HAMILTON COUNTY
INDIANA

ArcGIS® Field Maps

ArcGIS® Survey123

NEW HAMILTON COUNTY ARCGIS APPLICATIONS AND CROSS USE APPLICABILITY

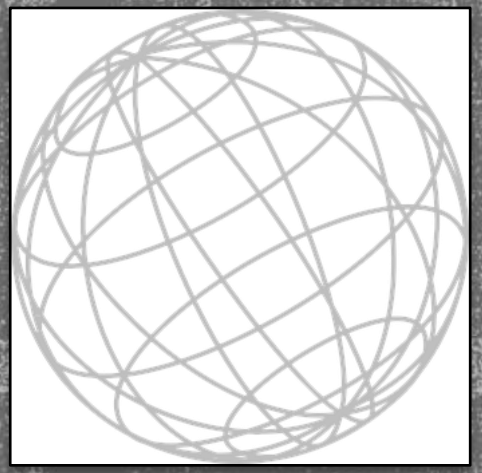
OVERVIEW

1. ArcGIS and Project Needs
2. GIS Mobile Applications
3. Field Maps – HIP Project
4. Demos
5. Survey 123 – EMA
6. Demos
7. Questions

ARCGIS AND PROJECT NEEDS

GIS

What is GIS? “A geographic information system (GIS) is a system that creates, manages, analyzes, and maps all types of data. GIS connects data to a map, integrating location data (where things are) with all types of descriptive information (what things are like there).”



HIP – WHAT IS IT?

The Hamilton County Invasives Partnership (HIP) was established in 2019 as the county's Cooperative Invasive Species Management Area (CISMA). The Partnership serves to unite landowners and managers, organizations, and citizens in the battle against invasive species and the destruction they cause across the county.

Vision: That Hamilton County's ecology, economy, and public health will be unobstructed by invasive species.

Euonymus alatus (Burning Bush)

Pyrus calleryana
(Callery Pear)

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HAMILTON COUNTY EMERGENCY MANAGEMENT AGENCY (EMA) – DAMAGE ASSESSMENT

What is an Emergency or Disaster

An emergency or disaster can include

- Severe Weather
  - Tornadoes
  - Straight line winds
  - Ice storms
- Earthquakes
- Hazardous Materials
  - Chemical spills
  - Chemical fires
  - Chemical releases
- Man-made Incidents
  - Terrorism
  - Violent extremists
  - Cyber threats
- Solar Incidents such as solar flares

GIS MOBILE APPLICATIONS

ARCGIS FIELD MAPS VS SURVEY 123

- **Field Maps:** ArcGIS Field Maps is an all-in-one app that uses data-driven maps to help mobile workers perform data collection and editing, find assets and information, and report their real-time locations. **Map-based**
- **Survey123:** ArcGIS Survey123 is a complete, form-centric solution for creating, sharing, and analyzing surveys. **Form-based**
- **Which one?:** It depends on your task, what data you are trying to collect, and what you are trying to accomplish.

What is the end goal?

HAMILTON COUNTY INDIANA

esri

ArcGIS Survey123

ArcGIS® Field Maps

HAMILTON COUNTY PROJECT USES

- **HIP:** County-wide invasive species mapping (Field Maps).
  - Mapping of invasive species, treatment, and surveyed areas.
- **EMA Damage Assessment:** Quick collection of damage assessment data after a disaster (Survey123).
  - Meets FEMA requirements.
    - Damage assessment form.
  - Point data for damage surveys.

