2023 Texas GIS Forum

MARINE DEBRIS AND PUBLIC OUTREACH: A DASHBOARD IS WORTH A THOUSAND WORDS

Speaker

Jess Lucas

Speaker Background

- B.S. from Texas A & M University in Wildlife Biology
  Worked on many species of animals
  Began my GIS journey with ArcMap 8.1
- M.S. from Clemson University in Wildlife Biology
  Worked with a rare bat species, environmental surveys
  Habitat analysis using GIS
- GIS Certificate from Austin Community College
  Honed my GIS skills
- Currently working as a GIS analyst on primarily non-profit projects

CLEMSON UNIVERSITY

TEXAS A&M UNIVERSITY

AUSTIN COMMUNITY COLLEGE DISTRICT

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Who is SPLASh

- Comprised of individuals from various non-profits and organizations
  - American Bird Conservancy
  - Gulf Coast Bird Observatory
  - Black Cat GIS
- Conduct outreach and education activities
- Work to develop best management practices for litter control/cleanup
- Host regular coastal cleanups where community volunteers collect, sort, and categorize trash
- Use data from these cleanups to inform better waste management practices.

SPLAS

STOPPING PLASTICS A

ITTER ALONG SHORE

Project Goals

SPLASh
STOPPING PLASTICS AND LITTER ALONG SHORELINES

PRODUCT

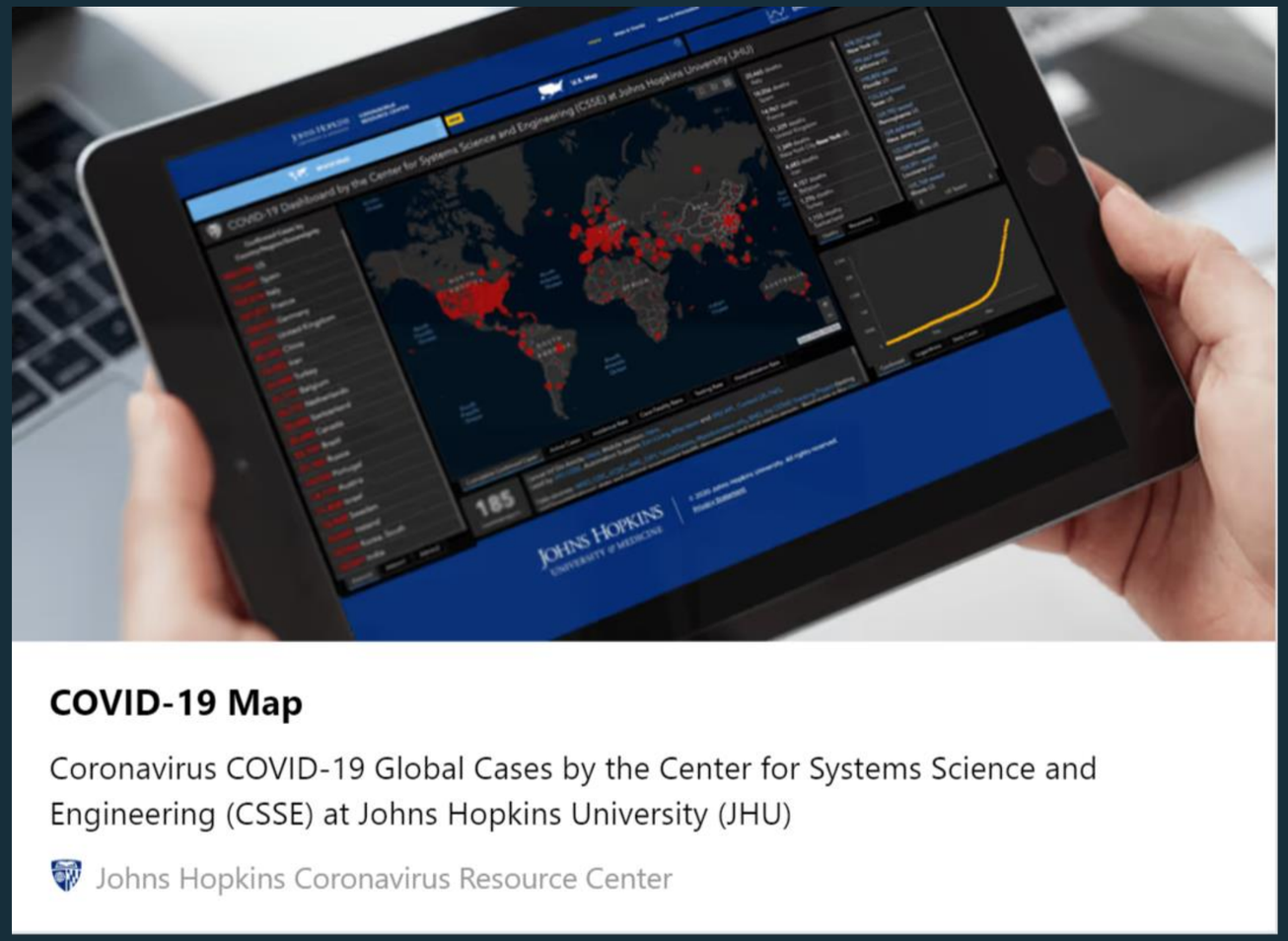
Create online data visual for SPLASh

GOALS

User friendly
Easily updated
No new techniques

METHOD

Create dashboards housed on StoryMap



COVID-19 Map

Coronavirus COVID-19 Global Cases by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU)

Johns Hopkins Coronavirus Resource Center

Dashboards as Outreach

When data is online, make it visual

Visual representation can be easier to communicate with the general public

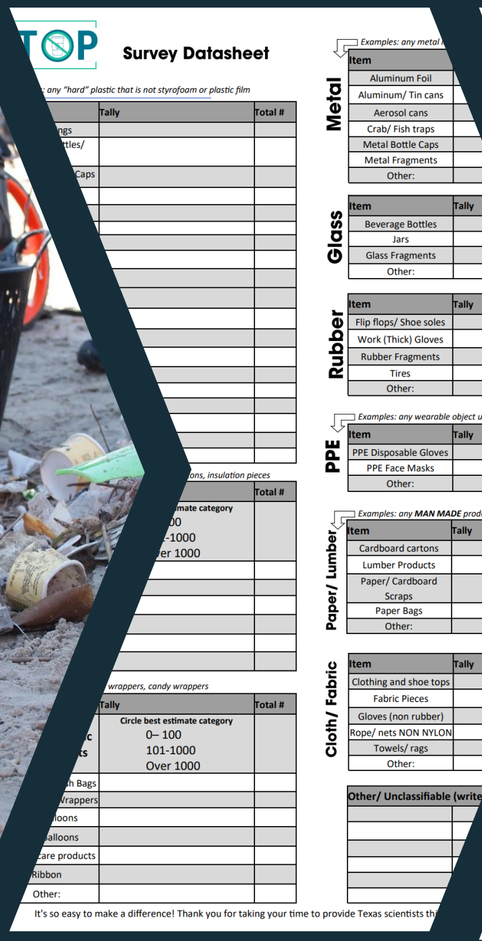
Purpose-built Dashboard

Criteria for this EPA funded non-profit project

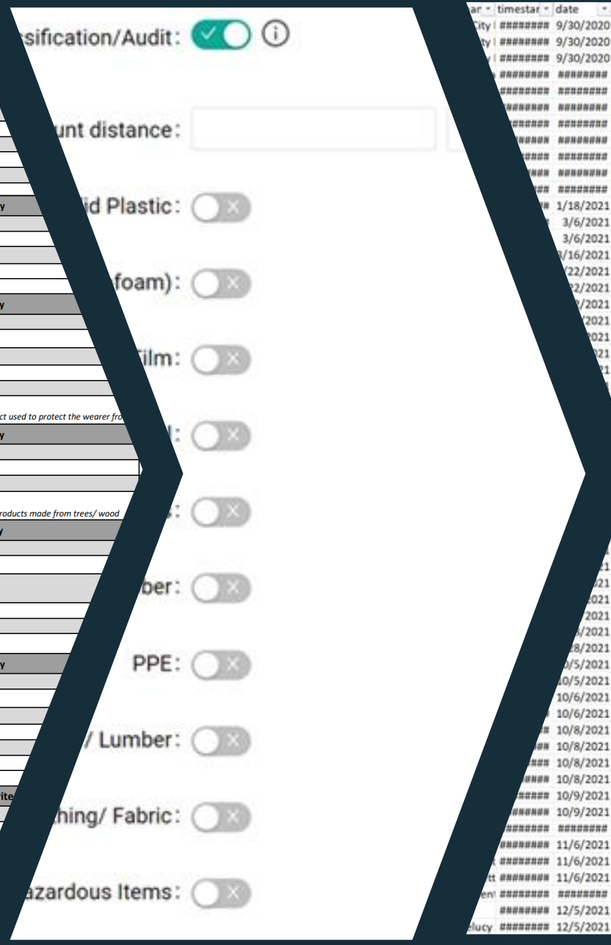
- I**nnovative online platform** to collect data and engage the public
- **Ability to query** trash data entered by site or across sites by year or multiple years
- **Access and use by local stakeholders** to improve trash management and to target prevention of the most discarded items.
- I**dentify trash peaks** that may coincide with nesting seasons, migration, and other natural, biological and environmental phenomena.
- Provide a detailed starting point to **track trash removal efforts**

