Designing Effective GIS Dashboards:

TAILORING COMPLEXITY TO THE DISTRICT'S NEEDS

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Second To None Providing Life's Most Precious Resource

What is a dashboard (ESRI)

https://doc.arcgis.com/en/dashboards/10.8/get-started/what-is-a-dashboard.htm

ArcGIS Enterprise (10.8.x) | Other versions

A dashboard is a view of geographic information that helps you monitor events or activities. Dashboards are designed to display multiple visualizations that work together on a single screen. They offer a comprehensive and engaging view of your data to provide key insight for at-a-glance decision making. Like web maps and web layers, dashboards are part of the ArcGIS geoinformation model. They are items within your organization that can be identified by their icon when browsing and searching for content.

Key Terms

The type of dashboard you create should be based on who you're sharing it with and the information you want to convey.

Monitor

Make decisions

See trends

Multiple visualizations quickly

Configurable elements

Informative vs. Interactive

EXAMPLE 1:
SIMPLE AND STRAIGHT FORWARD

THE REQUEST

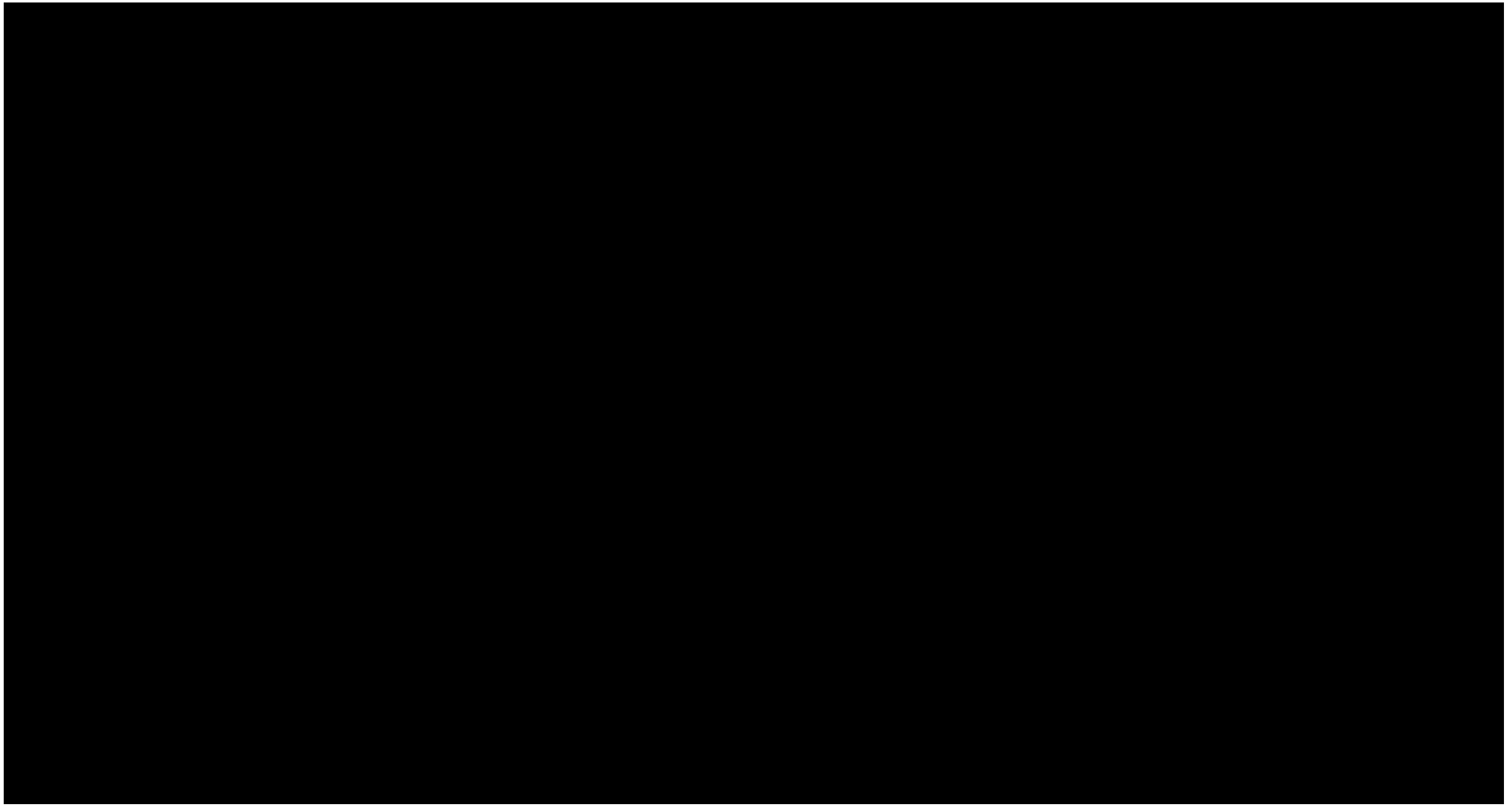
"Do you think you can make a map where we can tell if any person who calls or comes in here is located inside our district?"

