

VUEWorks/GIS Integration for Enhanced Reporting

Annie Bastoni

VHB

Allison Hamel

RIDOT

Agenda

RIDOT's Stormwater Program

VUEWorks Overview

VUEWorks at RIDOT

VUEWorks to GIS Migration

Data Use

RIDOT's Stormwater Management Program

- Driven by Consent Decree finalized between EPA/DOJ and RIDOT in December 2015
- Consent Decree Goal: to meet the 2003 RIPDES permit requirements
- Requirements
 - Stormwater Control Plans
 - Drainage System Inventory
 - Catch Basin Cleaning
 - Street Sweeping
 - Illicit Discharge Detection and Elimination (IDDE)



RIDOT Stormwater Assets

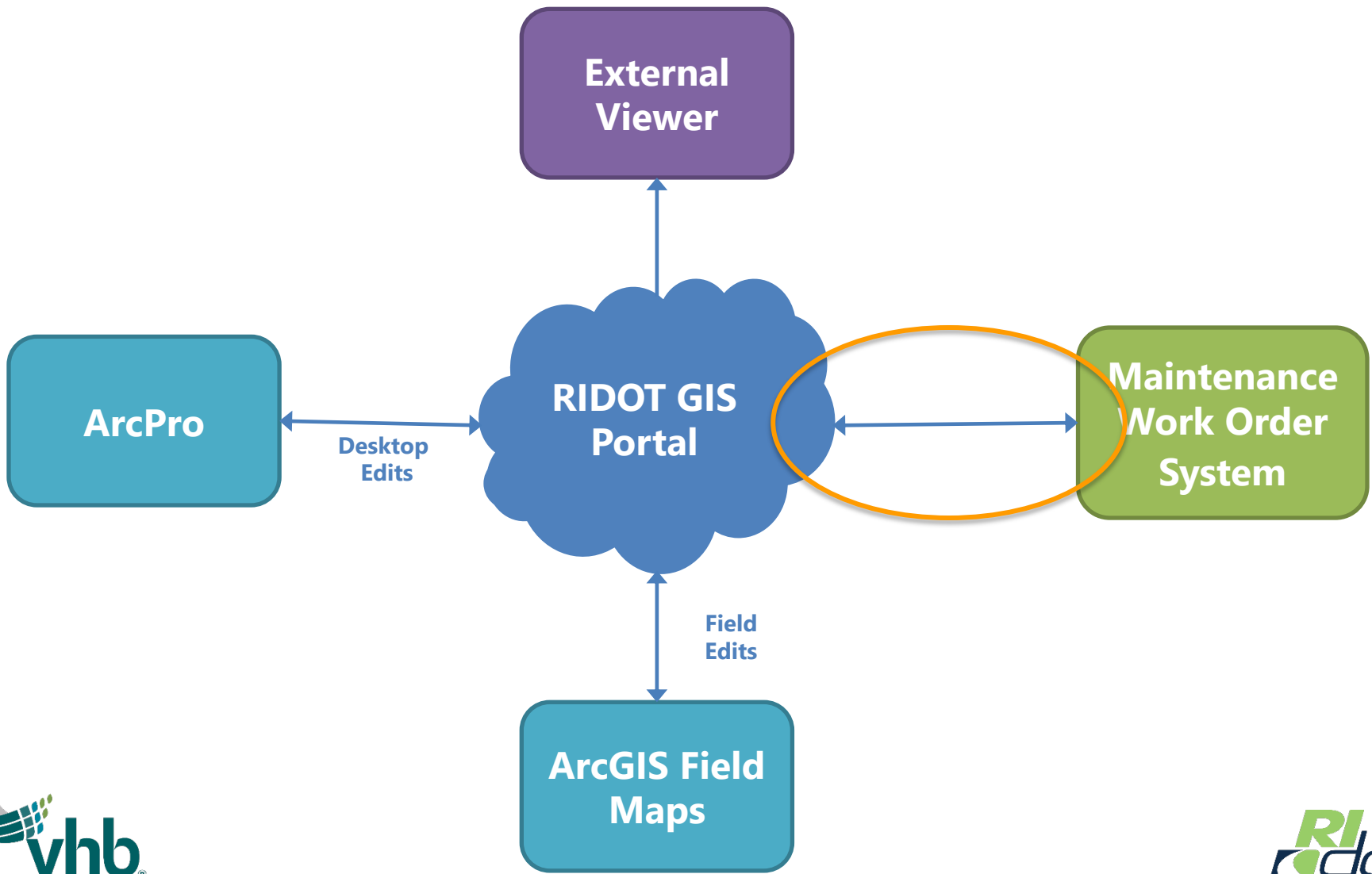
- RIDOT has:
 - 5,300 outfalls
 - 32,000 catch basins
 - 10,000 manholes
 - 32,000 storm pipes
 - 1,500 Stormwater Treatment Units (STUs)