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ArcGIS Survey123

ArcGIS Field Maps

FIELD MAPS – HIP PROJECT

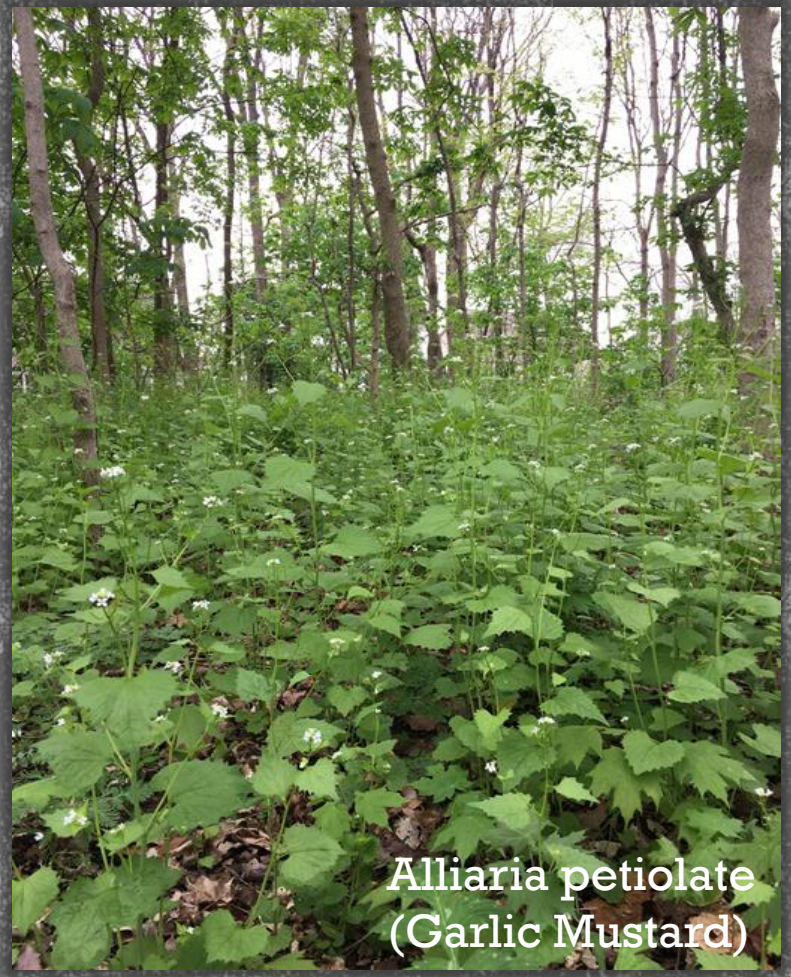
APPLICATION DESIGN

- **Field Maps:** What was already being used by Carmel.
  - Was able to be pulled into Hamilton County and modified.
- **ArcGIS Enterprise/Portal:** Geodatabase to store data and needed for attribute rules
- **ArcGIS Online:** To make the application accessible to organizations outside of Hamilton County Government.

FIELDS AND DOMAINS

- **What types of data needed to be collected?:** Would points or polygons be needed? What types of data needed to be split out from the others?
- **Fields:** For each data type collected what fields were needed?
- **Domains:** Did the domain need to be an open text entry or a dropdown selection?

FIELDS AND DOMAINS


Alliaria petiolate
(Garlic Mustard)

- **Area Surveyed:** To collect a record of the areas that have been surveyed.
- **Treatment:** Treatments being applied to an area or single species.
- **Invasive Species Points*:** Species that could likely be found as a single plant.

  Points so they don't get lost as tiny polygons
- **Invasive Species Polygons:** Groups or areas of invasives.

AREA SURVEYED

Visible	Read Only	Field Name	Alias	Data Type	Allow NULL	Highlight	Number Format	Domain	Default	Precision	Scale	Length
☑	☐	InvasiveFound	Invasive Found	Text	☐	☐		Invasive_YesNo		0	0	5
☑	☐	SurveyedByOrg	Surveyed By: Organization	Text	☑	☐		Invasive_Organizations		0	0	255
☑	☐	SurveyedByInd	Surveyed By: Individual	Text	☑	☐				0	0	255
☑	☐	TimeSpent	Hours spend surveying this polygon	Double	☑	☐	Numeric			38	8	
☑	☐	Survey_Method	Method of Survey	Text	☑	☐		Invasive_SurveyMethod		0	0	255
☑	☐	Survey_Level	Level of Survey	Text	☑	☐		Invasive_SurveyDetail		0	0	255
☑	☐	Notes	Notes:	Text	☑	☐				0	0	500
☑	☑	POLY_AREA	Area (Acres)	Double	☑	☐	Numeric			38	8	
☑	☐	created_user	created_user	Text	☑	☐				0	0	255
☑	☐	created_date	created_date	Date	☑	☐				0	0	
☑	☐	last_edited_user	last_edited_user	Text	☑	☐				0	0	255
☑	☐	last_edited_date	last_edited_date	Date	☑	☐				0	0	
☑	☑	OBJECTID	OBJECTID	Object ID	☐	☐	Numeric			10	0	
☑	☐	Shape	SHAPE	Geometry	☑	☐				0	0	
☑	☑	Shape.STLength()	Shape_Length	Double	☐	☐	Numeric			0	0	
☑	☑	Shape.STArea()	Shape_Area	Double	☐	☐	Numeric			0	0	
☑	☑	GlobalID	GlobalID	Global ID	☐	☐				0	0	
☑	☐	Year	Year	Text	☑	☐		Invasive_Year	2022	0	0	255

