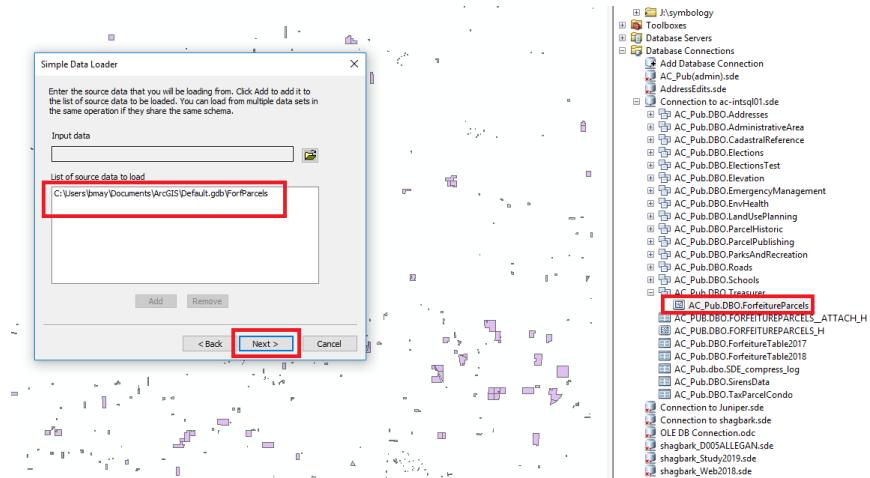


Figure 1.16: Load Data 1

push next

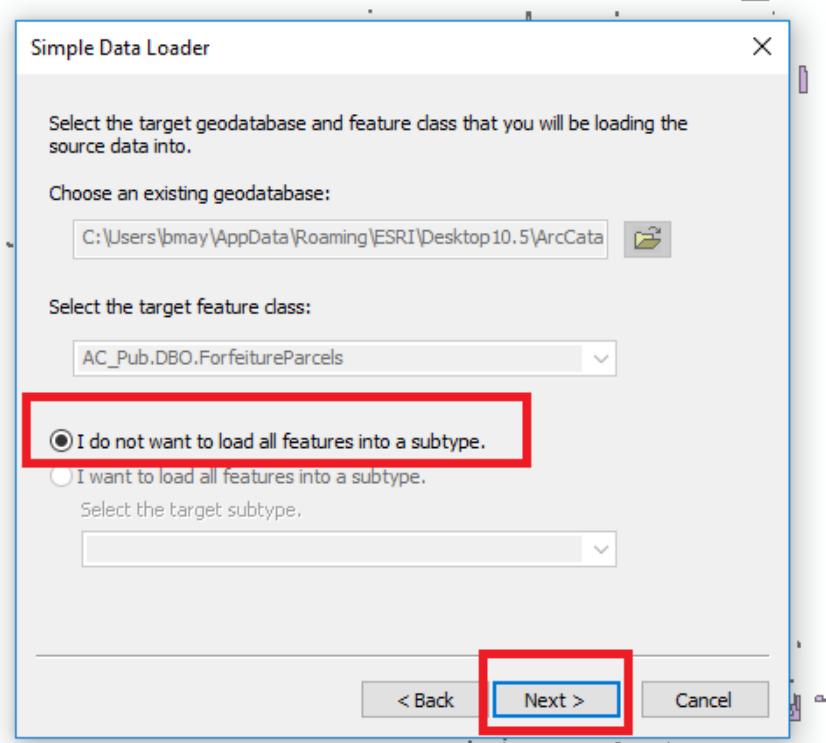


Figure 1.17: Load Data 2

Match these fields

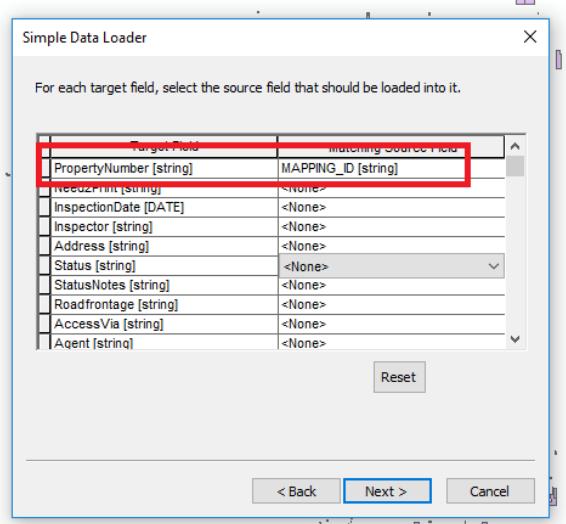


Figure 1.18: Match Fields 1

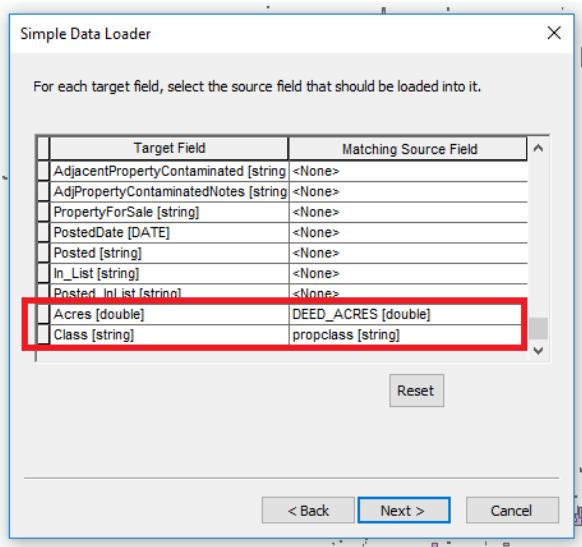


Figure 1.19: Match Fields 2

push next

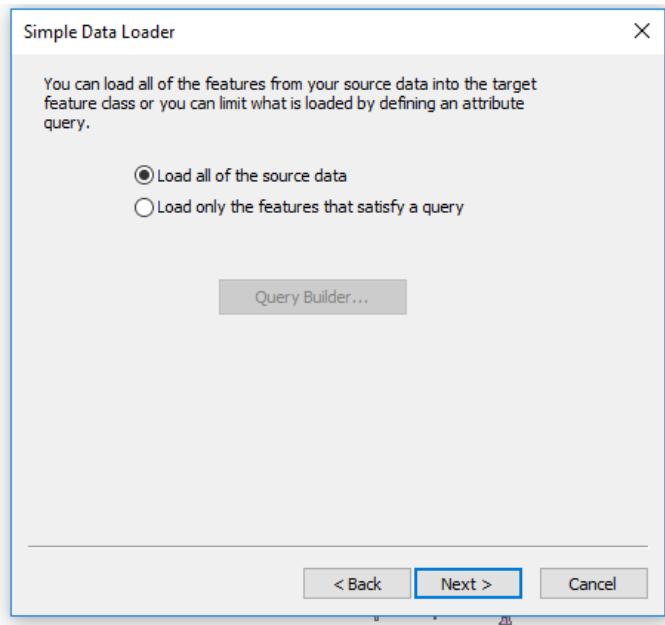


Figure 1.20: Load Data 3

Push Finish

Data Setup

Register as versioned and Add Global IDs

Right Click ⇒ Manage ⇒ Register as Versioned

and

Right Click ⇒ Manage ⇒ Add Global IDs

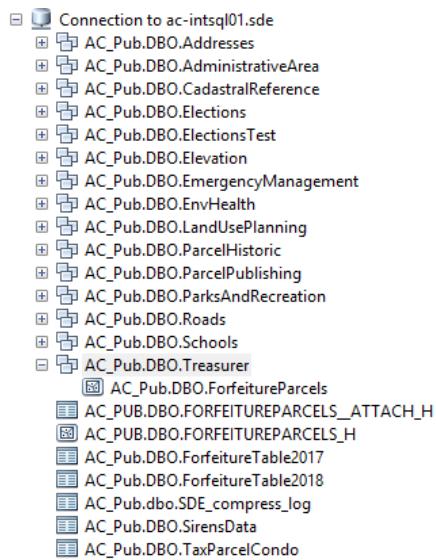


Figure 1.21: Setup Data

Create Attachments

