

# BENEFITS OF OPEN FEDERAL DATA TO STATE PROGRAMS

Jack Pflaumer

New Jersey Department of  
Environmental Protection

# Agenda

- ▣ The Problem
- ▣ Data Universe
- ▣ Solution – WQDE/WQX
- ▣ Solution – Water Quality Portal
- ▣ Continuous Data Issue
- ▣ Benefits

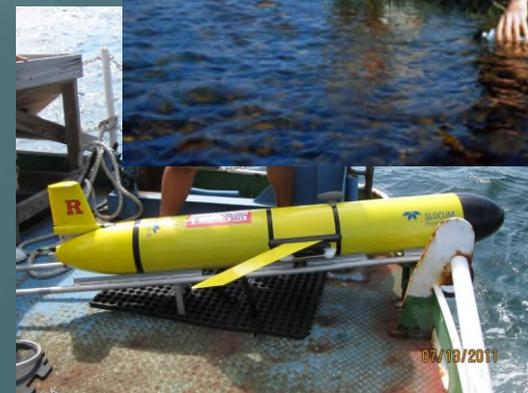
# The Problem

- ▣ Issues with data from multiple sources
  - Storage medium
  - Data formatting
  - Terminology
  - Required data information
  - Availability/ Accessibility
  - QA/QC



# What/Whose Data Do We Use?

- ▣ Agency-Generated
- ▣ Monitoring Partners
  - Federal agencies: USEPA, USGS, NOAA
  - Interstate commissions: DRBC, IEC
  - Regional, county, and municipal government agencies: Brick Township MUA, Monmouth County Health Department, Pinelands Commission
  - Volunteer monitoring organizations/watershed associations
  - AmeriCorps NJ Watershed Ambassadors
  - Other entities: dischargers (NJHDG), water purveyors (NJWSA), academic institutions (Rutgers)



# Data Repositories

- ▣ NWIS
- ▣ STORET (pre-WQX)
  - Clearinghouse for nationwide water quality data
  - Difficult to import data
  - Difficult to retrieve data
  - Uneven participation and data availability
- ▣ Myriad of other databases (excel, access, text)



A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
orgid	actid	actyp	sdate	stime	locid	metcont	metnam	detcont	charnam	sanfrac	val	valunit					
31DELRBC	31DELRBC_WQX-1003	Field Mer/I	3/23/2010	10:07:00	31DELRBC_WQX-892065	USEPA	USEPA				8.52	mg/l					
31DELRBC	31DELRBC_WQX-1004	Field Mer/I	4/20/2010	10:05:00	31DELRBC_WQX-892065	USEPA	USEPA				9.16	mg/l					
31DELRBC	31DELRBC_WQX-1005	Field Mer/I	5/25/2010	10:03:00	31DELRBC_WQX-892065	USEPA	USEPA				9.97	mg/l					
31DELRBC	31DELRBC_WQX-1006	Field Mer/I	6/22/2010	0:00:00	31DELRBC_WQX-892065	USEPA	USEPA				6.53	mg/l					
31DELRBC	31DELRBC_WQX-1007	Field Mer/I	7/20/2010	12:46:00	31DELRBC_WQX-892065	USEPA	USEPA				6.48	mg/l					
31DELRBC	31DELRBC_WQX-1008	Field Mer/I	8/30/2010	10:23:00	31DELRBC_WQX-892065	USEPA	USEPA				7.01	mg/l					
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31DELRBC	31DELRBC_WQX-1306	Field Mer/I	6/25/2013	9:52:00	31DELRBC_WQX-892065	USEPA	USEPA				7.51	mg/l					

The dissolved arsenic levels at these site were as follows:

01444990  
 2/8/2005: 0.2 ug/L  
 8/16/2005: 0.6 ug/L, sediment (tot rec.) 1.1 ug/g

01445100  
 2/16/2005: 0.3 ug/L  
 8/11/2005: 0.8 ug/L, sediment (tot rec.) 1.4 ug/g

01445700  
 2/17/2005: 0.3 ug/L  
 8/24/2005: 0.7 ug/L

All total recoverable samples were <2.0 ug/L.