TREATMENT

Visible	Read Only	Field Name	Alias	Data Type	Allow NULL	Highlight	Number Format	Domain	Default	Precision	Scale	Length
☑	☐	Primary_Treatment	Primary Treatment	Text	☐	☐		Invasive_TreatmentType		0	0	255
☑	☐	Chemical_Type	Chemical Type	Text	☑	☐		Invasive_Chemical Type		0	0	255
☑	☐	Comments	Comments	Text	☑	☐				0	0	255
☑	☐	ChemicalAmountOZ	Chemical Amount (oz per gal)	Double	☑	☐	Numeric			38	8	
☑	☐	Primary_Total	Total amount of primary chemical used (total oz)	Long	☑	☐	Numeric			10	0	
☑	☐	Additive_Type	Additive Type	Text	☑	☐		Invasive_Additive		0	0	255
☑	☐	AdditiveAmountOZ	Additive Amount (oz per gal)	Double	☑	☐	Numeric			38	8	
☑	☐	Primary_Species	Primary Species Treated	Text	☑	☐		Invasive_SpeciesPoly		0	0	255
☑	☐	Secondary_Treatment	Secondary Treatment	Text	☑	☐		Invasive_TreatmentType		0	0	255
☑	☐	Secondary_Chemical	Secondary Chemical Type	Text	☑	☐		Invasive_Chemical Type		0	0	255
☑	☐	Secondary_ChemOZ	Secondary Chemical Amount (oz per gal)	Double	☑	☐	Numeric			7	1	
☑	☐	Secondary_Add	Secondary Additive Type	Text	☑	☐		Invasive_Additive		0	0	255
☑	☐	Second_Add_OZ	Secondary Additive Amount (oz per gal)	Long	☑	☐	Numeric			10	0	
☑	☐	Total_Secondary	Total amount of secondary chemical used (total oz)	Text	☑	☐				0	0	255
☑	☐	Secondary_Species	Secondary Species Treated	Text	☑	☐		Invasive_SpeciesPoly		0	0	255
☑	☐	Wind_Speed	Wind Speed	Text	☑	☐		Invasive_WindSpeed		0	0	255
☑	☐	Wind_Direction	Wind Direction	Text	☑	☐		Invasvie_WindDirection		0	0	255
☑	☐	Treatment_Temp	Treatment Temperature	Text	☑	☐		Invasive_TreatmentTemp		0	0	255
☑	☐	TreatedBy_Org	Treated by: Organization	Text	☑	☐		Invasive_Organizations		0	0	255
☑	☐	Treatedby_Ind	Treated by: Individual	Text	☑	☐				0	0	255
☑	☐	HoursTreating	Hours spend treating this polygon	Double	☑	☐	Numeric			38	8	
☑	☐	TreatmentDate	Treatment Date	Date	☑	☐	Date			0	0	
☑	☐	PolyArea	Area (Acres)	Double	☑	☐	Numeric			38	8	
☑	☑	Shape.STLength()	Shape_Length	Double	☐	☐	Numeric			0	0	
☑	☑	Shape.STArea()	Shape_Area	Double	☐	☐	Numeric			0	0	
☑	☑	GlobalID	GlobalID	Global ID	☐	☐				0	0	
☑	☐	Year	Year	Text	☑	☐		Invasive_Year		0	0	255
☑	☐	treat_other	Other species treated	Text	☑	☐				0	0	255
☑	☐	treat_other2	Secondary other species treated	Text	☑	☐				0	0	255

INVASIVE SPECIES POINTS

Visible	Read Only	Field Name	Alias	Data Type	Allow NULL	Highlight	Number Format	Domain	Default	Precision	Scale	Length
☑	☑	OBJECTID	OBJECTID	Object ID	☐	☐	Numeric			10	0	
☑	☐	Species	Species	Text	☑	☐		Invasive_SpeciesPoints		0	0	25
☑	☐	Mappedby_Org	Mapped by: Organization	Text	☑	☐		Invasive_Organizations		0	0	200
☑	☐	Mappedby_Ind	Mapped by: Individual	Text	☑	☐				0	0	25
☑	☐	Needs_Verification	Needs verification:	Text	☑	☐		Invasive_YesNo		0	0	25
☑	☐	park	Park	Text	☑	☐		Invasive_Parks		0	0	25
☑	☐	Park_Other	Unlisted Park or Survey Area	Text	☑	☐				0	0	25
☑	☐	Plant_Type	Type of Plant	Text	☑	☐		Invasive_PlantType		0	0	25
☑	☐	comments	Comments	Text	☑	☐				0	0	25
☑	☐	Ecosystem	Ecosystem	Text	☑	☐		Invasive_Ecosystems		0	0	25
☑	☐	Life_Stage	Life Stage	Text	☑	☐		Invasive_LifeStage		0	0	25
☑	☐	Shape	Shape	Geometry	☑	☐				0	0	
☑	☑	globalid	GlobalID	Global ID	☐	☐				0	0	
☑	☑	created_user	created_user	Text	☑	☐				0	0	25
☑	☑	created_date	created_date	Date	☑	☐				0	0	
☑	☑	last_edited_user	last_edited_user	Text	☑	☐				0	0	25
☑	☑	last_edited_date	last_edited_date	Date	☑	☐				0	0	