WHAT TO CONSIDER:

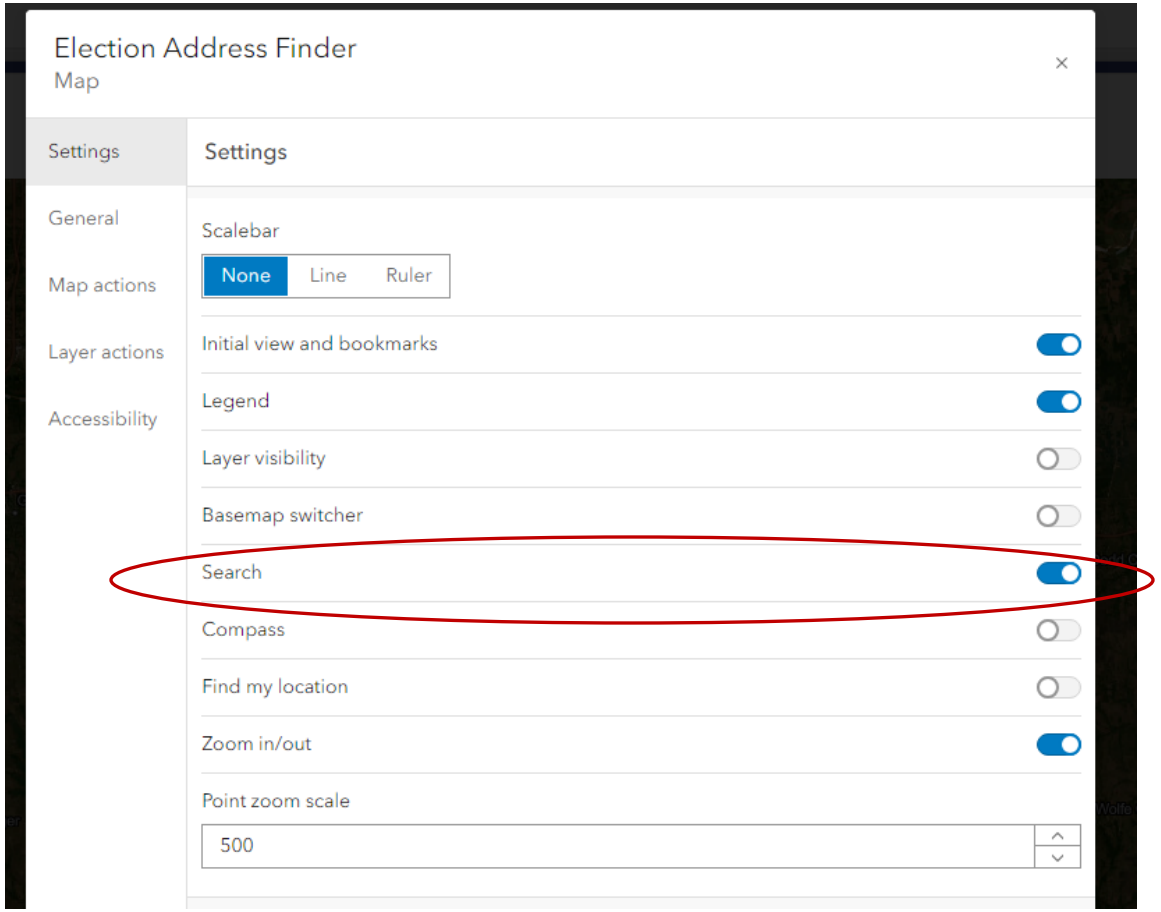
AS EASY TO USE AS POSSIBLE

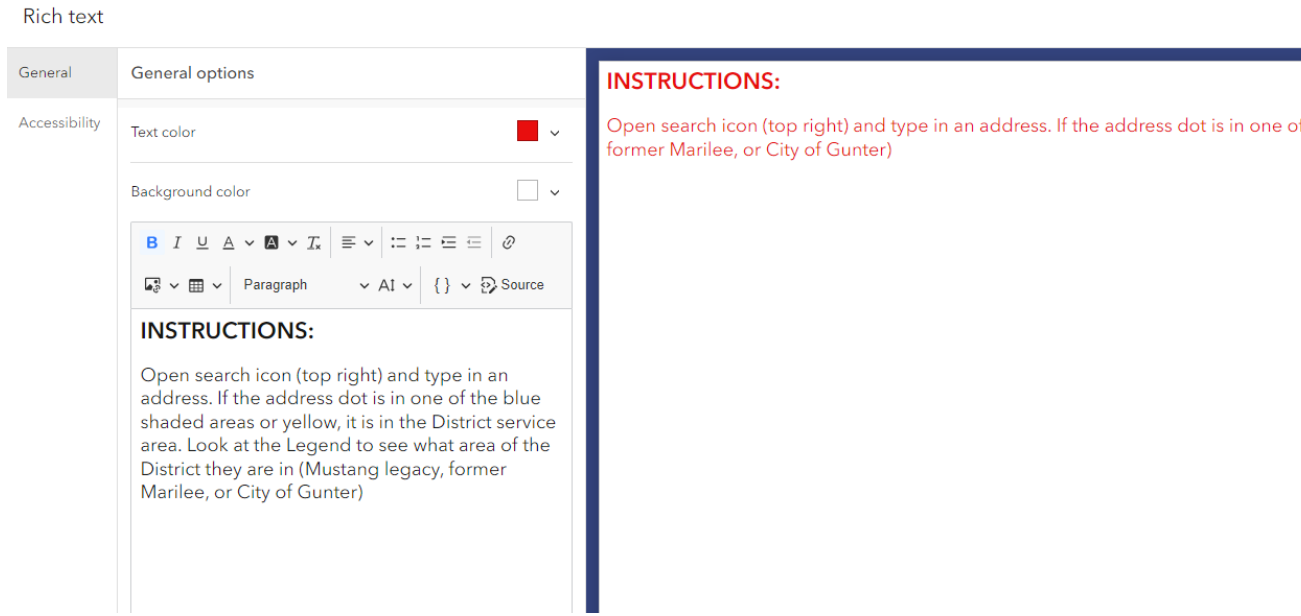
DON'T OVER DO IT

HAS ONE PURPOSE



How it was configured





EXAMPLE 2: INTERACTIVE AND DATA EXPORT

THE REQUEST