Remedial Measures: Good Housekeeping

- Catch Basins, Manholes, and Outfalls
 - Implement tracking protocol Maintenance Management System
 - **Locate and inspect drainage structures**
 - 50% by 12/31/2016
 - 100% by 12/31/2017
 - Clean, repair, and inspect annually
 - 1,250 clean + 1,000 repair on non-interstate
 - 2,000 clean and repair (as necessary) on interstate
- Street Sweeping
 - Sweep all streets in permit area at least once/year
 - Increased frequency sweeping in some areas



Data Management Approach



VUEWorks

- Used for work tracking
 - Service Requests
 - Work Orders
 - Condition Ratings
- Pulls asset data from GIS portal
 - Traffic
 - Roadways
 - Safety
 - Drainage
 - ITS
 - Rail
 - Facilities
 - Property Management



VUEWorks for Stormwater

- Catch basin repair
- Catch basin cleaning
- Street sweeping GPS tracking
- STU inspections
- STU maintenance





- + Welcome, Nate.Pacheco.CTR
- + Administration
- + Document Link
- + Service Requests
- + Work Orders
- + Resource Manager
- + Stormwater

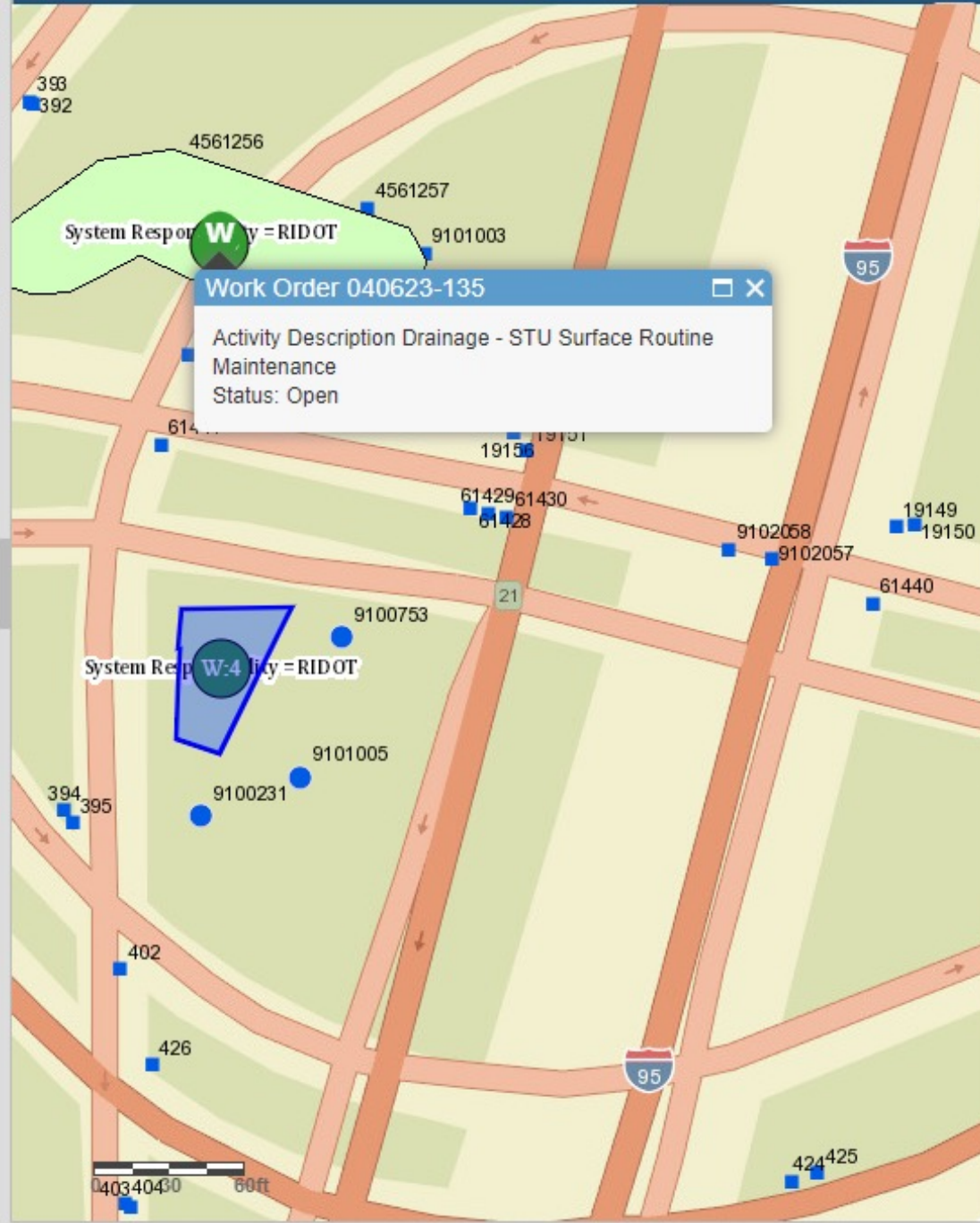
Surface STU: {A294C18F-0661-45D0-A49C-E09EA1EE0B29}

- A** Attributes
- A Attributes
 - D Documents
 - C Condition
 - W Work Orders