Project Process

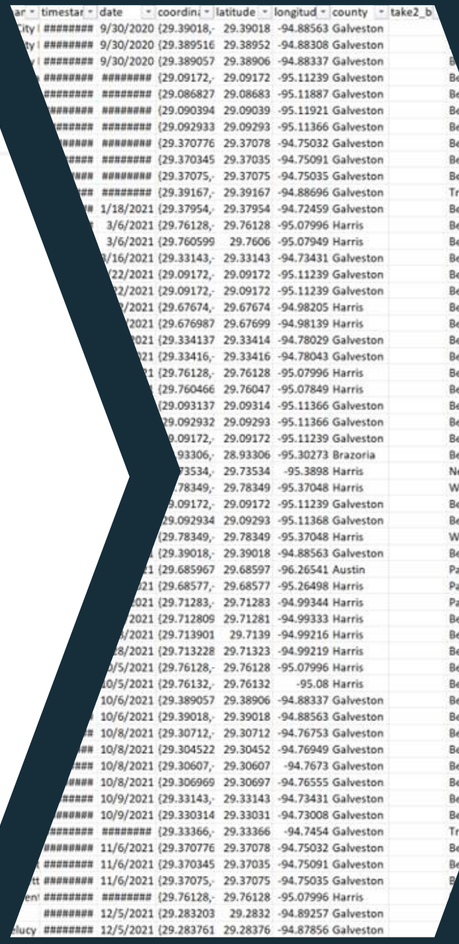
Litter Cleanup



Field Data



Litter Database



Data Download

Dashboard

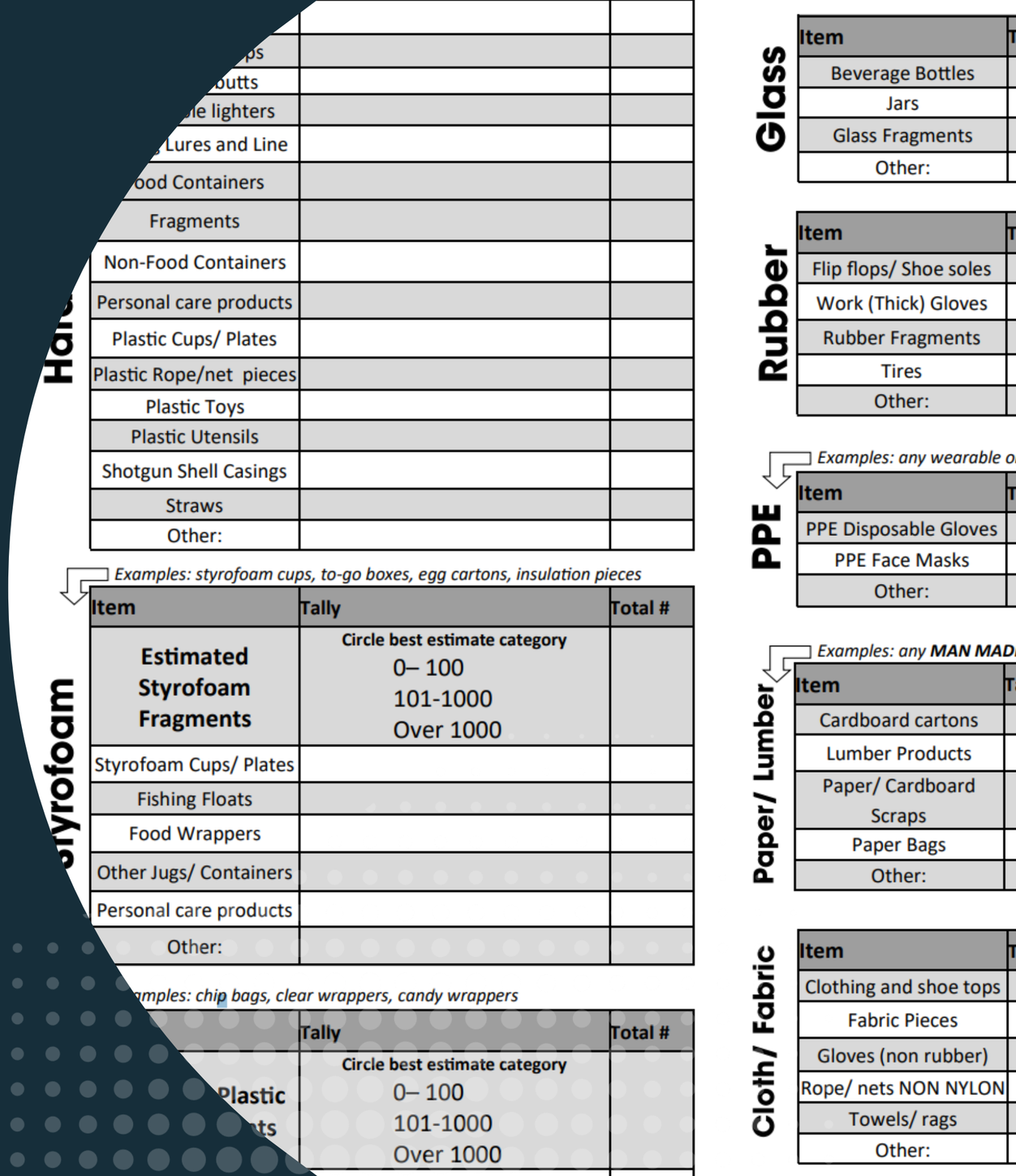
Litter Cleanup - STOP

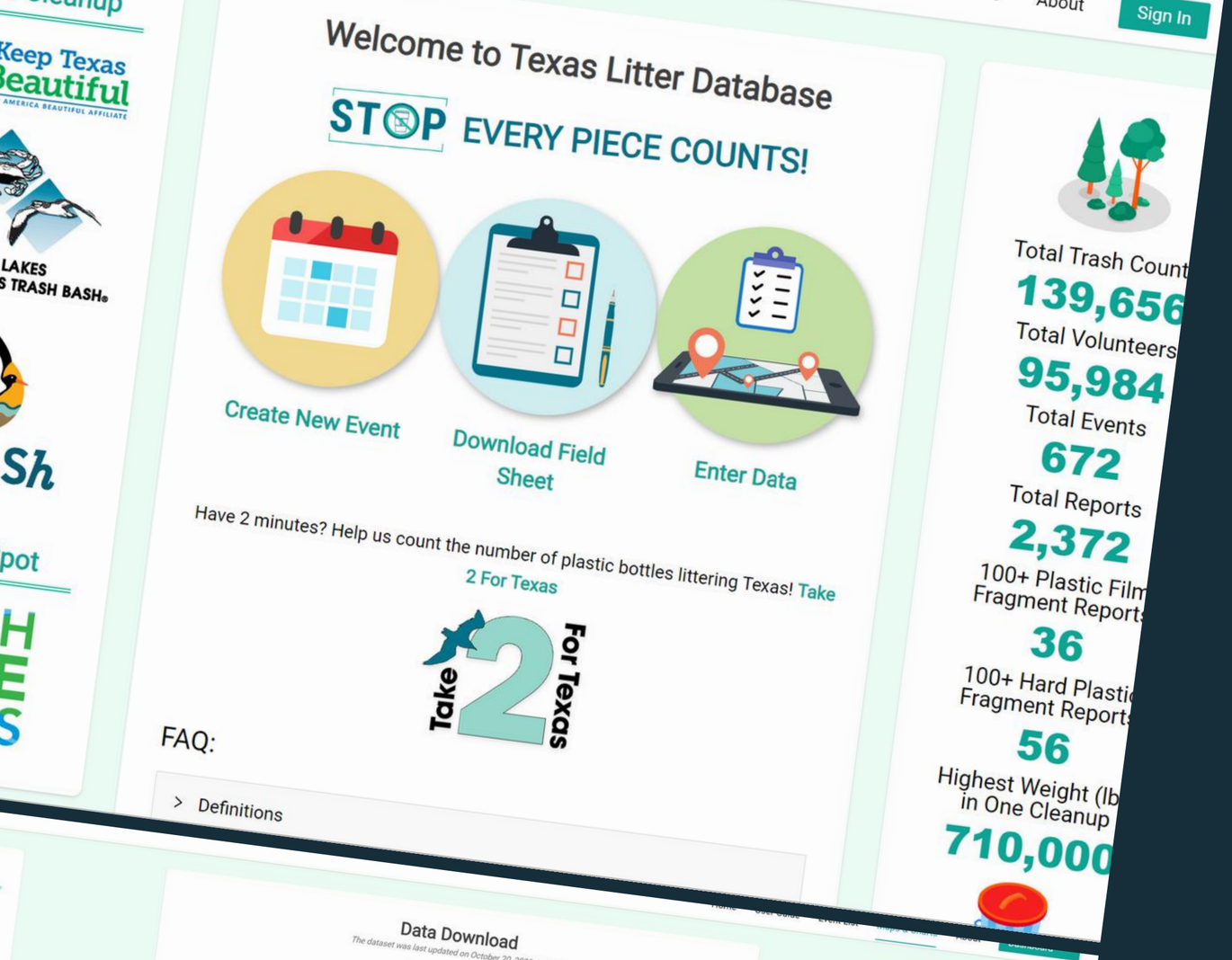
- Driving force behind Texas Litter Database
- Method:
  - track a line and note the distance (say 100 ft) and pick up every single piece of trash you see, the size of a cigarette butt or larger.
  - Once collected, record the number of individual items into the trash report page.