INVASIVE SPECIES POLYGONS

Visible	Read Only	Field Name	Alias	Data Type	Allow NULL	Highlight	Number Format	Domain	Default	Precision	Scale	Length
☑	☑	OBJECTID	OBJECTID	Object ID	☐	☐	Numeric			10	0	
☑	☐	Shape	Shape	Geometry	☑	☐				0	0	
☑	☐	Species	Species	Text	☑	☐		Invasive_SpeciesPoly		0	0	255
☑	☐	park	Park	Text	☑	☐		Invasive_Parks		0	0	255
☑	☐	Park_Other	Unlisted Park or Survey Area	Text	☑	☐				0	0	255
☑	☐	Mappedby_Org	Mapped by: Organization	Text	☑	☐		Invasive_Organizations		0	0	255
☑	☐	Mappedby_Ind	Mapped by: Individual	Text	☑	☐				0	0	255
☑	☐	density_of_invasive_species	Density of Invasive Species	Text	☑	☐		Invasive_Density		0	0	255
☑	☐	Needs_Verification	Needs verification:	Text	☑	☐		Invasive_YesNo		0	0	255
☑	☐	Ecosystem	Ecosystem	Text	☑	☐		Invasive_Ecosystems		0	0	255
☑	☐	Life_Stage	Life Stage	Text	☑	☐		Invasive_LifeStage		0	0	255
☑	☐	comments	Comments	Text	☑	☐				0	0	255
☑	☐	POLY_AREA	Area (Acres)	Double	☑	☐	Numeric			38	8	
☑	☑	Shape.STLength()	Shape_Length	Double	☐	☐	Numeric			0	0	
☑	☑	Shape.STArea()	Shape_Area	Double	☐	☐	Numeric			0	0	
☑	☑	created_user	Created User	Text	☑	☐				0	0	255
☑	☑	created_date	Created Date	Date	☑	☐				0	0	
☑	☑	last_edited_user	Last Edited User	Text	☑	☐				0	0	255
☑	☑	last_edited_date	Last Edited Date	Date	☑	☐				0	0	
☑	☑	GlobalID	GlobalID	Global ID	☐	☐				0	0	
☑	☐	Plant_Type	Type of plant	Text	☑	☐		Invasive_PlantType		0	0	255

DOMAINS

Domain Name	Description	Field Type	Domain Type
Invasive_Additive	Additive	Text	Coded Value Domain
Invasive_Chemical Type	Treatment Chemicals	Text	Coded Value Domain
Invasive_Density	Density of Invasive Species	Text	Coded Value Domain
Invasive_Disposal	Treatment disposal types	Text	Coded Value Domain
Invasive_Ecosystems	Invasive Survey Ecosystems List	Text	Coded Value Domain
Invasive_LifeStage	Life Stage	Text	Coded Value Domain
Invasive_Organizations	Organizations involved with invasive species project	Text	Coded Value Domain
Invasive_Parks	Park Names	Text	Coded Value Domain
Invasive_PlantType	Type of plant	Text	Coded Value Domain
Invasive_SpeciesPoints	Single plant species list	Text	Coded Value Domain
Invasive_SpeciesPoly	Species list for polygons	Text	Coded Value Domain
Invasive_SurveyDetail	Survey detail level	Text	Coded Value Domain
Invasive_SurveyMethod	Survey Method	Text	Coded Value Domain
Invasive_TreatmentTemp	Temperature Range when Treated	Text	Coded Value Domain
Invasive_TreatmentType	Type of Treatment	Text	Coded Value Domain
Invasive_TSN	Taxonomic Serial Number	Double	Coded Value Domain
Invasive_WindSpeed	Wind Speed	Text	Coded Value Domain
Invasive_Year	Year task done	Text	Coded Value Domain
Invasive_YesNo	Yes or No	Text	Coded Value Domain
Invasvie_WindDirection	Wind Direction	Text	Coded Value Domain