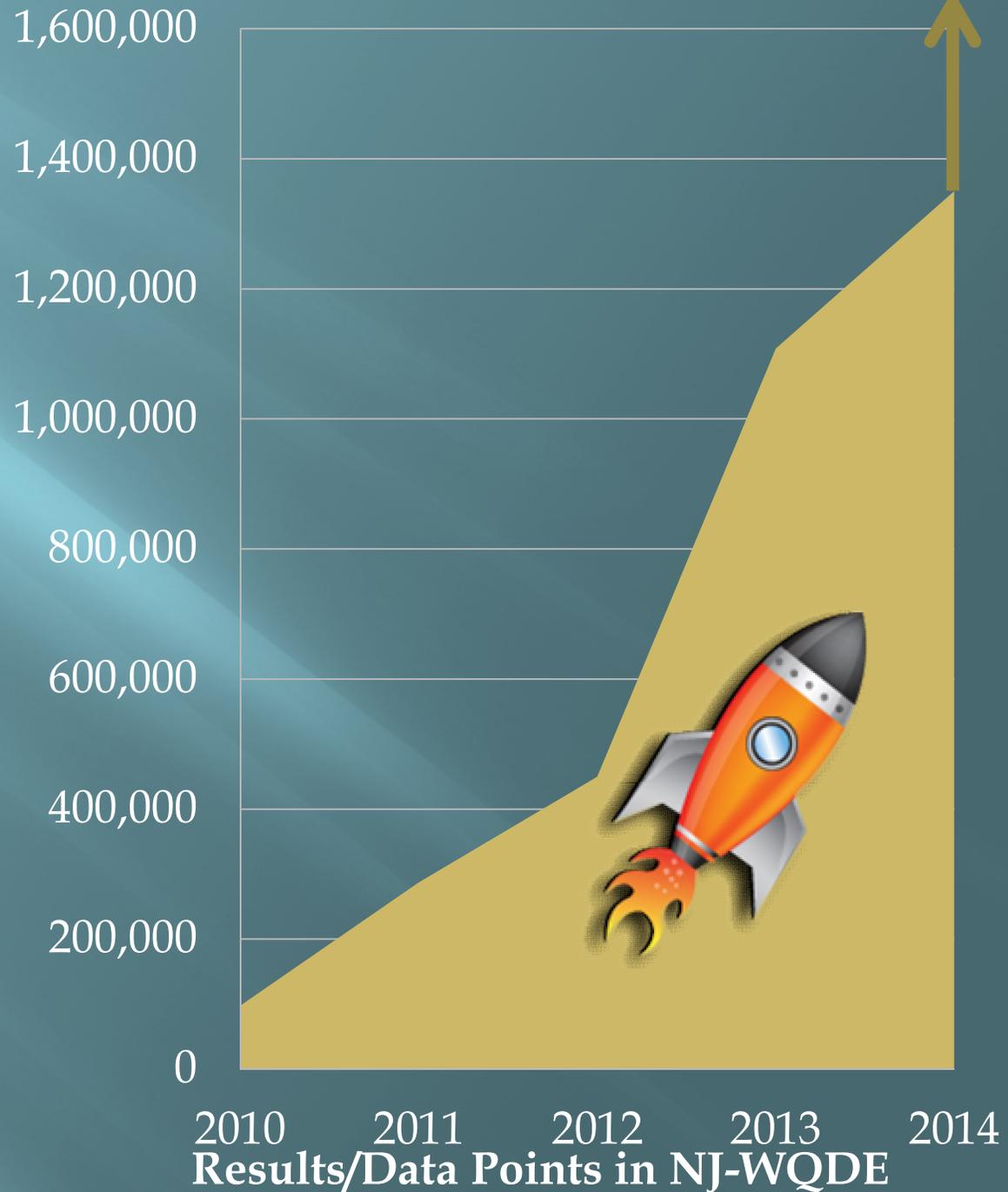
# Solution – WQDE/WQX

- ▣ NJDEP Water Quality Data Exchange System (WQDE)
  - Developed in 2009
  - New Jersey specific database for water quality, biological and habitat data
  - Automatic uploads to STORET
  - Increased participation by other organizations and volunteer groups
  - Training and Help Desk available
  - Improved collaboration
- ▣ EPA Water Quality Exchange (WQX)
  - Easy to use
  - High participation



# How Much Data Do We Use?

- ▣ Numerous networks and partners
- ▣ Over 11,000 monitoring stations
- ▣ Almost 2 million data/results in WQDE



# Solution - Water Quality Portal

- ▣ Water Quality Portal (2012)