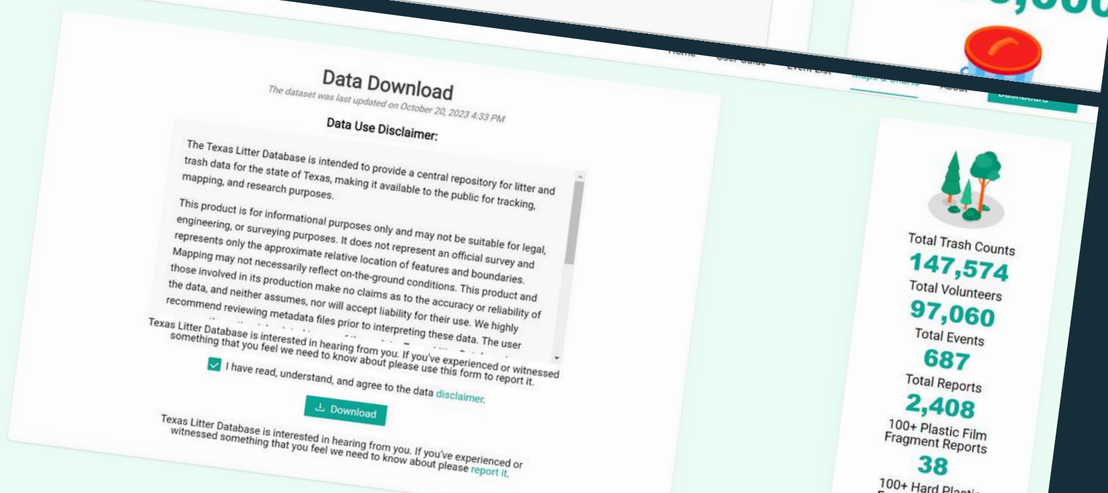
STOP Field Data

From field to database

- Field data is reported into the datasheet
- Diverse categories cover most items
- Specific breakdowns of ‘type’ of item within each category
- Totals – overall weight
- Transects – itemized count







Texas Litter Database

Centralized data repository

Organizes trash and marine debris data

Open to all users – maps, graphs, and data downloads

Data download available free with an account

CSV format

Currently managed by Houston Advanced Research Center (HARC)

HARC

Data Download/Cleaning

Manage Data quality

Similar quality to citizen science

Entry by numerous volunteers, untrained staff, etc.

Creates misspellings, duplications, inconsistency, etc.

Corrections by program staff

Best use of pre-existing fields

Little/no flexibility in field name or availability

Not always ideal for Dashboards

Some post-download modifications

Filter relevant data

Sort only SPLASh events

Separate totals/transects at data entry

Import Data

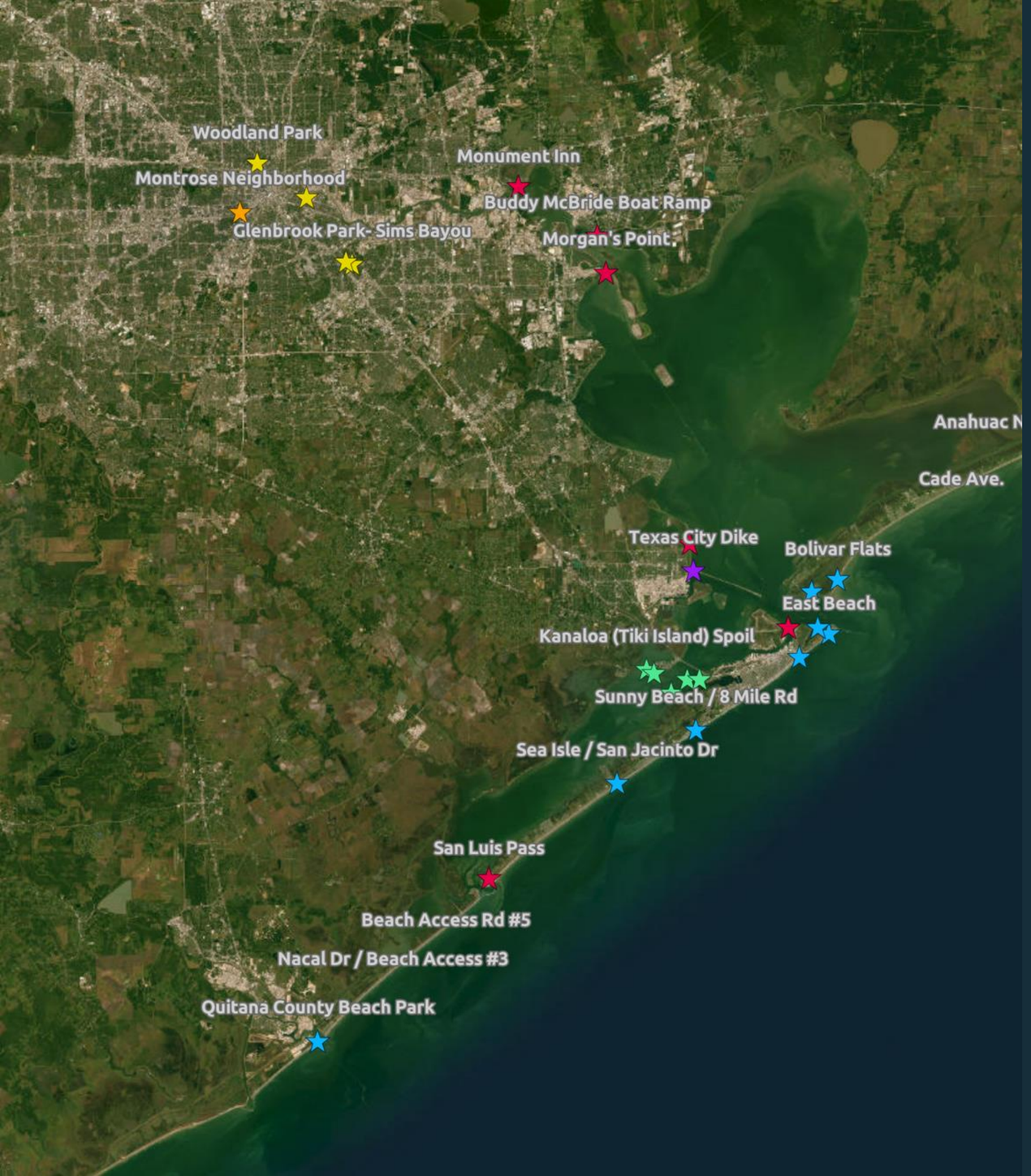
Create a map with site points

Add layer for cleanup data

Amend any field aliases

Create pop-ups to be used in ‘data at a glance’