 - S Service Requests

Save Cancel

Unit Type	Water Quality Basin
Location	
PTSID	
Contract Number	2012-CB-078
Installed Year	2017
Consultant	Fuss & O'Neill, Inc.
STU Owner	RIDOT
Partnership	No
Partnership_Type	None

Show All



Work Order 040623-135

Activity Description Drainage - STU Surface Routine Maintenance

Status: Open



Manage Work Orders

Filter is ON - Current list contains 63 out of 131049 Work Orders

- Select Field -

Clear Filter

Form View Table View Filter Reports Assets

ID 042623-180 Logged By Nate Pacheco 04/26/2023 02:56 PM

Type

Division

Group

Activity Description

Location Lat/Long 41.812063, -71.509465

Description

Assigned To Role: Midstate Facility 04/26/2023 2:56 PM

Project Group: Project:

Associate with...

Status Priority

Begin Date: Begin Time:

End Date: End Time:

Send Email to Notification List on Save

Form:

Details Costs Tasks Labor Equipment Inventory Assets Documents Work Orders Comments

Inspector Name

STU Type

Pollinator Area?

Traffic Control Required?

Structure Found?

STU Name

IMPORTANT! IF STU IS A POLLINATOR AREA, DO NOT MOW UNTIL POLLINATOR SEASON IS OVER (NOVEMBER)

STU-Specific Maintenance Considerations

Structure Accessible?