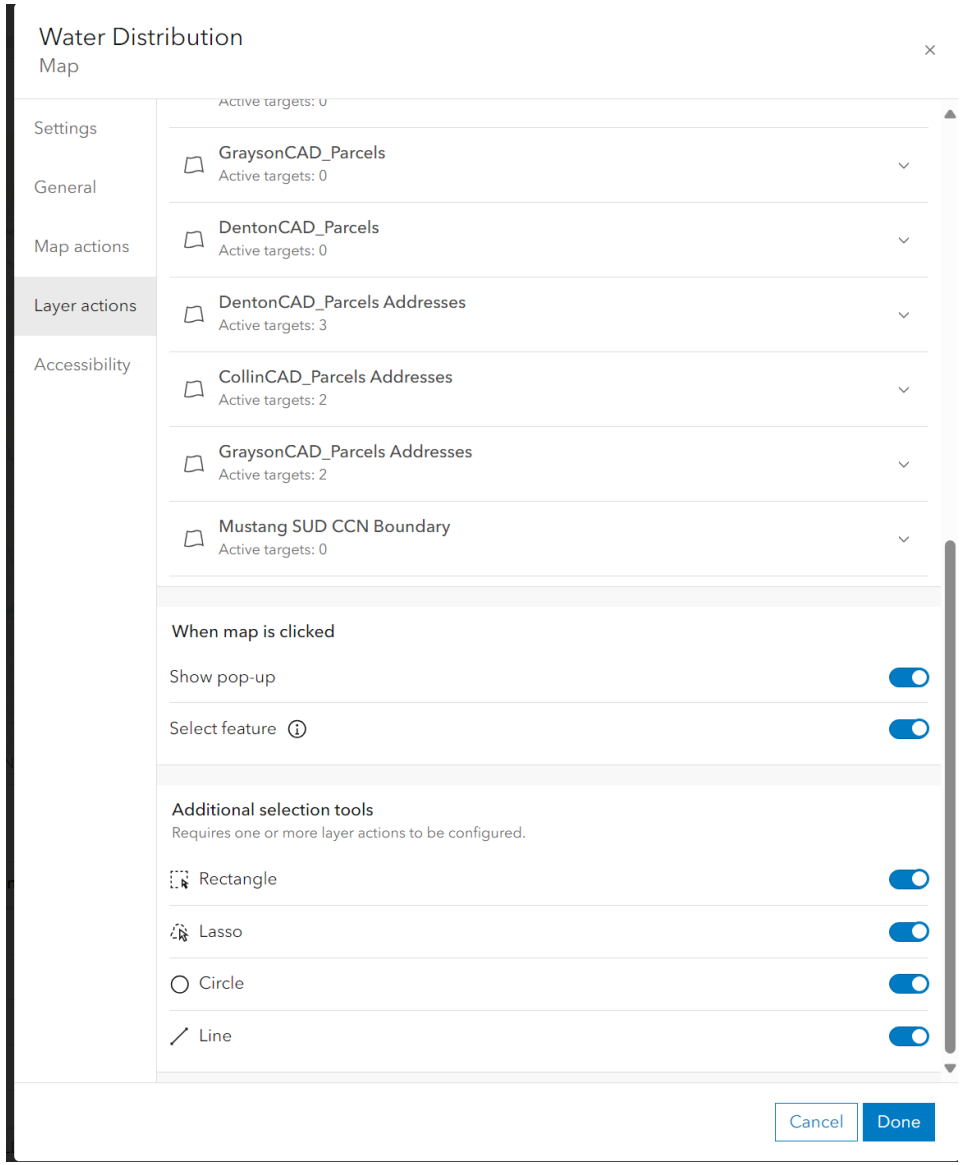
"Is there a way to highlight the line between valves we are going to shut off and show which customers need to be contacted?"

WHAT TO CONSIDER:

We do not have asset management or utility network

Easily accessible

Easy to use



How it was configured

EXAMPLE 3: TRACK QUALITATIVE DATA

THE REQUEST (FROM MYSELF)

"How am I going to show the process of developments that is constantly updated in a group of shared Teams punchlist/notes tables?"

WHAT TO CONSIDER:

Track developments that change status regularly

Keep track of almost daily changes to spreadsheets

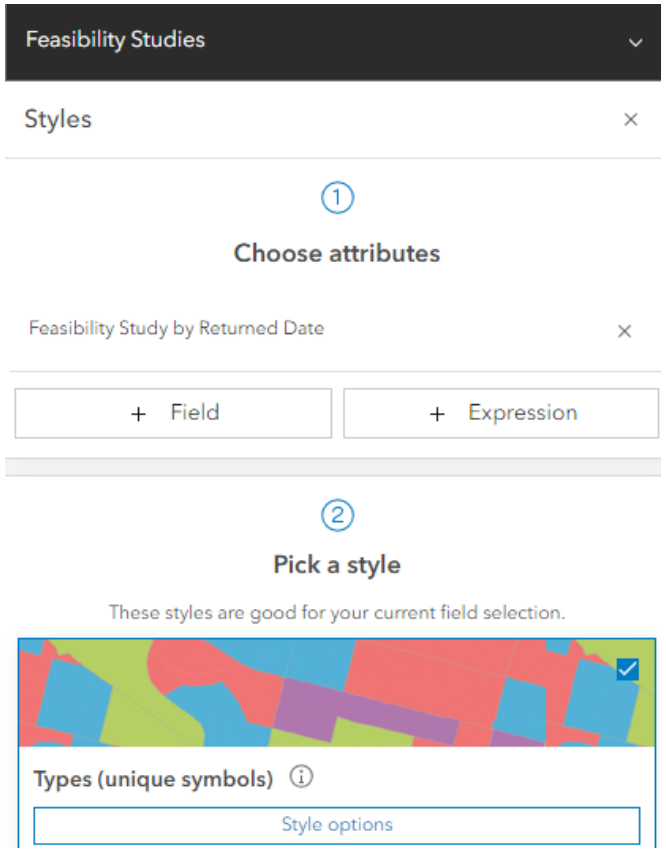
Avoid disrupting updates for users in Teams

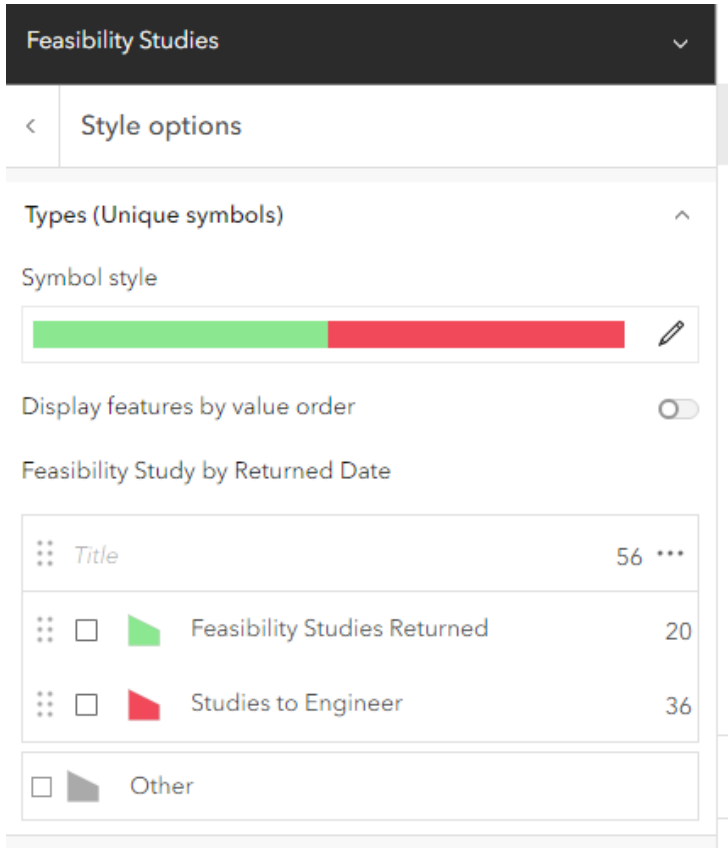
How it was configured with more complexity