Bring the data to ArcGIS Online

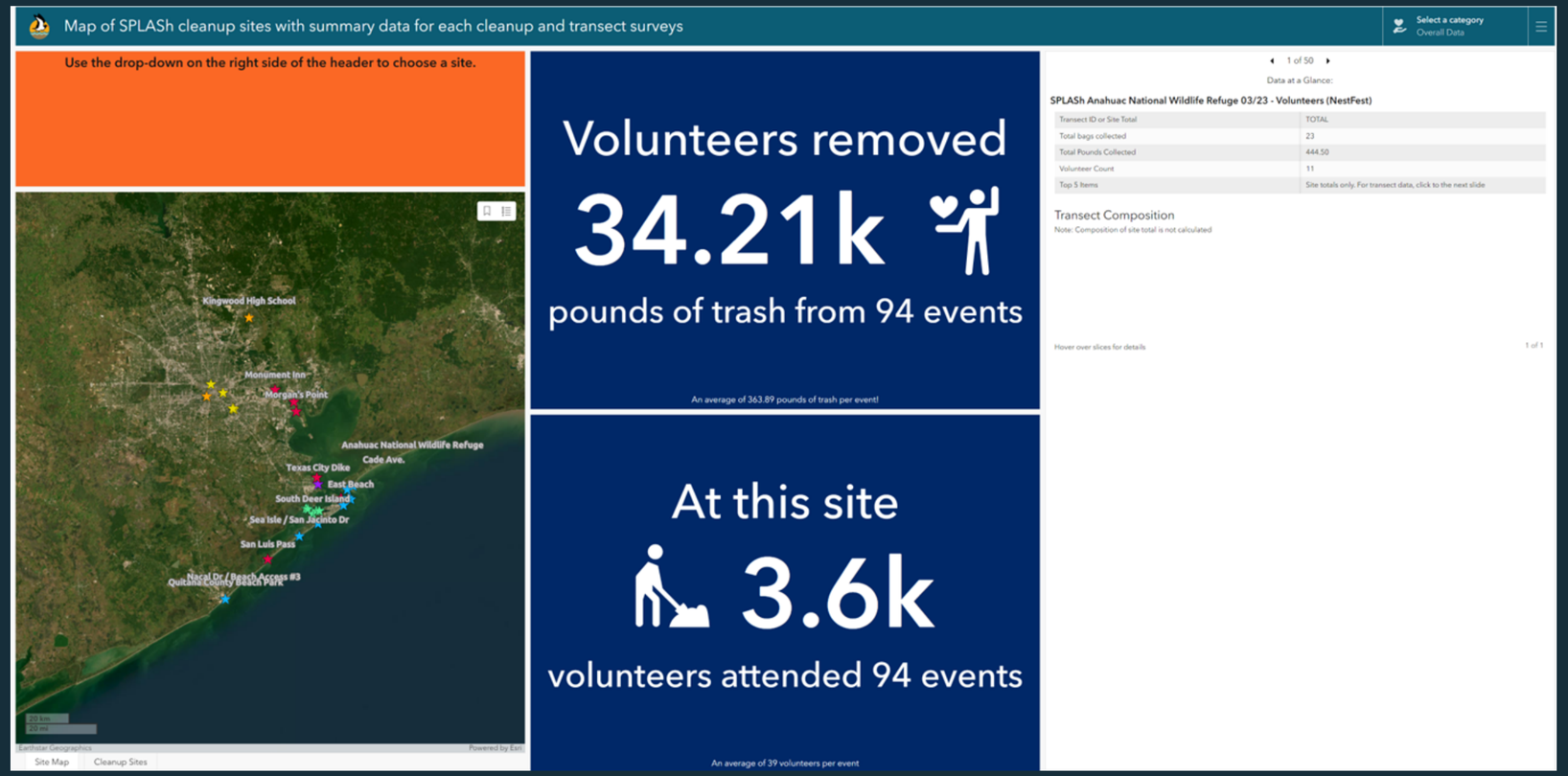


Building the Dashboard

- Work with SPLASh to determine dashboard wish-list
  - Must-have categories
  - Metrics and desirable layout
  - Style sheet
    - colors, type, logos

Dashboard - Maps and Metrics

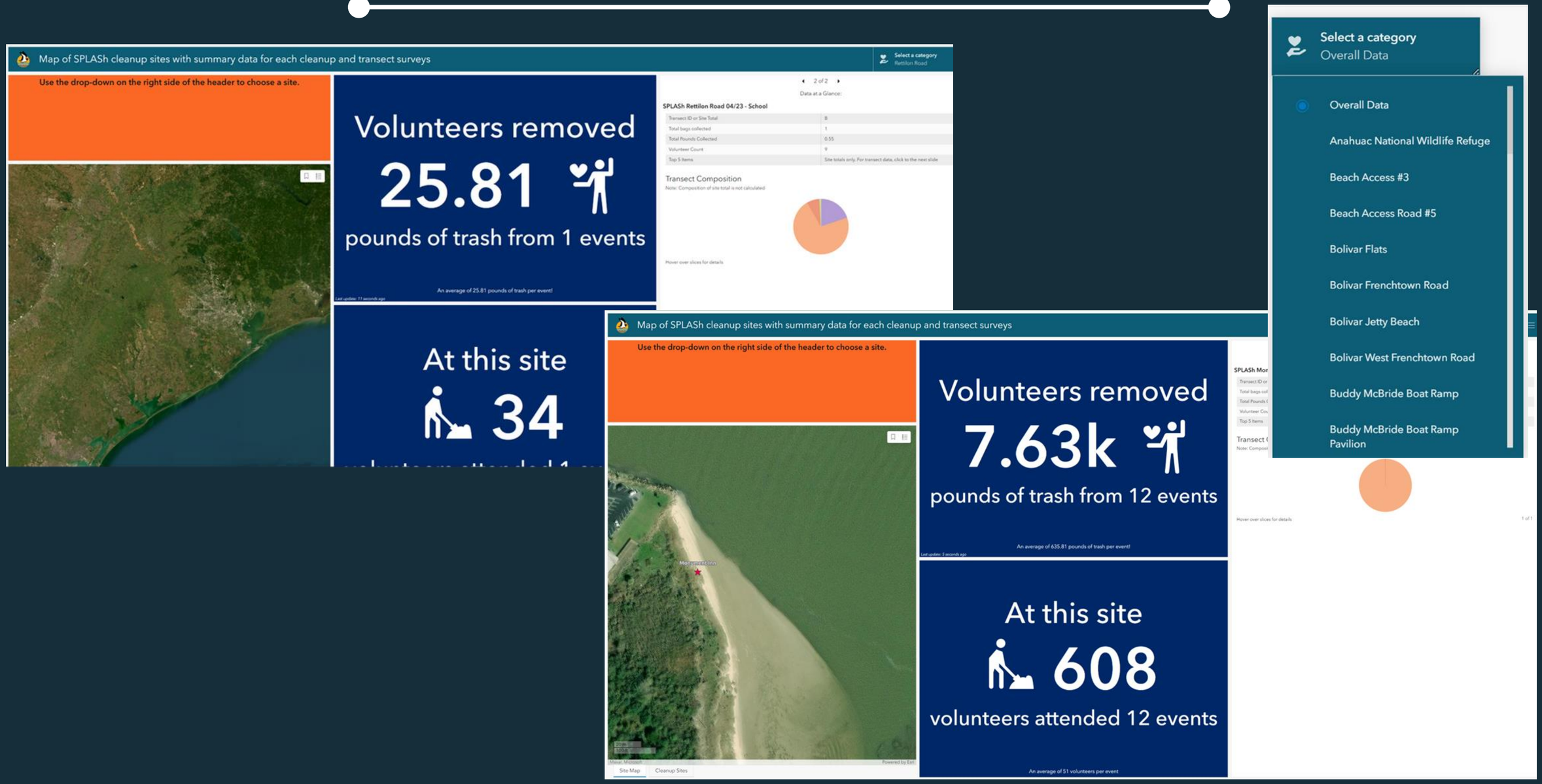
Create a dashboard with overall metrics and site specific metrics.