  - EPA (STORET), USGS (NWIS), USDA (STEWARDS)
  - One Stop Shop for data (except for continuous)
  - Standardized data protocol
  - Easy to use interface



**National Water Quality Monitoring Council**  
Working together for clean water

### Water Quality Data

WQP Home   Download Data   How to use the WQP ▾   National Results Coverage   About the WQP ▾

**LOCATION**

**Place:**

Country:	<input type="text" value="All"/>	?
State:	<input type="text" value="All"/>	?
County:	<input type="text" value="All"/>	?

**Point Location: ?**

Within  miles of

Lat:

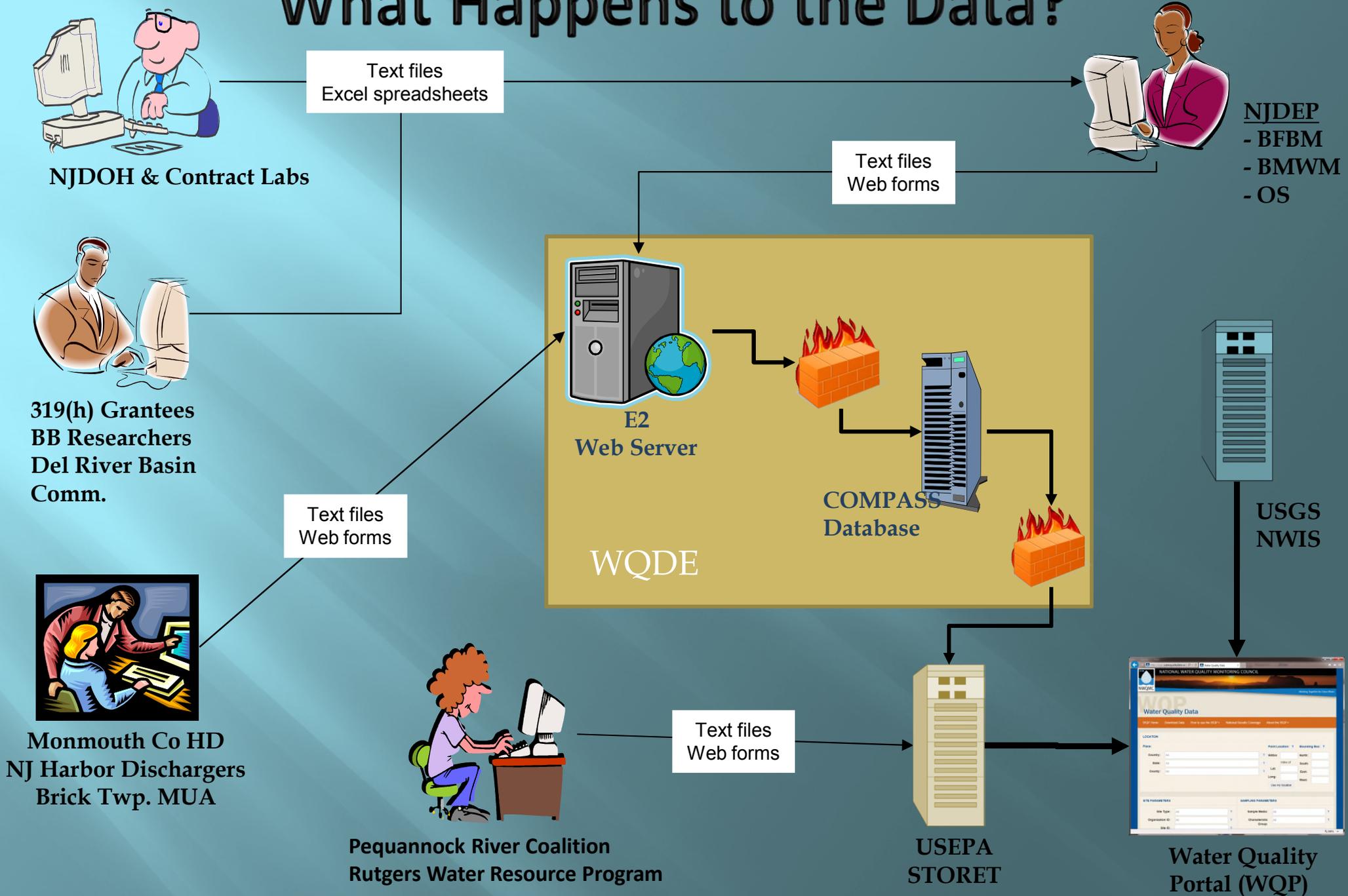
Long:

**Bounding Box: ?**

North:	<input type="text"/>
South:	<input type="text"/>
East:	<input type="text"/>
West:	<input type="text"/>

**SITE PARAMETERS**   **SAMPLING PARAMETERS**

# What Happens to the Data?





# Continuous Data Issue

Map | Graph

**AN0521 Short-Term Historical**  
 Description: MAPLE ROOT BR BOWMAN RD  
 Latitude: 40.08125  
 Longitude: -74.32714  
 Affiliation: NJDEP - Freshwater & Biological Monitoring  
 Affiliation URL: [www.state.nj.us/dep/wms/bfbm/index.html](http://www.state.nj.us/dep/wms/bfbm/index.html)  
 Data Date Range:  
 Earliest: 2015-06-26 01:30:00  
 Latest: 2015-10-01 09:30:00

[Graph](#) [Download](#)

Station Graphing

Map | Data | Graph

Please select the primary station you wish to look at and a variable.

Select Data Set: [QA'd Data] ▾  
 Select Station: [BB04a] ▾  
 Select Variable 1: [DO Concentration] ▾  
 Select Variable 2: [Salinity] ▾

Date Range:  Entire Date Range  Latest 2 Weeks  Latest 5 Day  Latest 3 Day  Custom  
 QA Date range: 07/19/2012 to 09/08/2015

[Graph](#)

DO Concentration [mg/L] — Salinity [ppt]

Date	DO Concentration [mg/L]	Salinity [ppt]
26 Aug	8.5	17.5
28 Aug	7.5	17.0
30 Aug	8.0	17.5
01 Sep	7.0	17.0
03 Sep	8.0	17.5
05 Sep	7.5	17.0
07 Sep	8.0	17.5

Map | Data | Graph

Dates and Locations

**Choose Geography**

County: [OCEAN] ▾ Huc14: [- All -] ▾  
 Municipalities: [Jackson Township] ▾

Station Type: [Short-Term Historical] ▾  
 Stations: [AN0521] ▾

Start Date: [- Month -] ▾ [- Day -] ▾ [- Year -] ▾ [Clear]  
 End Date: [- Month -] ▾ [- Day -] ▾ [- Year -] ▾ [Clear]

**Parameters:**

<input type="checkbox"/> Select all parameters	<input type="checkbox"/> Temperature	<input type="checkbox"/> Specific Conductance	<input type="checkbox"/> Salinity	<input type="checkbox"/> DO %
<input type="checkbox"/> DO Conc	<input type="checkbox"/> DO Charge	<input type="checkbox"/> pH	<input type="checkbox"/> Turbidity	<input type="checkbox"/> Chlorophyll