Right Click ⇒ Manage ⇒ Add Attachments

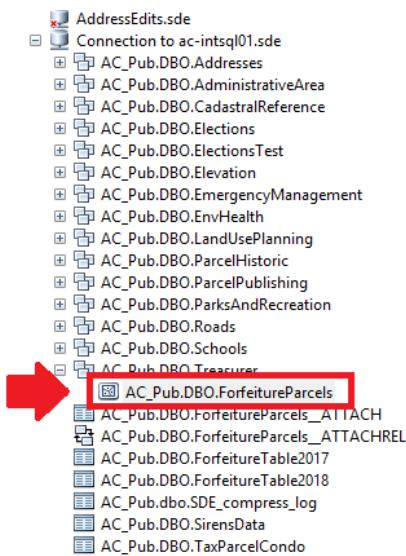


Figure 1.22: Create Attachments

Setup Users in ArcGIS

Users that will run Pre and Post processing scripts must be created and given privileges on ACPub Treasurer Feature Data Set.

For any new users of the geoprocessing tools, use the create Database User tool
or

In Catalog ⇒ Right click on ACpub ⇒ Administration ⇒ Add User

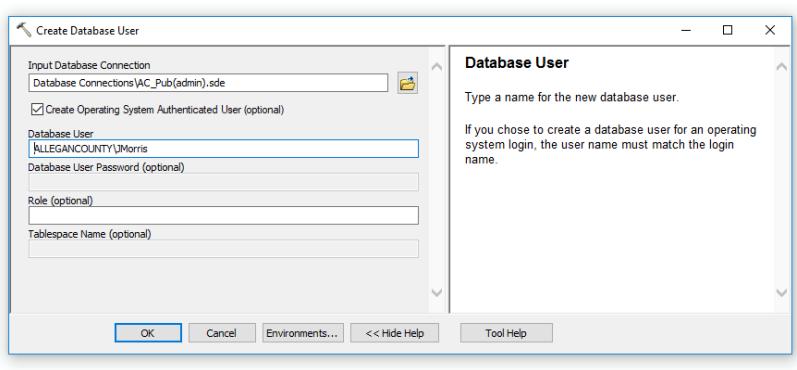


Figure 1.23: Add Db User

Add New User to Feature Dataset

In Catalog, ⇒ right click on Treasurer Feature Data Set ⇒ Manage ⇒ Privileges
⇒ Add ⇒ Type new user ⇒ ok