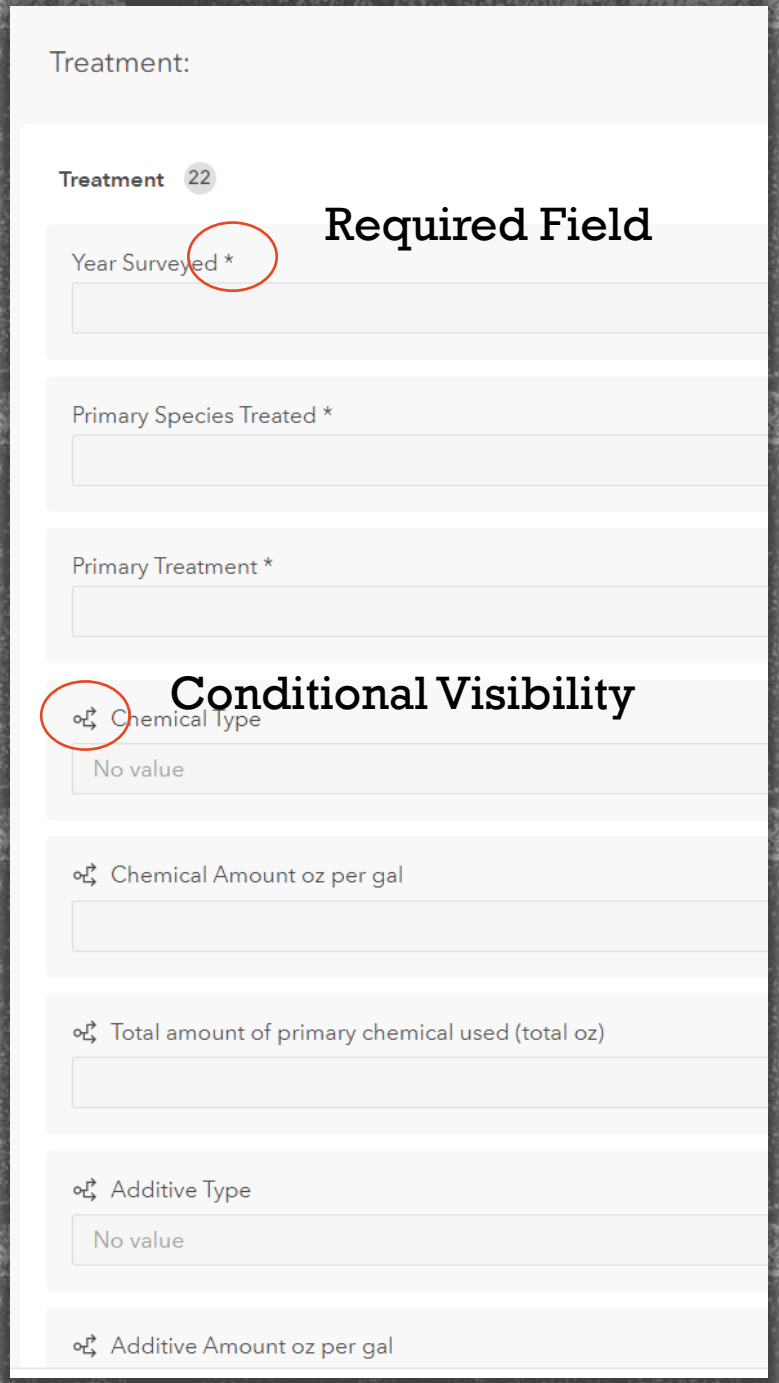
ATTRIBUTE RULES

Expression

```
var planttype = $feature.Species;
var output = [];
if (planttype == "Acer platanoides (Norway maple)"){output = "Tree"};
if (planttype == "Ailanthus altissima (Tree-of-heaven)"){output = "Tree"};
if (planttype == "Alnus glutinosa  (Black alder)"){output = "Tree"};
if (planttype == "Berberis thunbergii (Japanese barberry)"){output = "Shrub"};
if (planttype == "Celastrus orbiculatus (Asian bittersweet)"){output = "Vine"};
if (planttype == "Cirsium arvense (Canada thistle)"){output = "Forb"};
if (planttype == "Cirsium vulgare (Bull thistle)"){output = "Forb"};
if (planttype == "Clematis terniflora (Sweet autumn clematis)"){output = "Vine"};
if (planttype == "Conium maculatum (Poison hemlock)"){output = "Forb"};
if (planttype == "Convolvulus arvensis (Field bindweed)"){output = "Vine"};
if (planttype == "Elaeagnus umbellate (Autumn olive)"){output = "Shrub"};
if (planttype == "Euonymus alatus (Burning bush)"){output = "Shrub"};
if (planttype == "Euonymus fortunei (Wintercreeper)"){output = "Vine"};
if (planttype == "Frangula alnus (Glossy buckthorn)"){output = "Tree"};
if (planttype == "Hedera helix (English ivy)"){output = "Vine"};
if (planttype == "Hesperis matronalis (Dame's rocket)"){output = "Forb"};
if (planttype == "Lespedeza cuneata and other species (Sericea lespedeza)"){output = "Shrub"};
if (planttype == "Ligustrum obtusifolium (Blunt-leaved privet)"){output = "Shrub"};
if (planttype == "Lonicera japonica (Japanese honeysuckle)"){output = "Vine"};
if (planttype == "Lythrum salicaria (Purple loosestrife)"){output = "Forb"};
if (planttype == "Microstegium vimineum  (Japanese stiltgrass)"){output = "Grass"};
if (planttype == "Miscanthus sinensis (Chinese silver grass)"){output = "Grass"};
if (planttype == "Morus alba (White mulberry)"){output = "Tree"};
```

OK Cancel

CONFIGURATION IN MAP VIEWER FORMS



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PYTHON SCRIPTING

Species Point Entry Needs Verification

NR No-Reply
To Travis Cole

Phish Alert

OBJECTID: 1614, Created Date: 2022-05-12 13:43:09.000001, Species: Alnus glutinosa (Black alder), Organization: Other, Individual: Travis Cole , Needs Verification: Yes, Comments: DELETE
OBJECTID: 2014, Created Date: 2022-05-12 13:55:27, Species: Microstegium vimineum (Japanese stiltgrass), Organization: Other, Individual: Travis Cole , Needs Verification: Yes, Comments: DELETE
OBJECTID: 2077, Created Date: 2022-05-12 14:05:46, Species: Alnus glutinosa (Black alder), Organization: Other, Individual: Travis Cole , Needs Verification: Yes, Comments: DELETE

EDRR Species

NR No-Reply
To Travis Cole

Phish Alert

POINT - OBJECTID: 1614, Created Date: 2022-05-12 13:43:09.000001, Species: Alnus glutinosa (Black alder), Organization: Other, Individual: Travis Cole , Needs Verification: Yes, Comments: DELETE
POINT - OBJECTID: 2014, Created Date: 2022-05-12 13:55:27, Species: Microstegium vimineum (Japanese stiltgrass), Organization: Other, Individual: Travis Cole , Needs Verification: Yes, Comments: DELETE
POLYGON - OBJECTID: 2069, Created Date: 2022-04-18 18:11:00.000001, Species: Centaurea stoebe (Spotted knapweed), Organization: Other, Individual: Travis Cole , Needs Verification: Yes, Comments: DELETE
POLYGON - OBJECTID: 2077, Created Date: 2022-05-12 14:05:46, Species: Alnus glutinosa (Black alder), Organization: Other, Individual: Travis Cole , Needs Verification: Yes, Comments: DELETE
POLYGON - OBJECTID: 2078, Created Date: 2022-05-12 15:58:51, Species: Dioscorea polystachya (oppositifolia) (Chinese yam), Organization: Other, Individual: Travis Cole , Needs Verification: Yes, Comments: DELETE