Components

- Maps
  - Site Map
  - Overall sites
- Data at a Glance
- Indicators
- Category selector
- Text box

Category Selector



Category Selector -Actions

Select actions for different layers and maps in the dashboard

Filter

- Filters the data in the “data at a glance“ to reflect only site data
- Filters the data in the indicators to reflect only site data

Flash

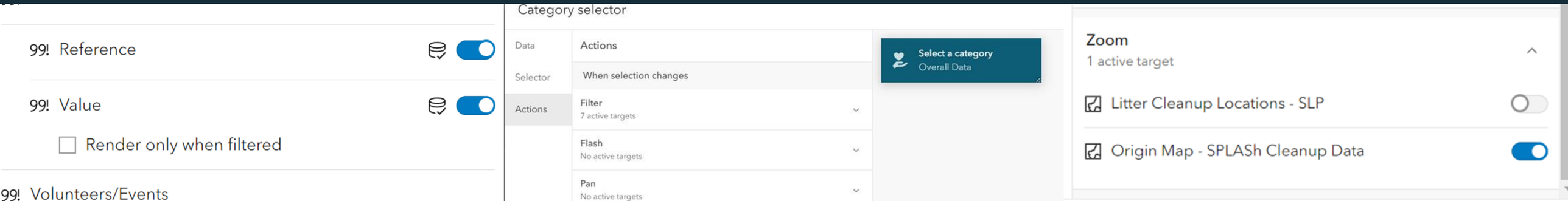
- Can flash a point on the map

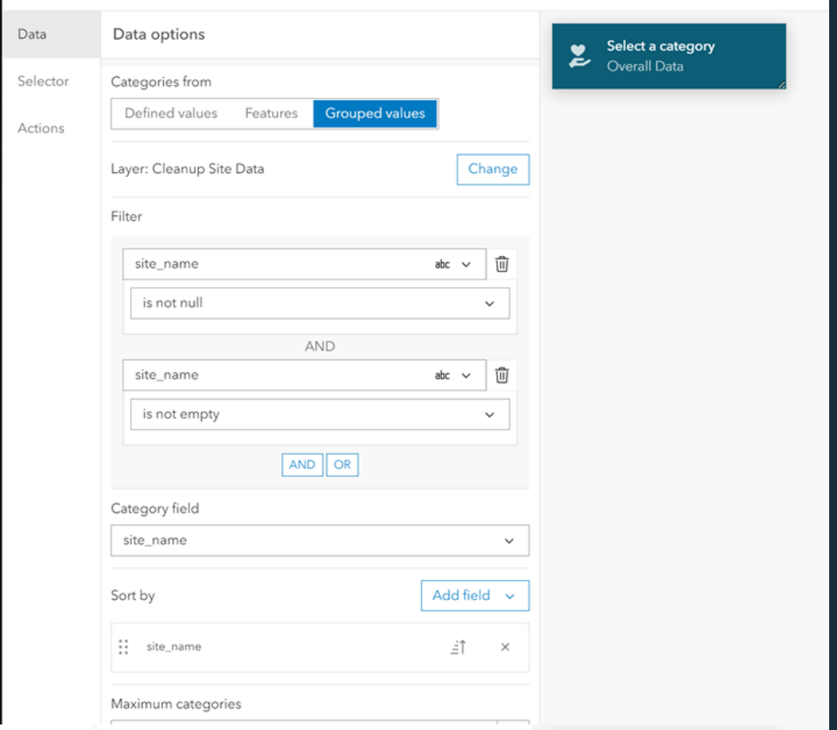
Pan

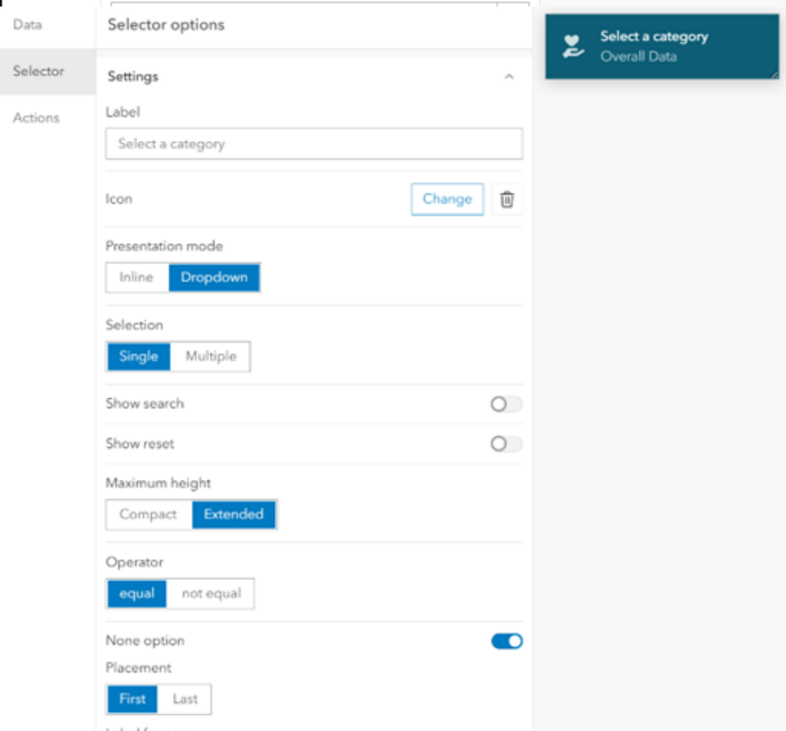
- Can pan to a point on the map

Zoom

- Zoom to the selected site in the main map







Category Selector

Data

- Choose Grouped Values
- Filter by site name (exclude null/empty)
- Select category field
  - Site Name

Selector

- Label for selector – ‘Select a category’, ‘sites’, ‘hospitals’ etc.
- Choose icon
- Choose presentation mode
  - Dropdown with single selection
- None option
  - No selection shows ALL data (labelled overall data)