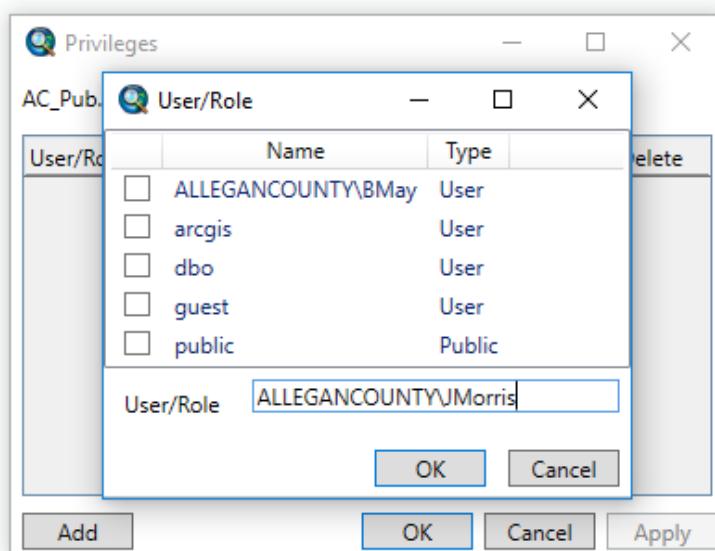


Figure 1.24: Add Feature Dataset User

Extend Privileges for New User

In Catalog ⇒ right click on Treasurer FDS ⇒ Manage ⇒ Privileges ⇒ check boxes

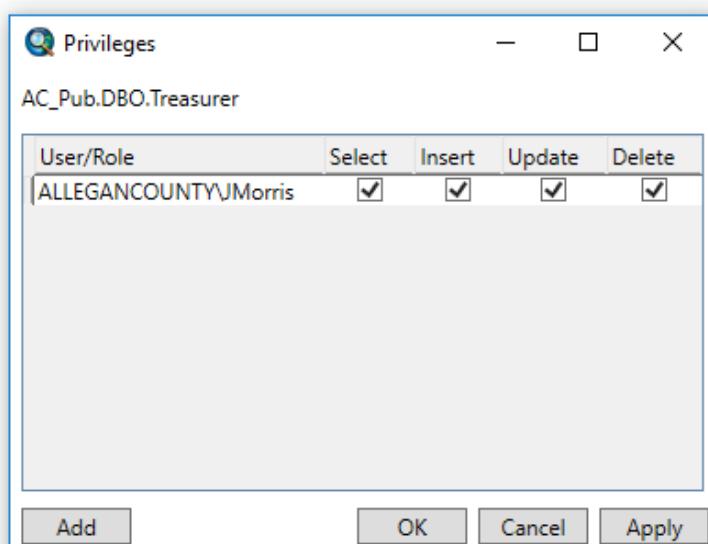


Figure 1.25: Extend Feature Dataset Privileges

Setup Users in Portal for ArcGIS

Users that will use the Collector for ArcGIS must have profiles added to and managed in the Allegan County GIS Portal site.

In Portal go to My Organization

The screenshot shows the 'My Organization' page of the Allegan County GIS Services portal. At the top, there's a navigation bar with links for Home, Gallery, Map, Scene, Groups, My Content, and My Organization. Below the navigation is a search bar and a dropdown for 'Bryan'. The main content area has a blue header with the portal logo and name. It features a table titled 'Members' with the following data:

Name	Username	Last Login	Level	Role	Action
Bryan May	bmay531	Nov 2, 2018	②	Administrator	[Edit]
Christina Andress	CAndress	Sep 19, 2018	②	Administrator	[Edit]
Jennifer Morris	JMorris	Oct 18, 2018	②	Administrator	[Edit]
Neil Besteman	nbesteman	Oct 29, 2018	②	Administrator	[Edit]
Paula Reed	preed6	Feb 7, 2017	①	Viewer	[Edit]

On the right side, there's a sidebar with 'Membership' statistics: 'Members per level' (1 of 30, 4 of 5), 'Total Members: 5 of 35', and links for 'Find...', 'The most viewed items', 'The last items added', 'Groups', and 'The organization's registered apps'.

Figure 1.26: Portal Add User 1

Add Members to Portal

Push add members ⇒ built in member

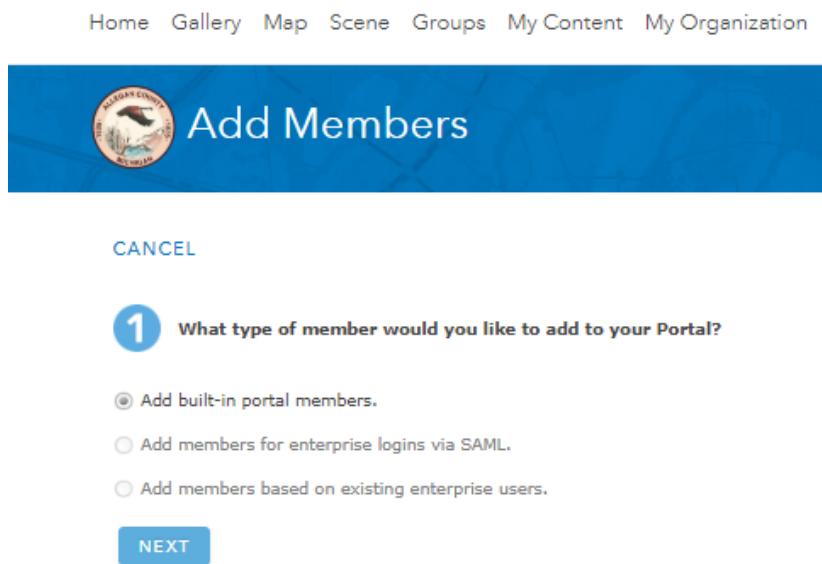


Figure 1.27: Portal Add User 2

Enter required info

CANCEL

2 Create new Allegan County GIS Services logins one at a time or in batch from a file.
Select any role for the member to be a part of. You must inform the member of their user name and password. If you do not have an email address for a particular user, use the administrator's email address.

Password may not be less than 8 characters.