- More manual steps by GIS
- Connection to table
- Applying IDs
- Use of ArcPro map environment
- Python Notebook to update a hosted feature layer (ChatGPT assistance)
- Update regularly

```python
import arcpy
from arcpy import env
from arcpy.mp import ArcGISProject

# Set up the ArcGIS project and map
project = ArcGISProject("CURRENT")
map_name = "DevelopmentTracker"
map = project.listMaps(map_name)[0]

# Names of feature classes
exported_layer_name = "DevelopmentTracker_ExportFeatures"
hosted_layer_name = "Development Tracker"

# Get layers
exported_layer = map.listLayers(exported_layer_name)[0]
hosted_layer = map.listLayers(hosted_layer_name)[0]

# Path to local geodatabase and Excel table
geodatabase_path = r"Y:\06 GIS\ArcPro Map Projects\DevelopmentTracker\DevelopmentTracker.gdb"
table_path = r"Y:\06 GIS\ArcPro Map Projects\DevelopmentTracker\DevelopmentTracker.xlsx\DevelopmentTracker$"

# Fields list for explicit use in cursors
fields_list = ["Inspector", "PROJECT", "PLANS_APPROVED", "REQUIRED_EASEMENTS", "FINAL_PLAT",
               "COVERSHEET", "SUBMITTALS_APPROVED", "PRECON_MEETING", "PASS_HYDROSTATIC_TESTING",
               "FLUSHED_PASSED_BACT", "HYDRANTS_TESTED", "TELEVISE_WW", "PASS_AIR__TEST",
               "MANDREL_DEFLECTION_TEST", "INFIL_EXFIL_TEST", "FINAL_AIR_TEST", "RPZ_INSTALLED",
               "FINAL_WALK", "CORRECT_PUNCH_LIST", "LIFT_STATION", "Notes", "GIS_ID"]

# Create a dictionary to store GIS_ID and corresponding row data from the Excel table
data_dict = {}
with arcpy.da.SearchCursor(table_path, fields_list) as search_cursor:
    for row in search_cursor:
        project_name = row[fields_list.index("PROJECT")]
        data_dict[project_name] = row

# Start an edit session to update the exported_layer
workspace = geodatabase_path  # Edit session requires workspace path
edit = arcpy.da.Editor(workspace)
edit.startEditing(False, True)
edit.startOperation()

# Update the exported_layer with matched GIS_ID data from Excel
try:
    with arcpy.da.UpdateCursor(exported_layer, fields_list) as update_cursor:
        for row in update_cursor:
            project_name = row[fields_list.index("PROJECT")]
            if project_name in data_dict:
                # Directly update the existing row with new data from Excel
                for i, field in enumerate(fields_list):
                    row[i] = data_dict[project_name][i]
                update_cursor.updateRow(row)
    print("Exported Layer updated successfully.")
finally:
    # Ensure that the edit operation and session are closed properly
    edit.stopOperation()
    edit.stopEditing(True)

arcpy.management.DeleteFeatures(hosted_layer)
print("Hosted Data Deleted")

arcpy.management.Append(exported_layer, hosted_layer, "NO_TEST")
print("Hosted layer updated successfully.")
```