Structure ID

AssetID

* Required † To Close

1 of 63

VUEWorks @ MassDOT



VUEWorks Work Orders for Bridge Maintenance

- MassDOT Bridge Maintenance and Preservation efforts are supported by contracts that do not have work specified in advance.
- Work orders are created and assigned by the District Bridge Section and are the basis for maintenance actions.
- Repairs need to be tracked as part of the asset management and performance tracking of the strategies implemented.
- VUEWorks is used by MassDOT for asset management across activities from bridges, traffic, electrical, and other maintenance needs.
- VUEWorks provides a customizable package including a separate workflow for Bridge Maintenance Work Orders.



Updated Priority?*




Updated Description?*







Bridge Information

Bridge No.* Y01005 *	BIN 474	Bridge Name
Bridge Type Stringer/Multi-beam or Girde	Mile Marker 72.3	Roadway Carried US 6 WB/MD CP HWY
Feature Crossed COMB WILLOW ST & MAC	City/Town Yarmouth	District 5

Reported By?
 Bridge Inspection ▾ 

Repair Reason*
 Joint Replacement. *

Repair Type*

Joint Replacement ▾ *		▾	
▾		▾	

MassDOT WO#*
1 *

Target Completion
 

Rerate Structure After Repairs

Perform Special Inspection After Repairs

Contract Information

Contract Number*
121204 *

Contractor Response
 


Contractor*
Sealcoating, Inc. *

Contractor Project Manager*
Steve Carey *

Contract Description*
 Scheduled and Emergency Bridge Deck and Joint Repairs at Various Locations *

Scope of Work*
 The Contractor shall perform the following:
 Install new pre-compressed joint seal system with exposed low permeability deck joint at Pier 1, 2 & 3. *