One at a time From a file

Email:

First Name:

Last Name:

Username:

Password:

Level 1 2

Role:

BACK REVIEW ADDITIONS

Figure 1.28: Portal Add User 3

Manage Treasurer Group

In Portal ⇒ Go to groups ⇒ Invite new user to the group

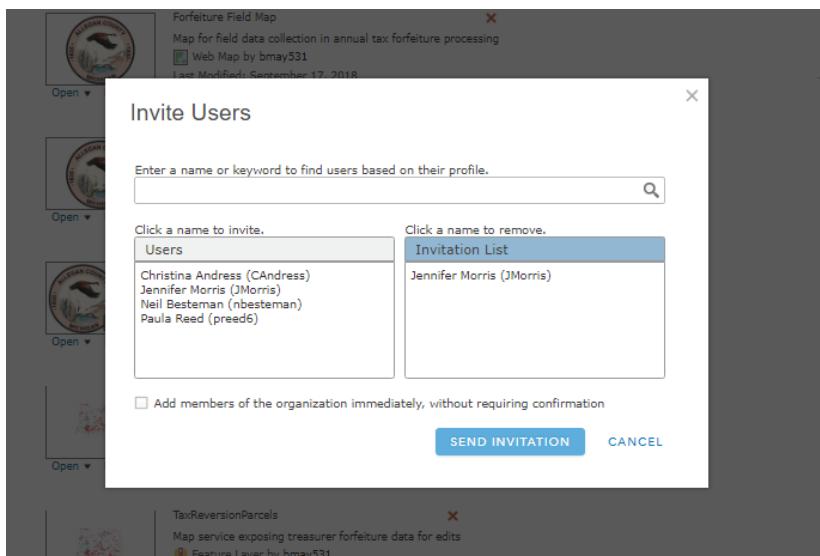


Figure 1.29: Portal Add User 4

Share Content To The Group

Any content used by the group needs to be shared to the group

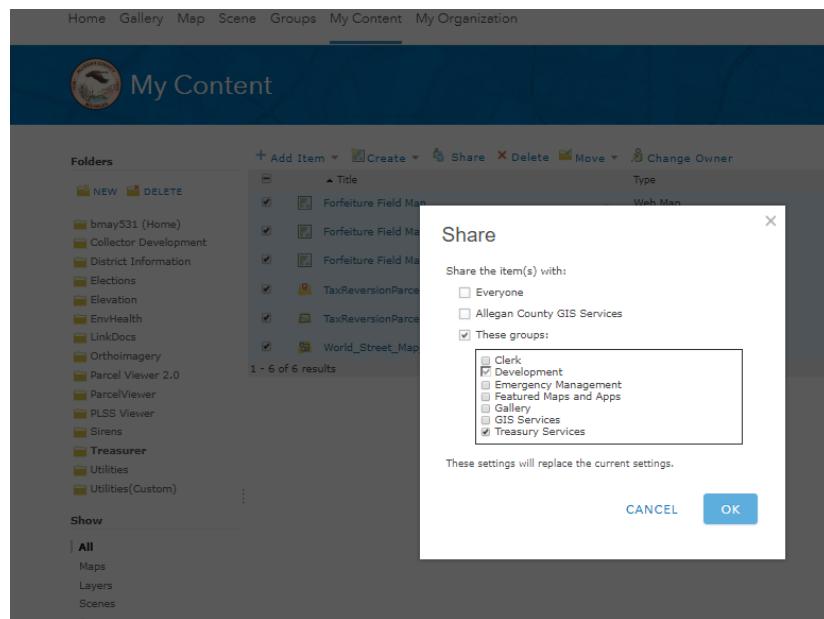


Figure 1.30: Portal AddUser 5

Schema Change Procedure

Form Edits Procedure

USER MANUAL

Collection Device Setup

Collector Application Setup Details

Install Collector for ArcGIS

➤ Available from the Google Play Store

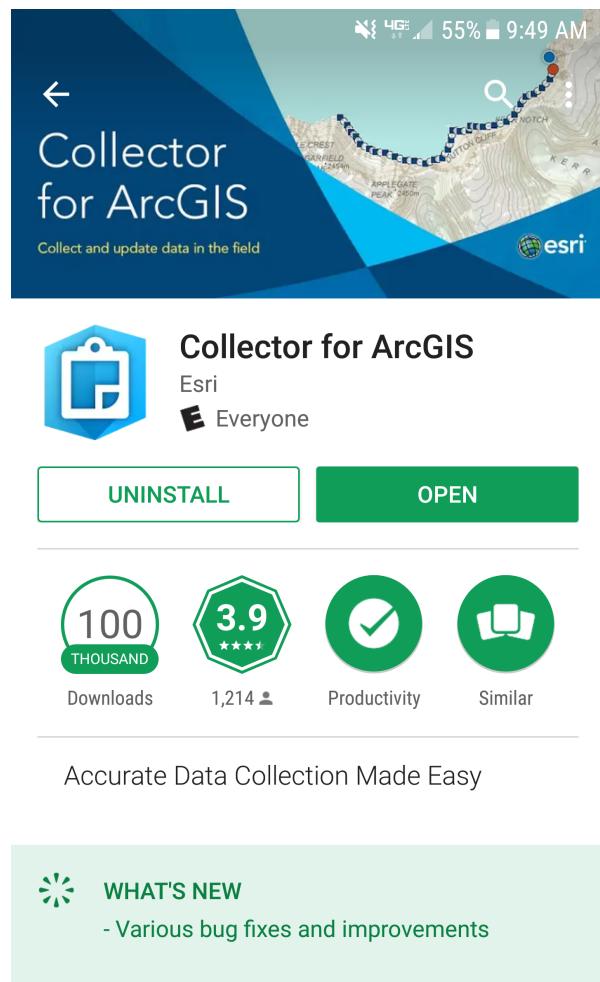


Figure 1.31: Download the App

Configure Collector

for Organization Website, Type:

```
{\textcolor{HeaderOrangeC}
https://gis.allegancounty.org/
portal_webadaptor}
```

then:

Press Continue

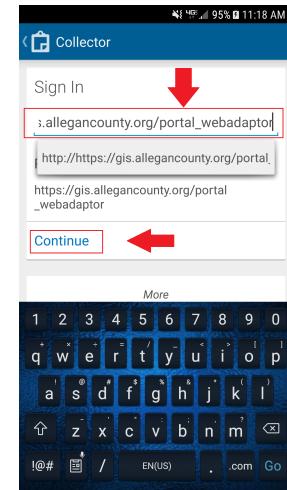


Figure 1.32: Collector Connection

Enter Credentials

then:

Press SIGN IN

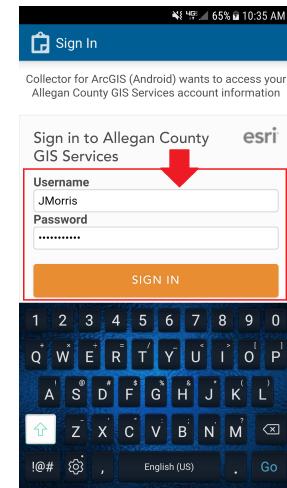


Figure 1.33: Enter Credentials

Download the Forfeiture Field Map

There are 3 different versions of the map

- Forfeiture Field Map
- Forfeiture Field Map For Photos
- Forfeiture Field Map For Attributes

The Download option indicates it is not on the device but is available for offline use

Choose a Map

Press Download

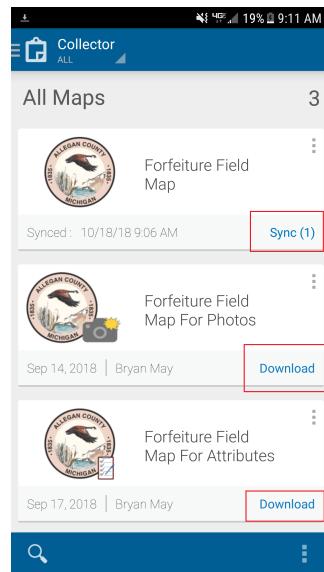


Figure 1.34: Collector Maps Menu

Specify work area

and press

map detail

Note that a larger area takes longer to download but the basemap only needs to be downloaded once

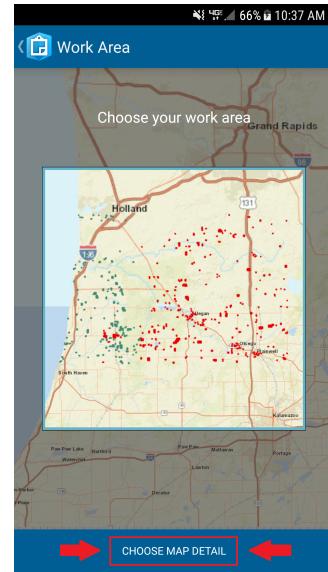


Figure 1.35: Choose Work Area (large)

Choose Map Detail

Zoom into the level of detail desired.

Press Download

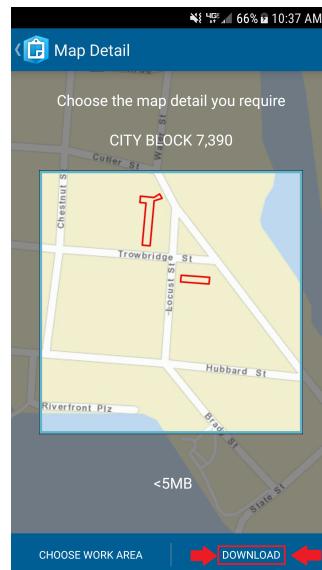


Figure 1.36: Choose Map Detail

This area is ready for field data collection.

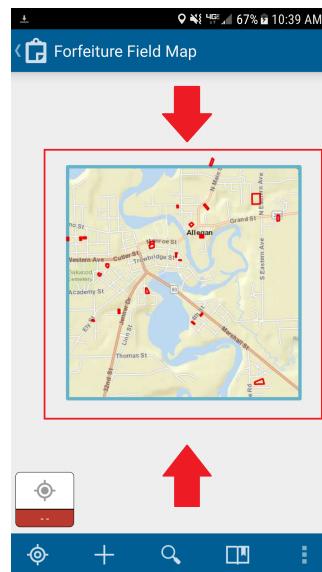


Figure 1.37: Map on Device

Open Camera Application Setup Details

Install Open Camera

- Available from the Google Play Store

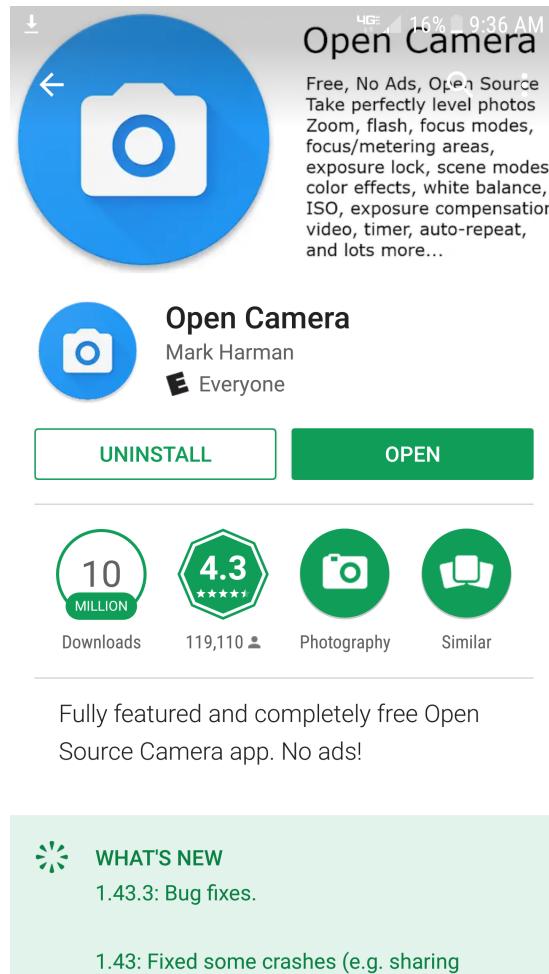


Figure 1.38: Open Camera from Google Play Store

Configure Open Camera

In the Open Camera Application:

Press the gear shaped Settings button to go into the settings menu

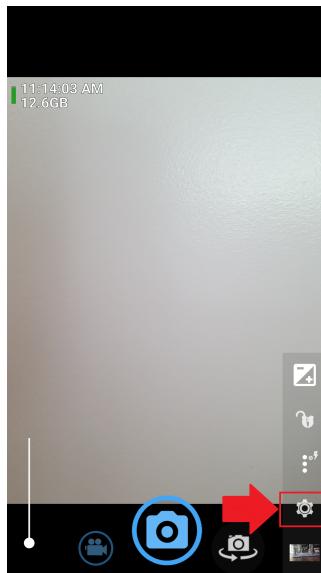


Figure 1.39: Find Settings Menu

Press the Photo Settings button

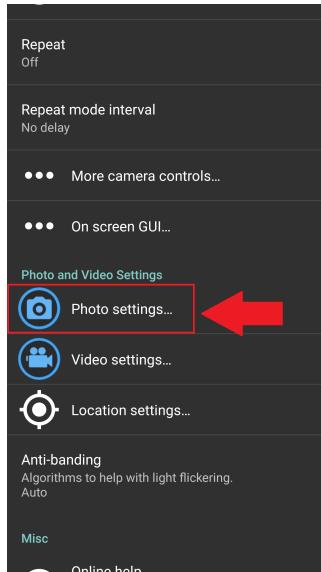


Figure 1.40: Setting Screen

Set Photo Resolution

In photo settings:

Press the Camera resolution button

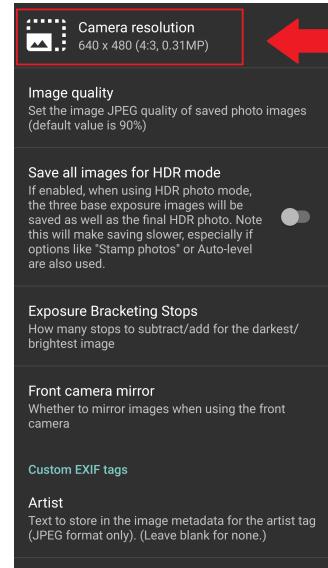


Figure 1.41: Photo Settings Menu

Select **640 x 480**

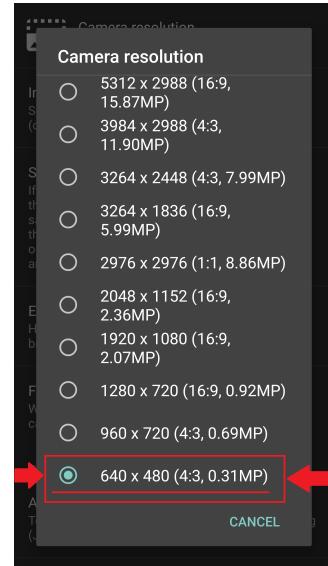


Figure 1.42: Camera Resolution Setting

Daily Preprocessing Routine

Execute Preprocessing Script

A tool in ArcGIS that:

- Exports current forfeiture list from BSA
- Updates webmap layers with results from BSA export

In Catalog:

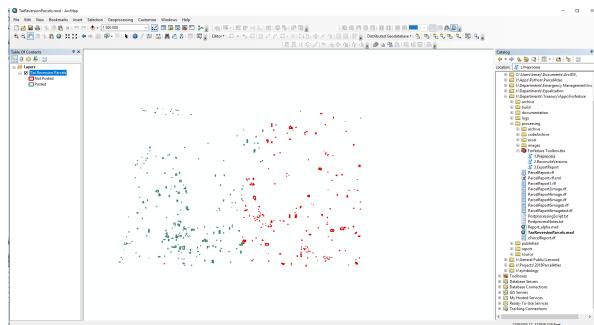
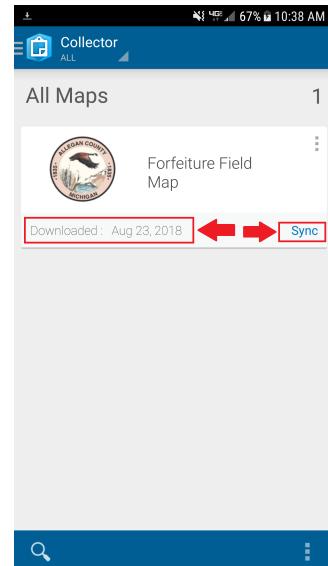


Figure 1.43: Processing Tools

Open tool 1

Synchronize the Forfeiture Field Map

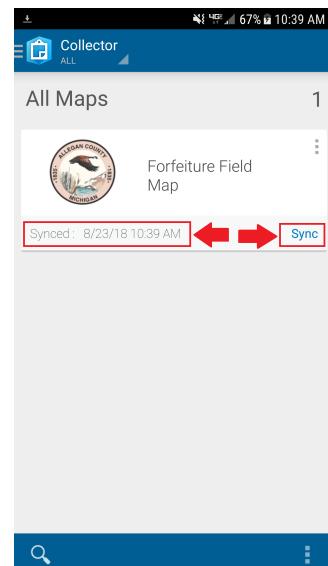
Note the date and time:



Press Sync

Figure 1.44: Map Downloaded

Note the date and time:



Map is synchronized

Figure 1.45: Map Synchronized

Forfeiture Data Collection

Forfeiture Parcels Data Details

Attributes are of four entry types:

- prefilled
- autofill
- dropdown
- text box

For each site visited, select the desired parcel, push the edit button and collect attributes.