Symbolize using Arcade in AGOL Map



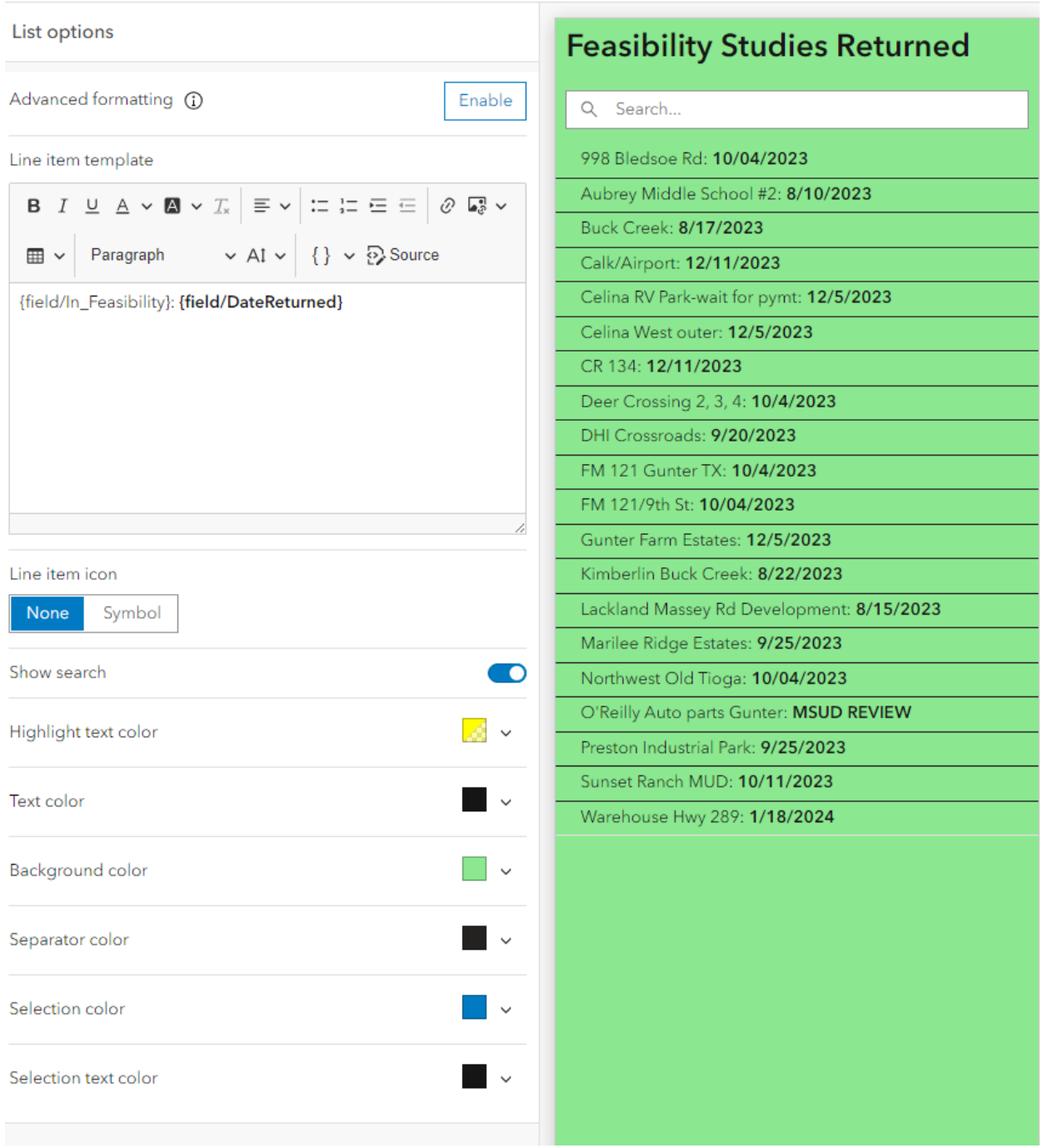


Back to the Dashboard

Use the out-of-the box formatting options to match your symbology.

For information on using Arcade to dynamically symbolize tables or lists inside the dashboard with color check out this website.

https://gisguidebooks.com/



LAST EXAMPLE: MONITORING LEAD AND COPPER INVENTORY

THE REQUEST

"The EPA requires an inventory of all service line materials by October 2024. How can we keep track of it?

WHAT TO CONSIDER:

Managers need to quickly see progress to meet deadline

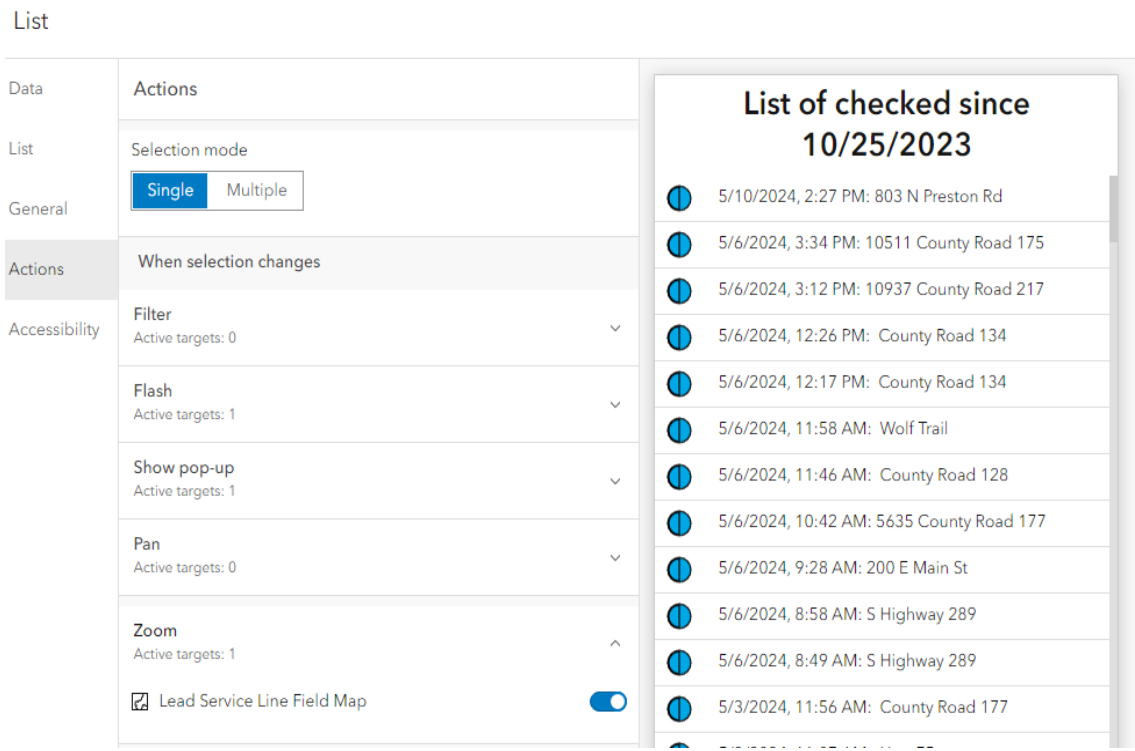
How it was configured

OUT-OF-THE-BOX TOOLS

- Modified dashboard provided in ESRI Solution

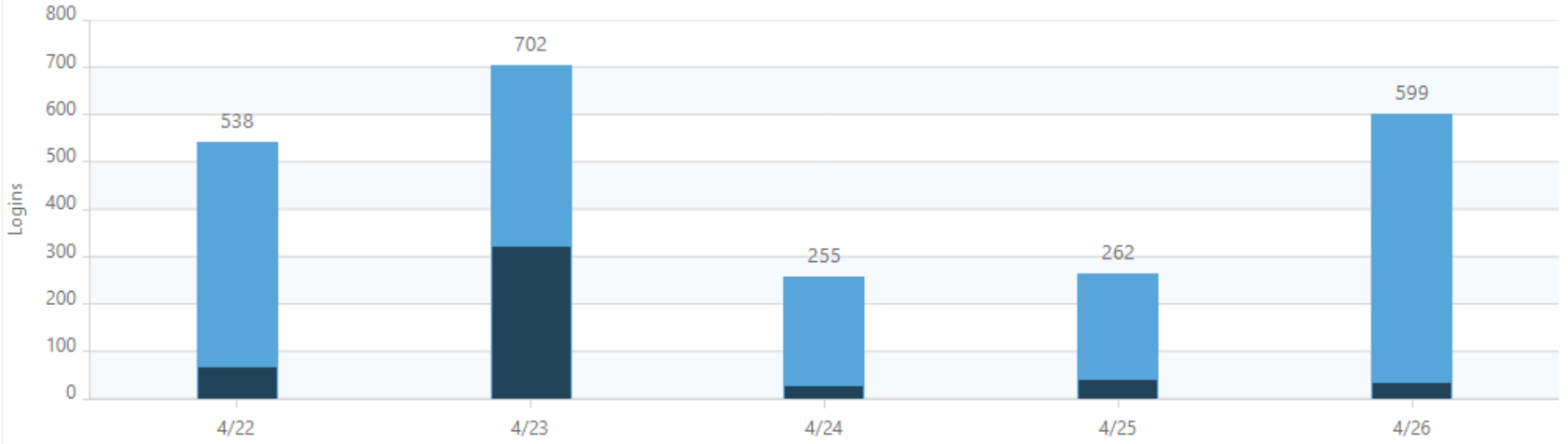
- Used gauges for tracking progress

- Used map to table actions to allow zooming to features and showing pop-ups



Usage of Registered Apps by Org Members

Total App Logins this Period: **2,356**



Showing: All Registered App Usage | App Name: ArcGIS Dashboards ✕

Select items from below tables to update chart

Usage by App Name

App Name	Logins
ArcGIS Dashboards	486

Usage by Member

Member	Logins
esimon@mustangwater.com	204
emcbroom_MustangSUD	192
water_operators	40
WaterMSUD	19
cdickerson_MustangSUD	9
MsudWW	7
kskillman_MustangSUD	5

In Summary

Know your audience for the task

Use few steps, if possible

Sometimes the simplest dashboards can make the largest impact