Comments

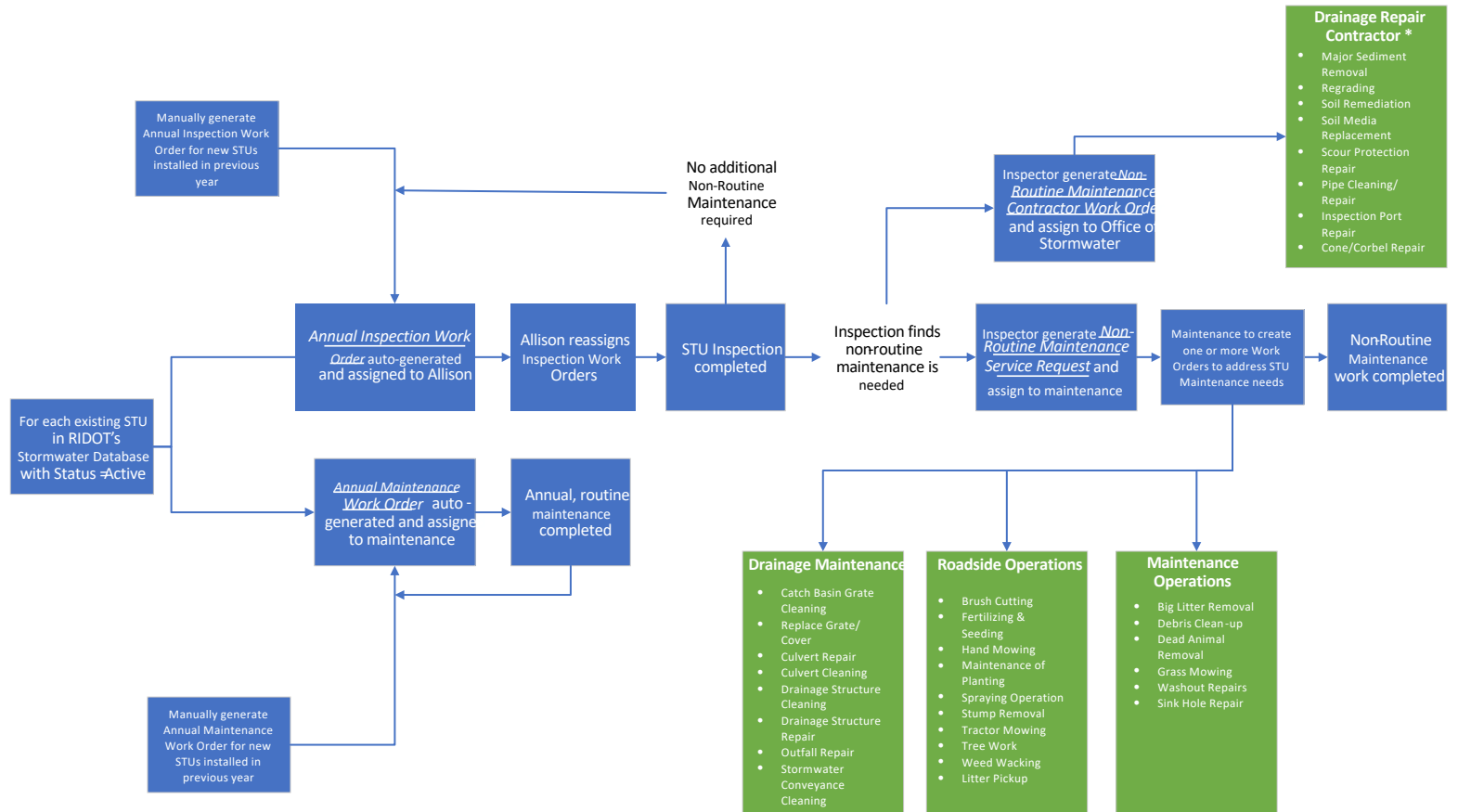
Actual Finish †
  †

Actual Start †
  †

Attachments

- Drawings
- Pictures

VUEWorks STU Inspection and Maintenance Workflow



Annual Inspection

Annual Routine Maintenance

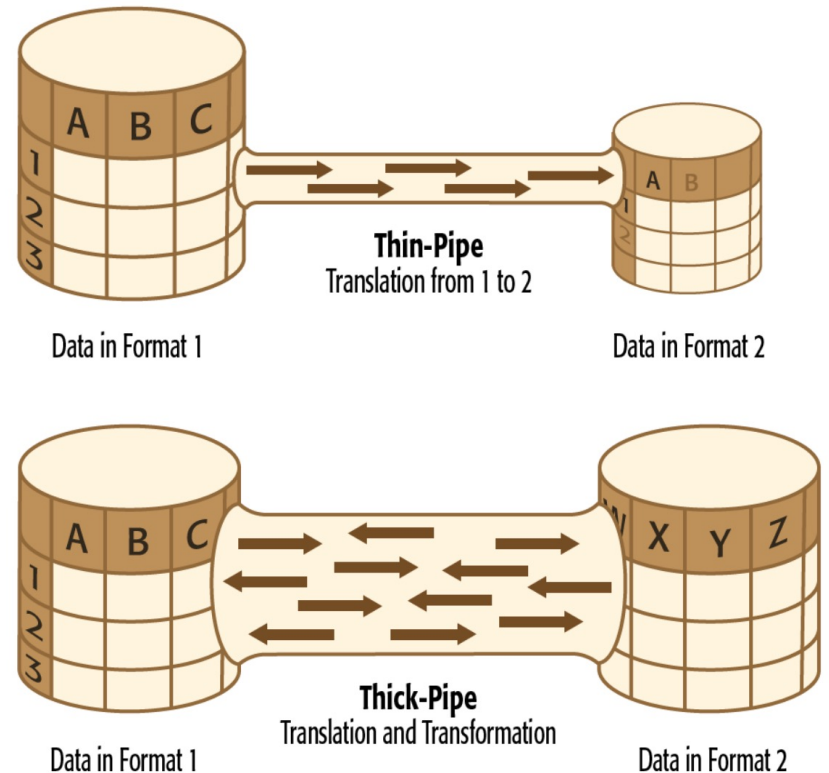
Non-Routine Maintenance
(Internal or Contractor)