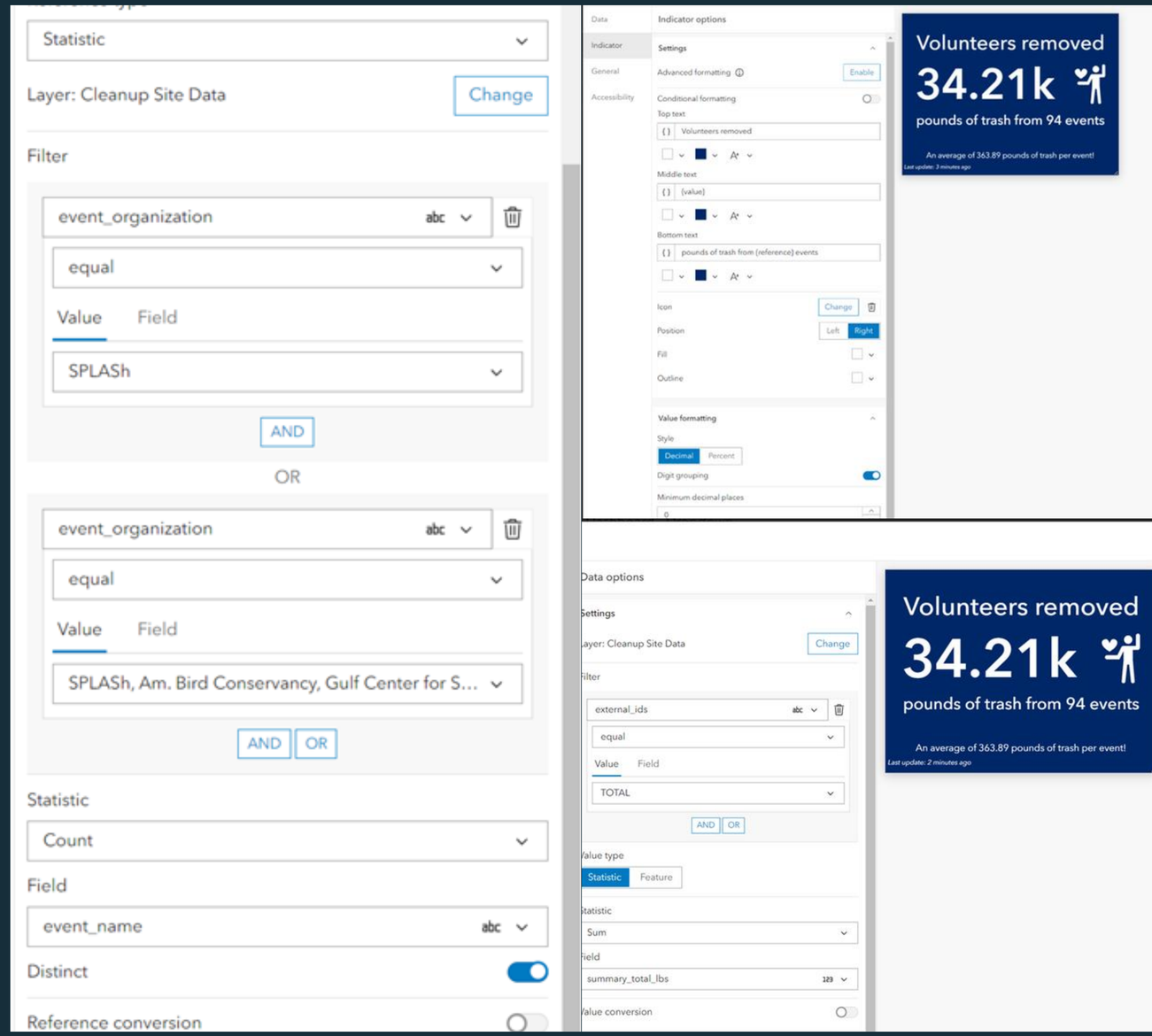
Indicators

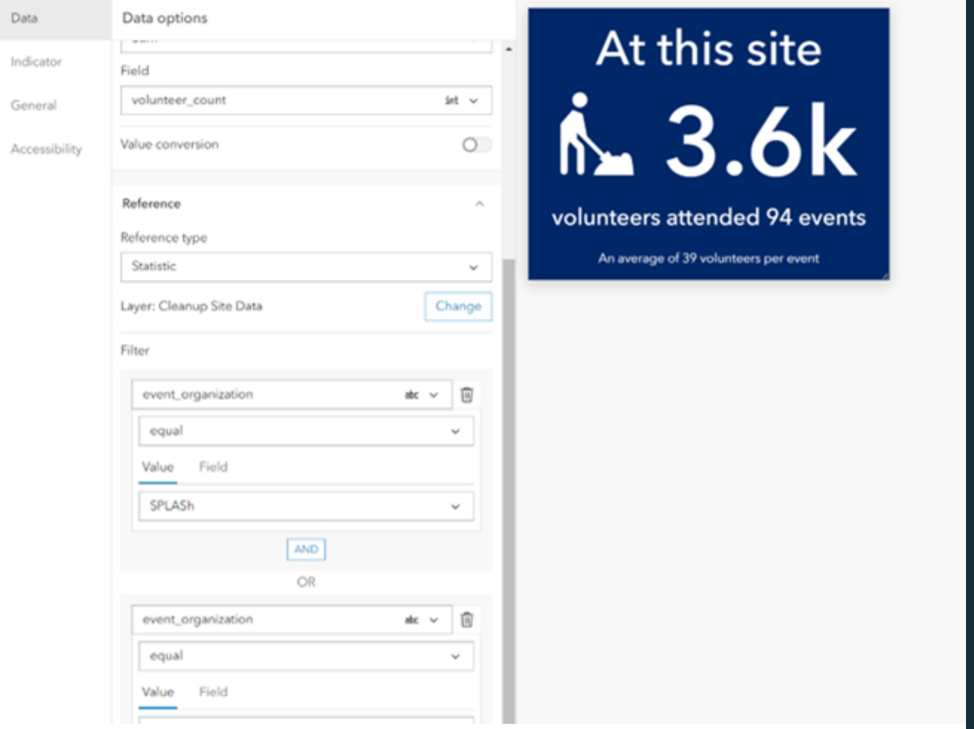
Data:

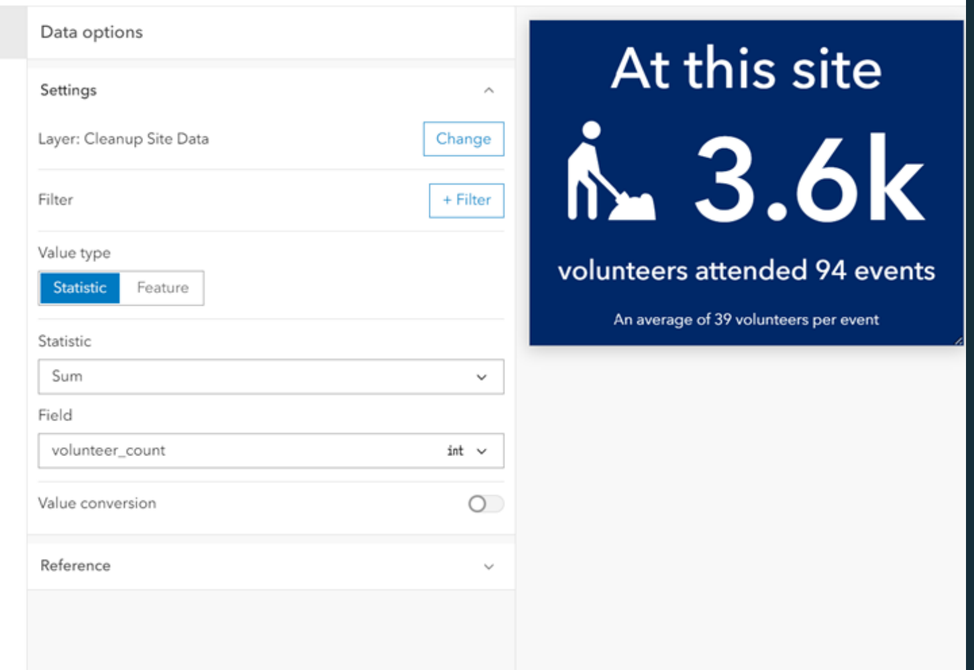
- Apply relevant filters
  - external ID ‘TOTAL’ (not itemized)
  - event organization (SPLASh)
- Create statistic
  - sum of total pounds of trash
- Create reference point
  - statistic
  - event organization
  - count - distinct event name

Indicator:

- Customize colors and text
- Insert the value/reference
- Choose/Import an appropriate icon







Indicators

Data:

- Choose the relevant data layer
  - Cleanup Site Data
- Apply necessary filters
  - Event/organization
- Determine the preferred statistic
  - Sum of Total volunteers
- Identify the reference points
  - Statistic
  - Event organization
  - Count – distinct event name

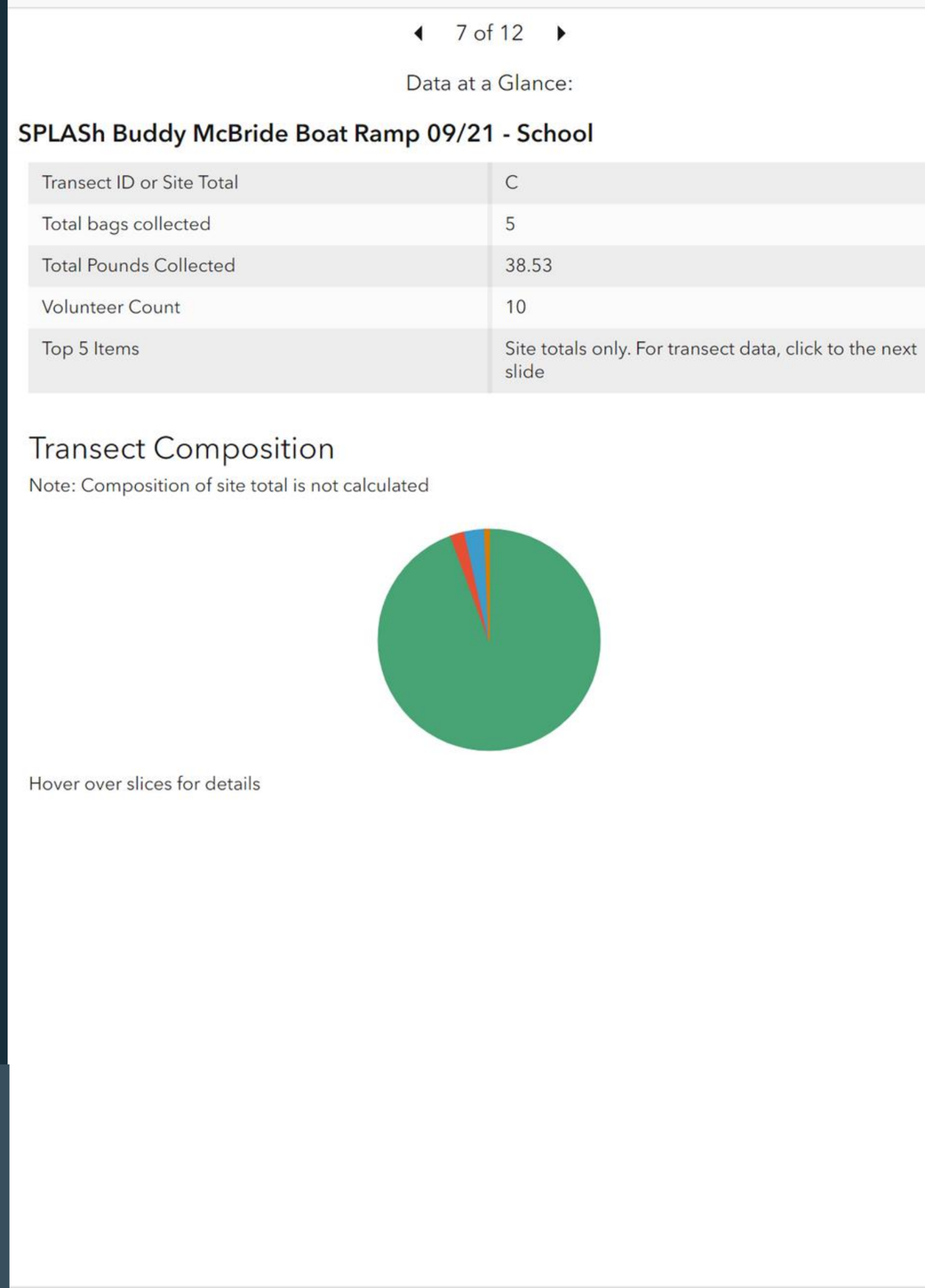
Indicator:

- Customize colors and text
- Insert the value/reference
- Choose/Import an appropriate icon.