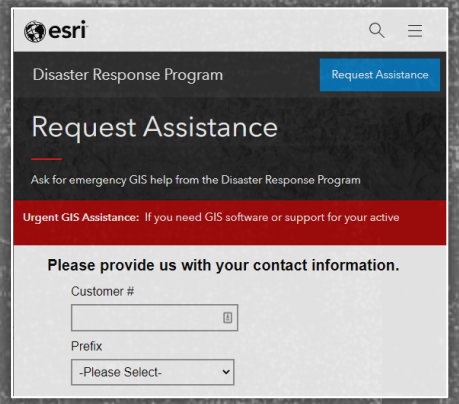
DEMOS

- Field Maps: Android or Apple Device
- Public Web Map: HERE
- Dashboard: HERE

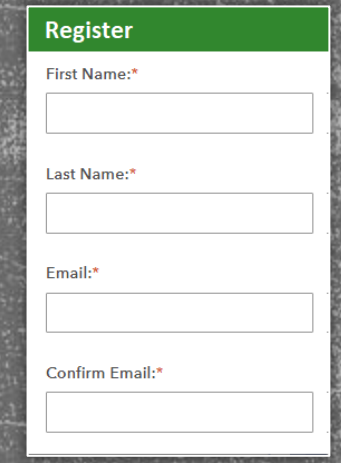
SURVEY123 – EMA DAMAGE ASSESSMENT

EMA DAMAGE ASSESSMENT

Surge Environment



Registration

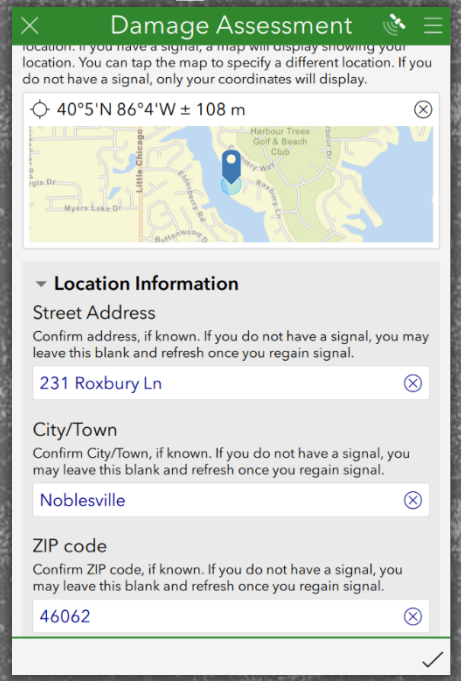


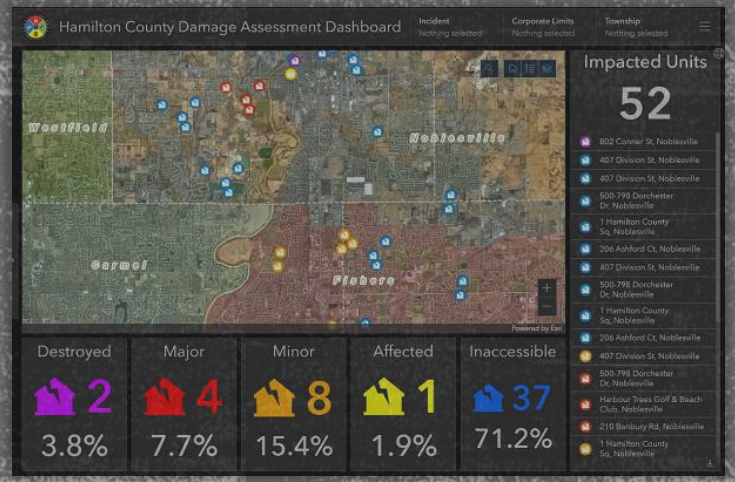
CSV

First Name	Last Name	Email	Username	Password	Role	User Type
Michale	Jackson	xxx@gmailcom	EMA_Michael_Jackson	HamCoEMA_5	Data Editor	Creator
Tom	Petty	xxx@gmailcom	EMA_Tom_Petty	HamCoEMA_5	Data Editor	Creator
Snoop	Dogg	xxx@gmailcom	EMA_Snoop_Dogg	HamCoEMA_5	Data Editor	Creator
Ed	Sheeran	xxx@gmailcom	EMA_Ed_Sheeran	HamCoEMA_5	Data Editor	Creator