VUEWorks to GIS Migration



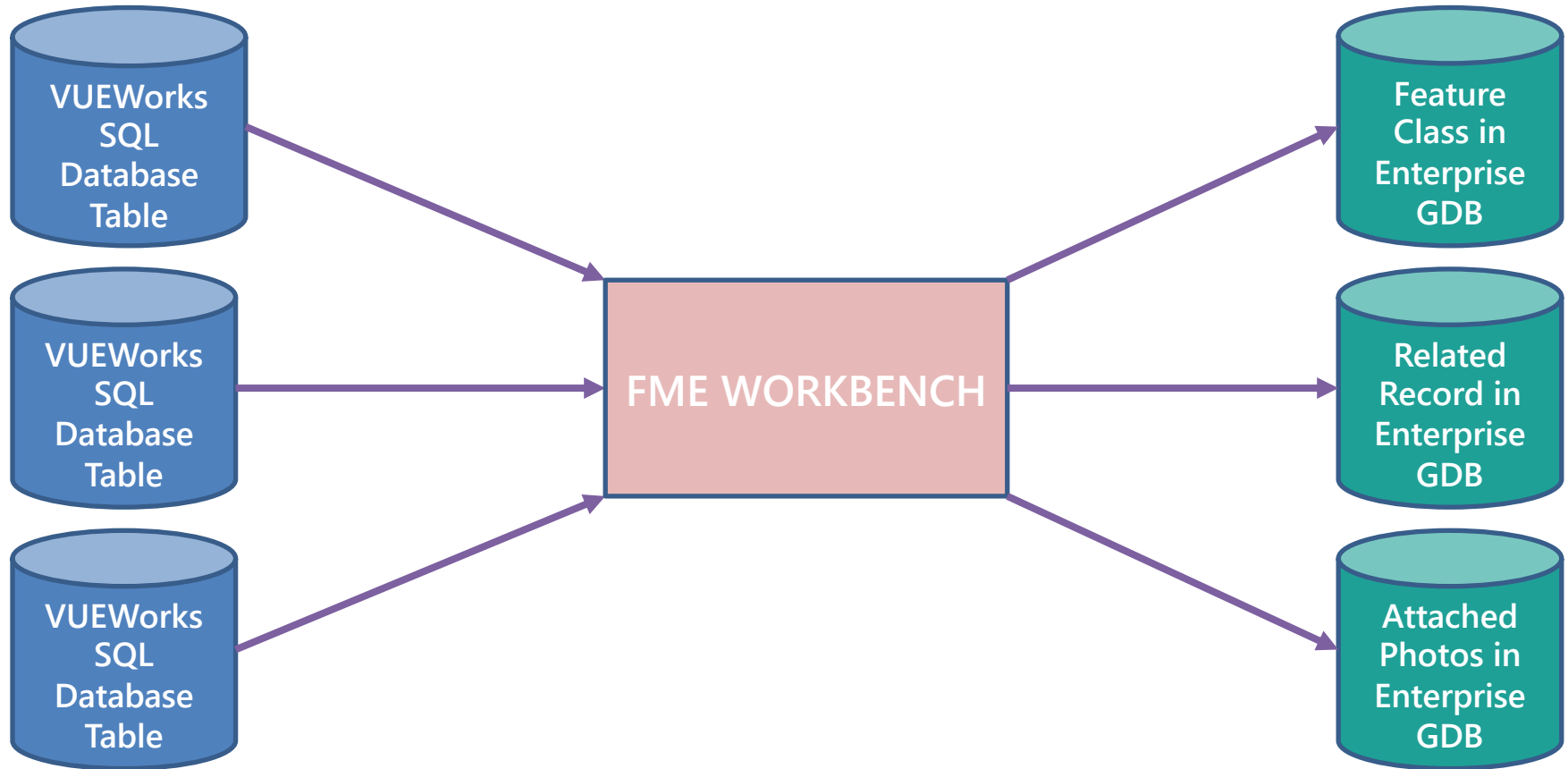
Feature Manipulator Engine (FME)