Data at a Glance

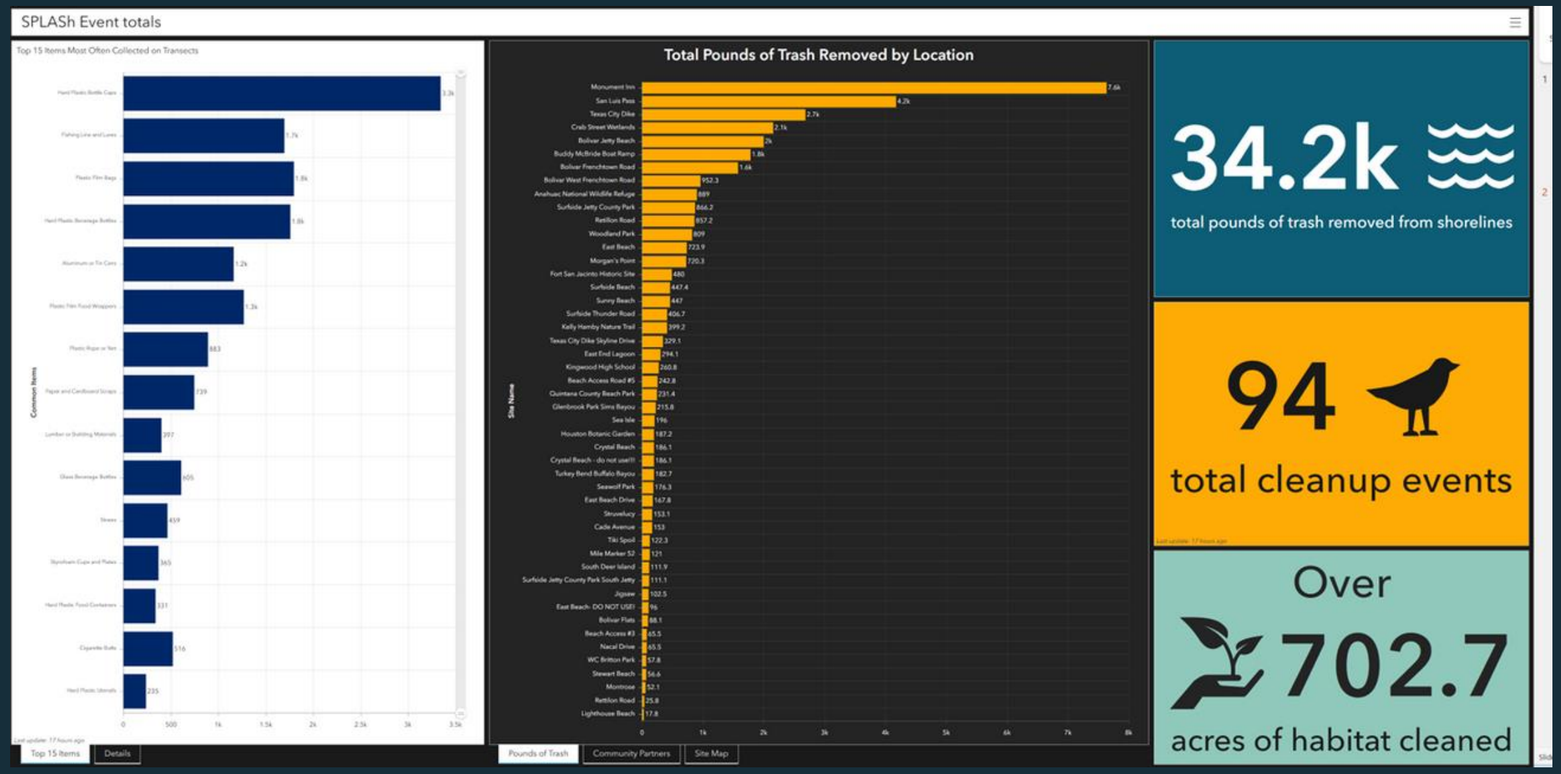
Created using pop-ups in ArcPro

- Select categories
- Correct aliases
- Transect/Totals
- Create chart of site items
  - composite groups



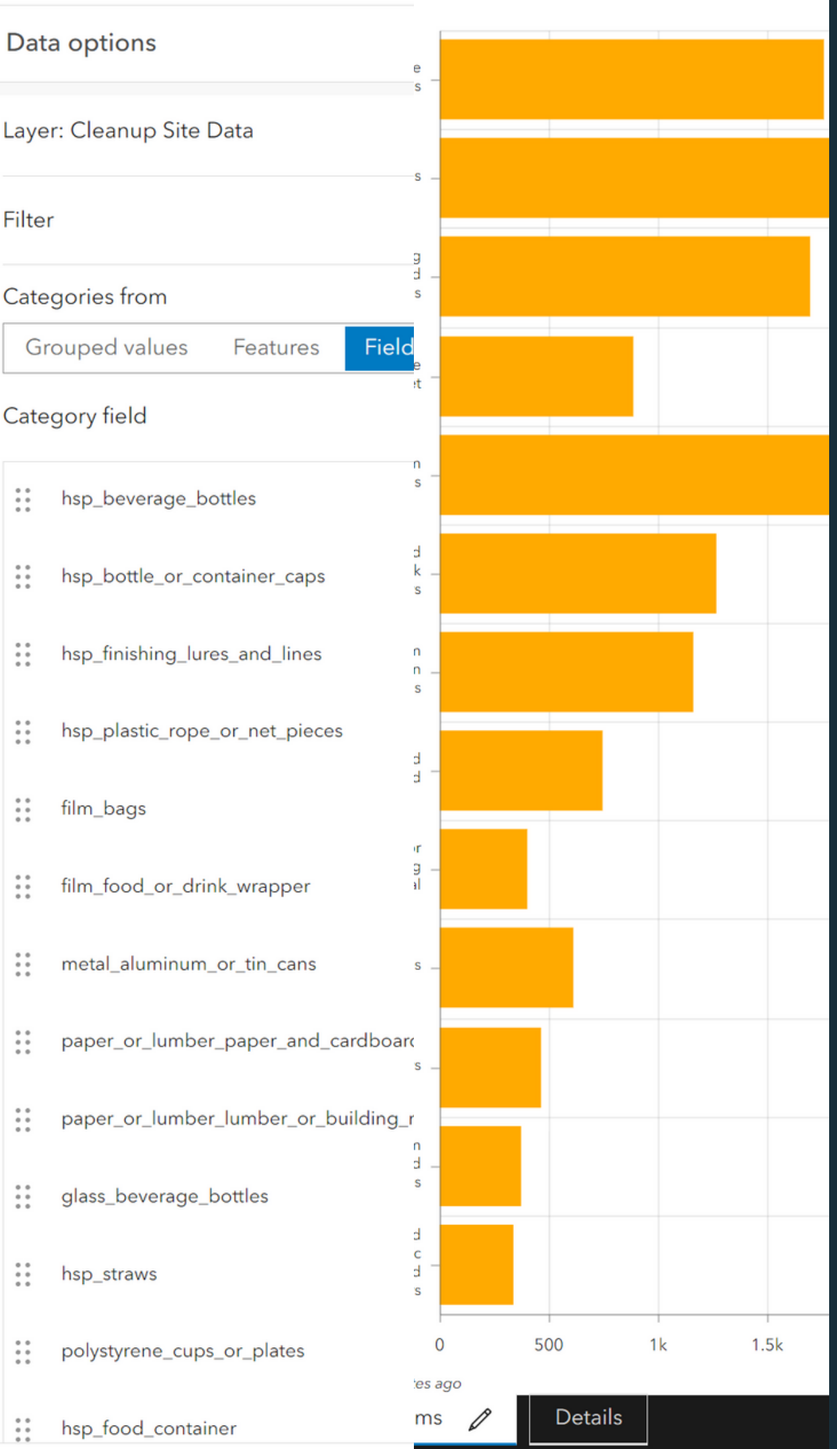
Dashboard - Charts

Create a dynamic live dashboard that presents website and item data in easily digestible sections.