Device 1 Field Operation

Select a parcel



Figure 1.46: Select Parcel

Push the edit button

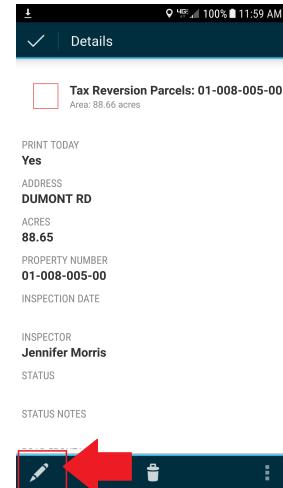


Figure 1.47: Parcel Details

Device 1 Field Operation Cont.
Select Yes for Print Today

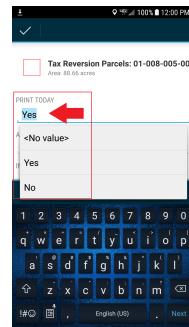
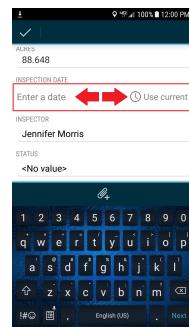


Figure 1.48: Print Today Yes or No

Select Use Current or enter any date



Select Inspector From Dropdown

Figure 1.49: Enter Date

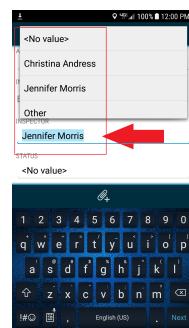


Figure 1.50: Select Inspector

Device 1 Field Operation Cont.

Select Occupied or Not Occupied

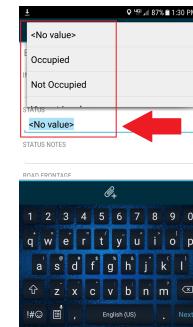


Figure 1.51: Status

Enter status notes up to 120 characters

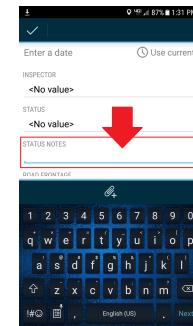


Figure 1.52: Status Notes

Select Yes or No for Road Frontage

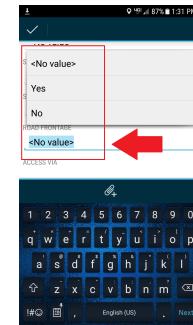


Figure 1.53: Road Frontage

Device 1 Field Operation Cont.

Enter road used for access

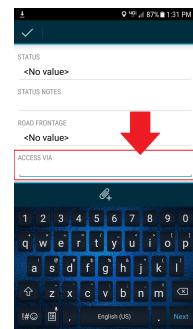


Figure 1.54: Access Via

Enter Agent Name

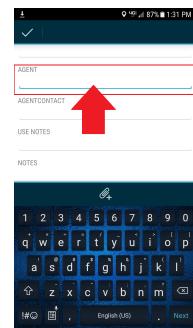


Figure 1.55: Agent

Enter Agent Contact Info

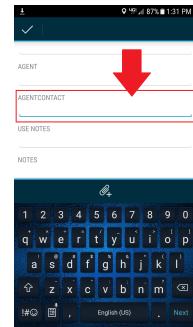


Figure 1.56: Agent Contact

Device 1 Field Operation Cont.

Enter Use Notes up to 120 characters

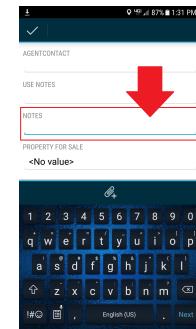


Figure 1.57: Use Notes

Enter Notes up to 120 characters



Figure 1.58: Notes

Enter property for sale yes or no

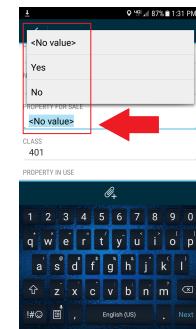


Figure 1.59: Property for Sale

Device 1 Field Operation Cont.

Property in Use Yes or No

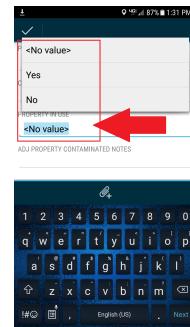


Figure 1.60: Property in Use

Placeholder

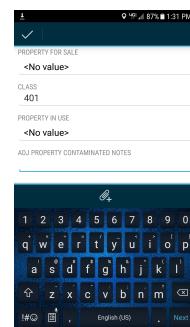


Figure 1.61: Placeholder

prefilled

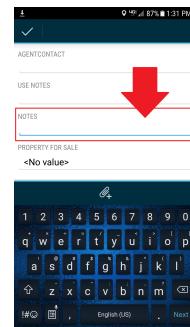
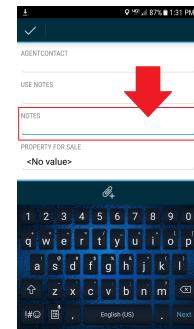


Figure 1.62: Property Contaminated

Device 1 Field Operation Cont.