- “Visual workflow editor”
manufactured by Safe Software
- First tool designed to be
ETL application
 - Extract
 - Transform
 - Load
- Requires proprietary software
or Data Interoperability License
- Highly configurable

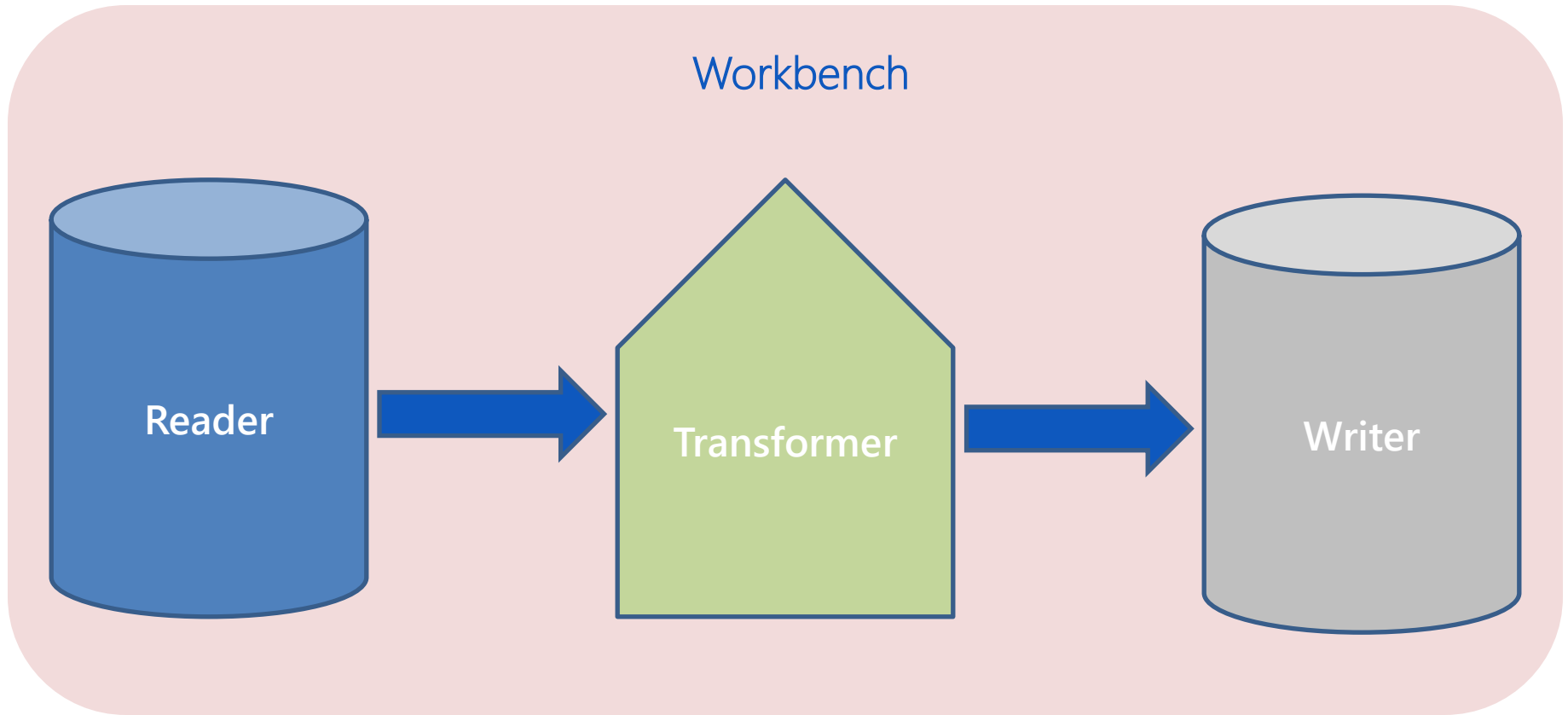


https://docs.safe.com/fme/html/FME_Desktop_Documentation/FME_Desktop/Workbench/What_is_FME.htm

RIDOT Stormwater Treatment Unit (STU) Condition Migration Tool



FME Basics



RIDOT Condition Migration Tool



Stormwater Asset Management

No issues detected x Edit x

Catch Basin Inspection and Cleaning

STU Inspection Tracking

STU Condition Tracking

STU Inspection Results

Dashboard to assist in identifying/prioritizing STU maintenance needs. Open the tab on the left for additional filters and instructions.