Users

Reports



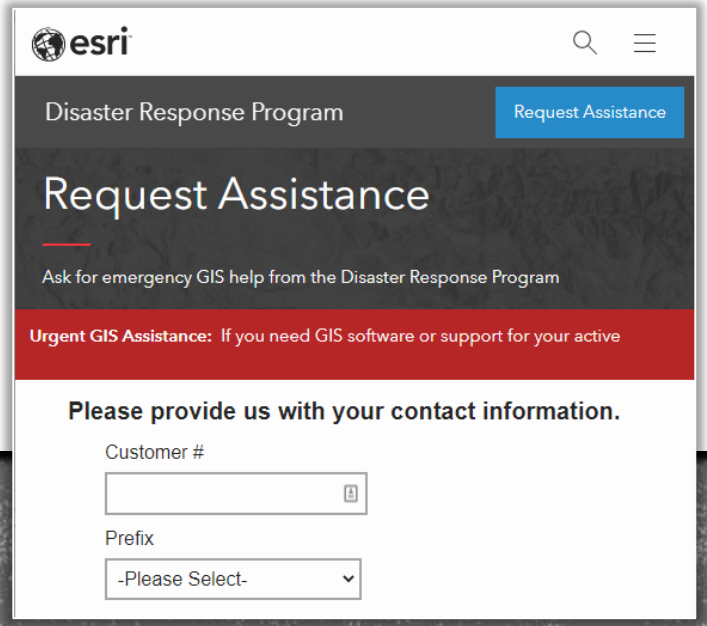


Dashboard

HAMILTON COUNTY
INDIANA

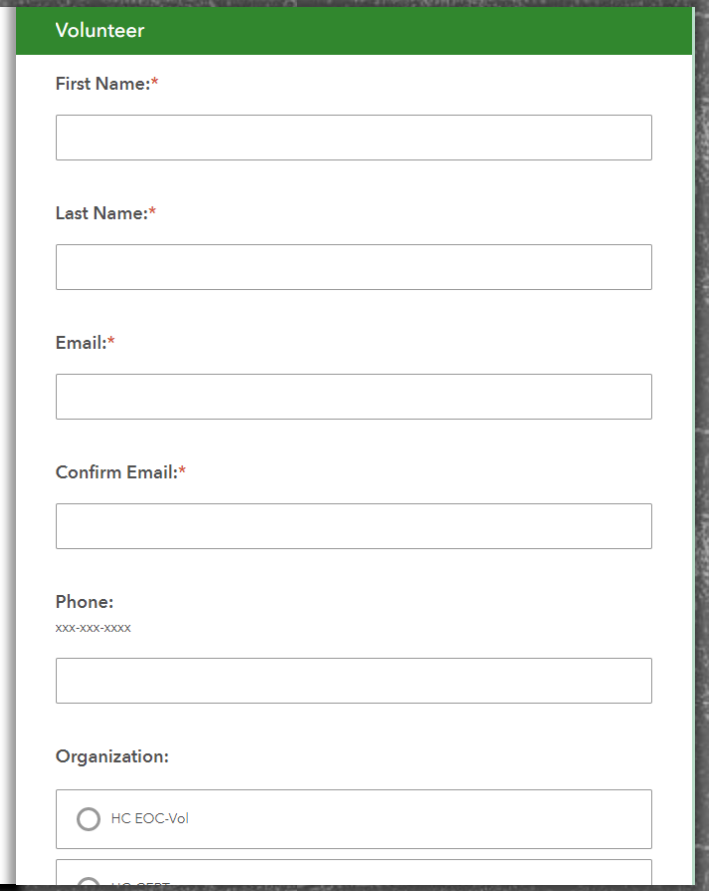
SURGE LICENSE

- **Public Safety Named User Program: ArcGIS Online Creator in a Surge Environment**
  - **Slightly higher cost**
  - **Normal use during non-surge times**
  - **Temporarily extend for Training or Disasters**
    - **Monitored 24/7**
    - **No Limit to requests/year**
    - **Training: 60 days**
    - **Emergency: 90 days (can extend)**