Enter notes up to 120 characters



Adjacent Property Contaminated pre-filled

Figure 1.63: Notes up to 120 characters

Property Contaminated notes prefilled

Figure 1.64: Adjacent Property Contaminated

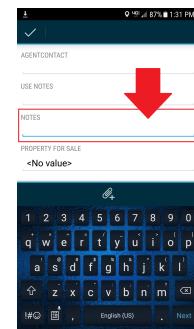


Figure 1.65: Property Contaminated

Device 1 Field Operation Cont.
Property Maintained Yes or No

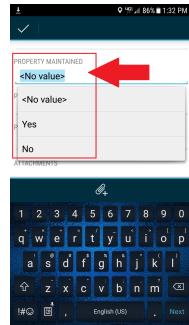


Figure 1.66: Property Maintained

Picture Comments up to 120 characters

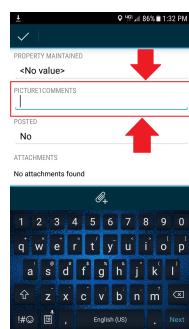


Figure 1.67: Picture Comments

Placeholder

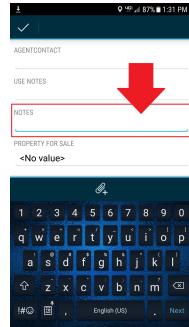


Figure 1.68: Placeholder

Device 2 Field Operation

Use photos taken with the Open Camera Application.

Select a parcel from the map



Figure 1.69: Select Parcel

Push Attachment Button

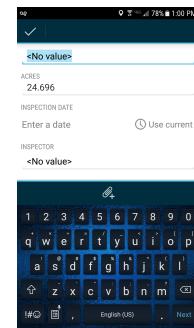


Figure 1.70: Push Attachment Button

Select Gallery

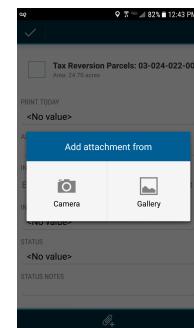


Figure 1.71: Add Attachment From Gallery

Device 2 Field Operation Cont.

Navigate to the Open Camera Folder

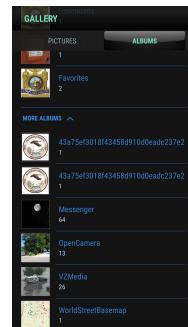
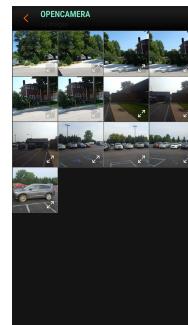


Figure 1.72: Open Camera Folder
Select the appropriate image



Press the check button to save the image to the parcel

Figure 1.73: In the Open Camera Folder

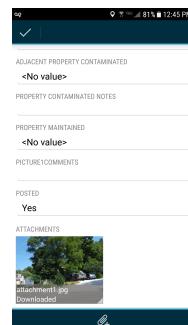


Figure 1.74: Image in the App

Daily Postprocessing Routine

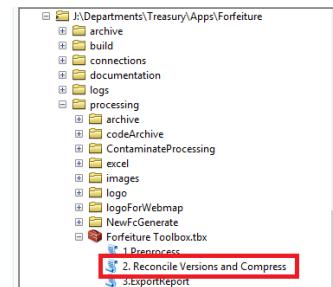
Back at the office

Synchronize Webmap

In Collector for ArcGIS, push the sync button on the Forfeiture Field Map

Execute Postprocessing Script

The Postprocessing Script is A tool in ArcGIS that: Reconciles geodatabase versions



Execute the Reconcile Versions and Compress Tool

Generates forms for each site visited

Figure 1.75: Reconcile Versions and Compress Tool

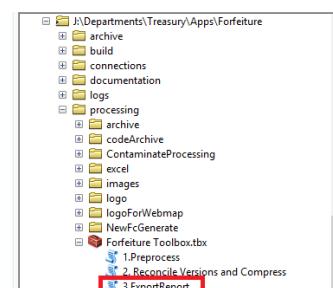


Figure 1.76: Export Report Tool

Execute the Export Report
Tool

- Reconciles geodatabase versions
 - Execute the Reconcile Versions and Compress Tool

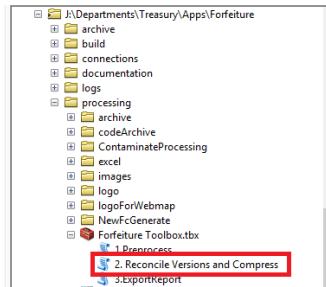


Figure 1.77: Reconcile Versions and Compress Tool

- Generates forms for each site visited
 - Execute the Export Report Tool

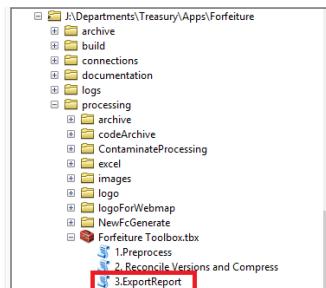


Figure 1.78: Export Report Tool

SOFTWARE

ESRI Licensed Products

ArcDesktop

Users of this application need a license to ArcGIS Standard level.

Enterprise ArcGIS Deployment

This app uses ArcGIS Server and ArcGIS Portal.

Collector for ArcGIS

Developed and tested on Android(7.0). Collector is available at the Google Play Store.

Other Software

Open Camera for Android

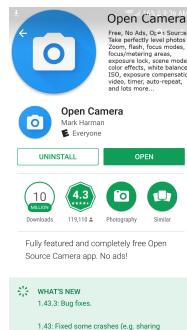


Figure 1.79: Open Camera from Google Play Store