Components

- Maps (stacked)
  - Community Partners
  - Site Map
- Data at a Glance (stacked)
- Indicators
- Serial Charts



Serial Chart

Simple to create

- add categories
- label axis
- set orientation

Select the most common items

- Too many items to include Styrofoam pieces
- Chart ordered with most > least

Total trash/site graph

Data options

Layer: Cleanup Site Data

Change

Filter

external_ids abc

equal

Value Field

TOTAL

AND OR

Categories from

Grouped values Features Fields

Category field

site_name

Parse dates

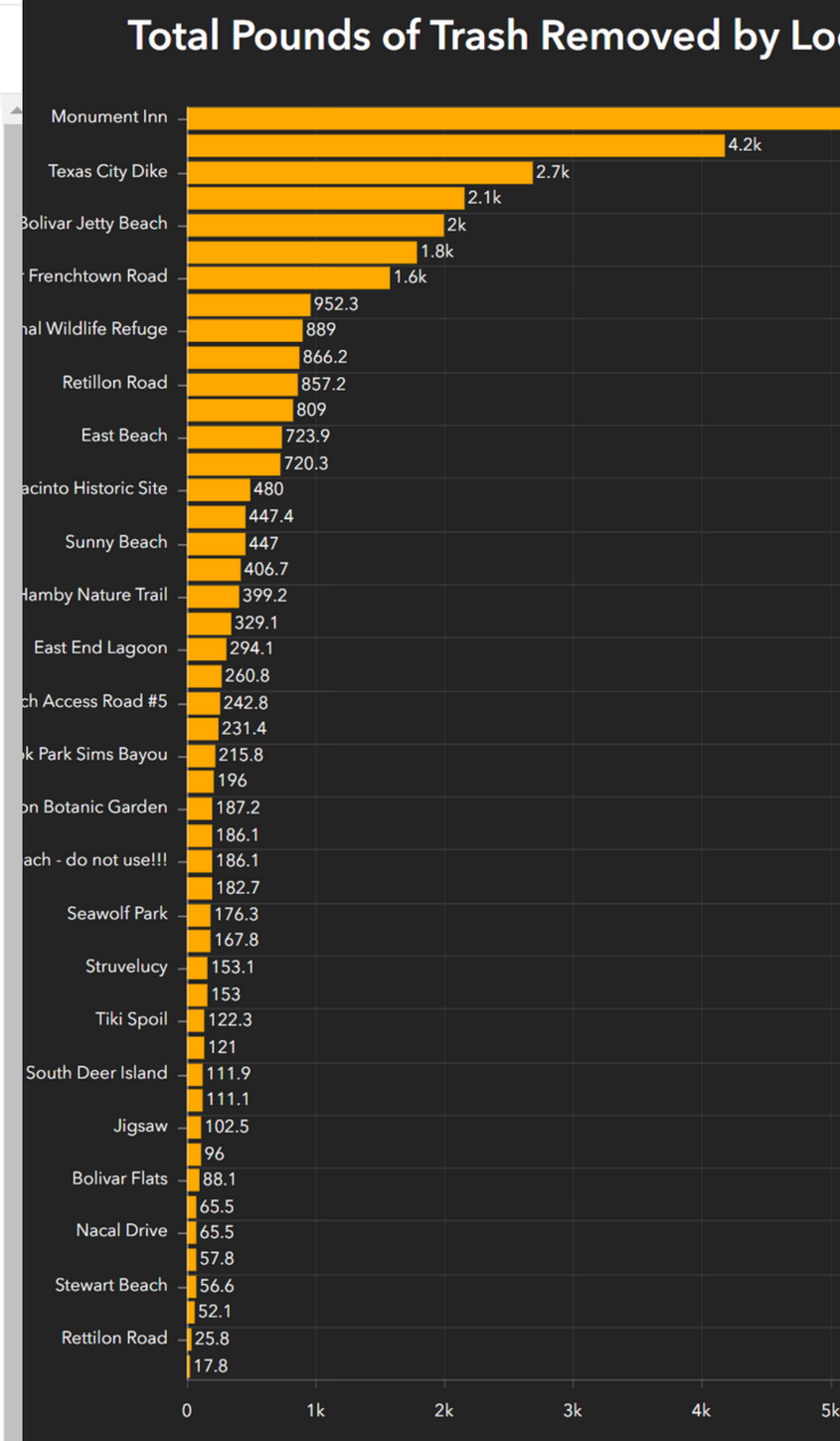
Split by field

Statistic

Sum

Field

summary_total_lbs 123



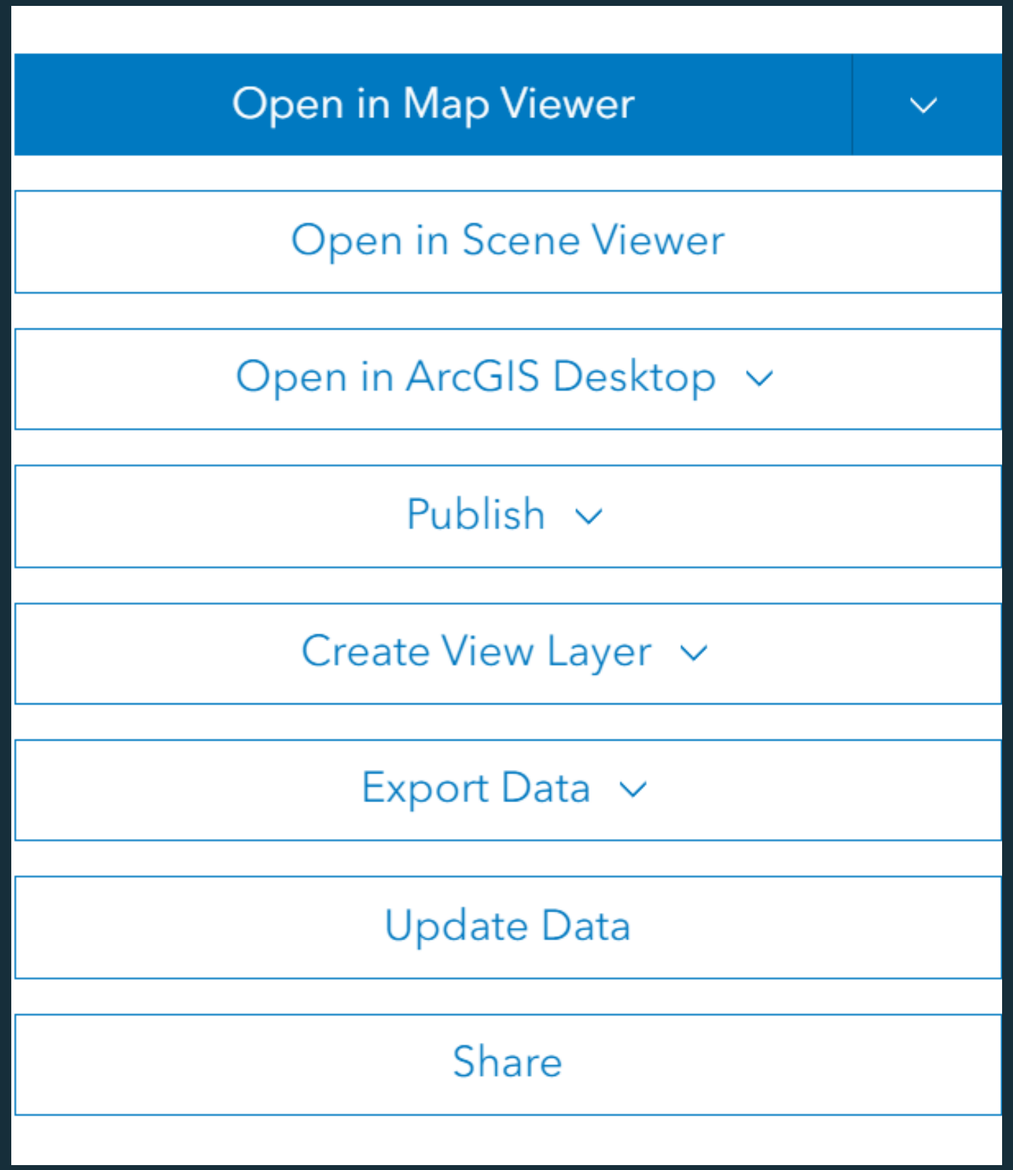
Maintenance

Manual - for non-GIS users

- Include login process and information
- Data download information
- Modifications to CSV file
- Updating the file in ArcGIS Online
- Documenting updates in Credits (Attribution) because of multiple users

Staff Training

- Available for any questions
- Walk-through with new staff



Ongoing updates

Texas Litter Database is switching to an ESRI based system in the future, which will dramatically change the way data can be used and displayed - check back in 2024!

Thank you

Special thanks to those who make this work possible