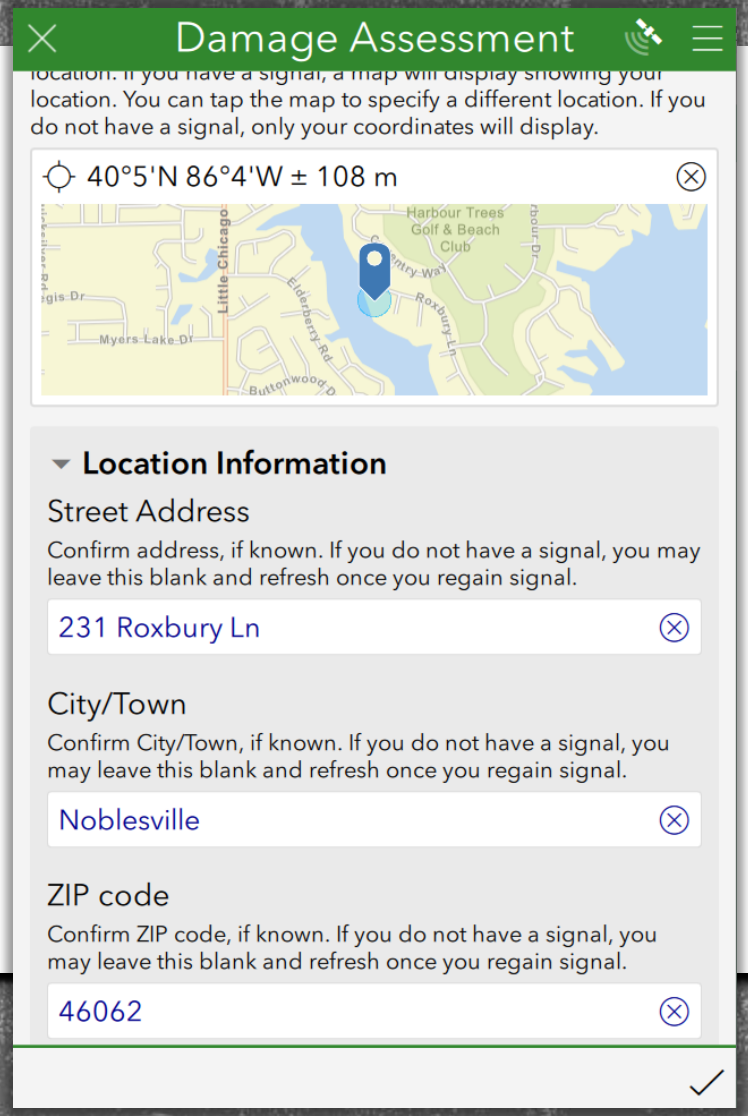
REGISTRATION FORM

- Survey123 form
  - Self-registration
  - QR code opens in a browser (no apps needed)
  - Anyone can submit, personal data protected
  - Captures/creates fields for creating users from CSV
    - Username
    - Temp password
    - Role
    - User Type



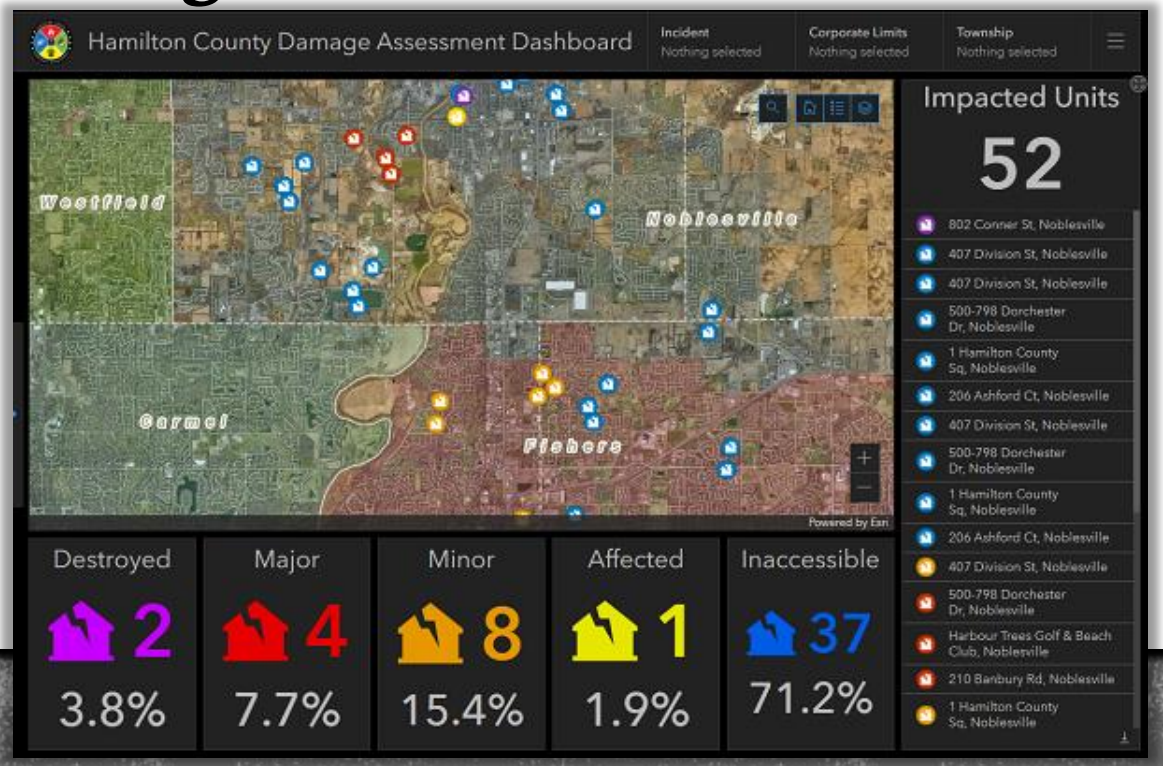
DAMAGE REPORT

- Survey123 form
  - Shared with field workers
  - If signal
    - Address fields from location (reverse geocode)
      - Township and municipality
  - Incident choices
  - Help links for damage extent



MONITORING DASHBOARD

- **ArcGIS Dashboard**
  - **Shared with authorities and municipalities**
  - **Real-time visualization of damage**
  - **Filters**
  - **Download data of interest**



DEMOS

- Survey123: Here
- Dashboard: HERE

QUESTIONS?

Travis Cole
GIS Developer/Analyst | ISS Department
(317) 774-2584
Hamilton County, Indiana
1 Hamilton County Square
Noblesville, IN 46060