Filter by Maintenance District: No Filter

STU malfunctioning

Click a slice to filter the Surface STU Inspection



Surface STU Subsurface STU

Follow-up required

Click a slice to filter the Surface STU Inspection



Surface STU Subsurface STU

Immediate safety issues

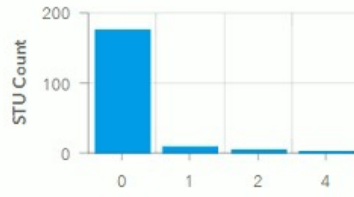
Click a slice to filter the Surface STU Inspection



Surface STU Subsurface STU

Surface STU Number of Failing Components

Select a bar below to filter the Surface STU



Surface STU Subsurface STU

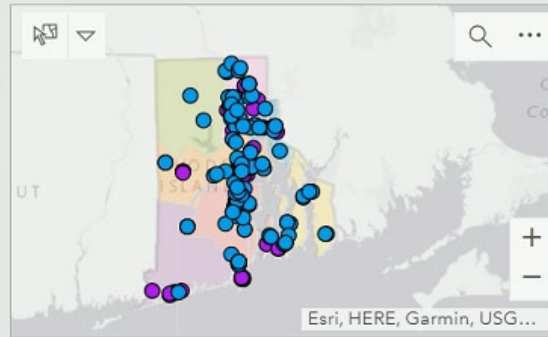
STUs Unable to be Located: 11

Click an STU below to pan and zoom the map. This list contains both surface and subsurface STUs.

STU Name: 0143W-BMP1
STU Type: Infiltration Basin
Structure Access Notes:
Last Inspection Date: 7/1/2022, 12:12 PM

STU Name: 0153N-STU-3
STU Type: Jellyfish Filter
Structure Access Notes:
Last Inspection Date: 1/9/2023 4:24 AM

STUs Unable to be Located



Surface STU Inspection Results: 191

Select a Surface STU in the list below to pan and zoom the map to that location.

STU Name: SCP-BLK-111
STU Type: Infiltration Swale
Maintenance District: Smithfield
Last Inspection Date: 1/20/2023, 4:45:00 AM
Overall Site Condition: Fair
Inlet Condition: Failing
Pretreatment Components Condition: Fair
Move Components Condition: Fair
Treatment Component Condition: Fair
Outlet Condition: Good

Last update: a few seconds ago

Surface STU Subsurface STU

Selected Surface STU Inspection Details

Use the arrows to scroll through all condition inspection forms for the selected Surface STU.

Inspection Date: 4/3/2023, 7:51 AM

Inspector Name: David.messier

STU Structure ID: 6,447

Structure: NA - See Work

Accessible? Order

Is erosion No

adjacent to the site that could contribute sediment to the treatment system present?

Are there signs No
of oil or gasoline

Last update: a few seconds ago

Surface STU Subsurface STU

Note: VUEWorks does not capture all work complete by RIDOT and numbers shown in dashboards are not necessarily precise

Conclusion

- VUEWorks powerful tool for tracking work completed and costs
- Shared spatial asset information with VUEWorks and GIS
- Custom data migration tools from VUEWorks to GIS
- Enhanced data analysis tools available in GIS

Allison Hamel | allison.hamel@dot.ri.gov | 401.479.1202

Annie Bastoni | abastoni@vhb.com | 617.607.2158