[Download Data](#) Records Selected: 4,673

- Long-Term Active
- Long-Term Historical
- Offline
- Short-Term Historical

Powered by [Leaflet](#) — [Mapbox](#) [OpenStreetMap](#) [Improve this map](#)

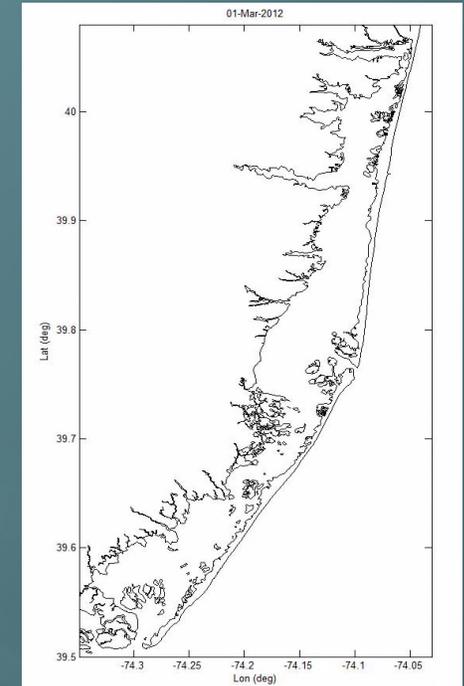
**NOTE: Provisional Data Subject to Revision.**

# Benefits

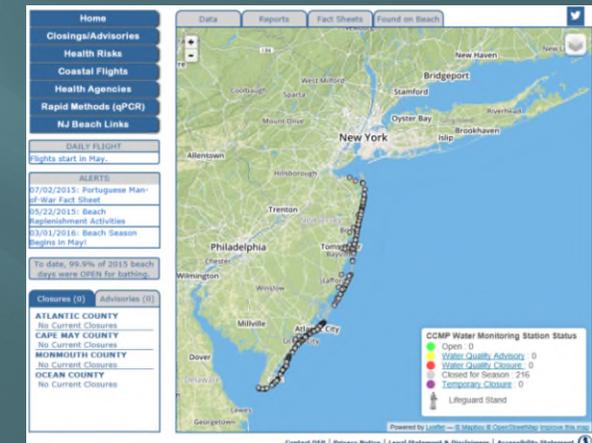
- ▣ Department-wide access to data
- ▣ Publically available and easily accessible
- ▣ Closer collaboration with stakeholders
- ▣ Improved Efficiencies (based on EPA collaboration)
  - Typically can improve work efficiencies:
    - ▣ Water Quality Assessment Project - 39% time savings, 44% cost savings
    - ▣ TMDL/Permit Project - 19% time savings, 26% cost savings
    - ▣ Effectiveness Monitoring Project - 17% time savings, 23% cost savings
- ▣ Improvement of Integrated Report Assessment Process
  - Incorporated a detailed comprehensive analysis using GIS and other lines of evidence
  - Automated Assessment Process - R programming
    - ▣ QA/QC Data
    - ▣ Discrete data processing
    - ▣ Continuous data processing
    - ▣ Data, assessment results, and graphing interface

# Benefits

- ▣ Increase in modeling efficiencies
  - TMDLs
  - Barnegat Bay
- ▣ Increase in research opportunities
  - Numeric nutrient criteria (lakes, rivers, estuaries)
  - Coastal Benthic Macroinvertebrate Index
- ▣ Restoration Prioritization
- ▣ Other Projects
  - Bathing Beach Data/Status
  - Story Maps
  - Volunteer Visual Assessment
  - Smartphone Apps



Lagrangian TRANsport (LTRANS)



Bathing Beach Website

# QUESTIONS



Point of Contact:

Jack Pflaumer: (609) 633-0499 [jack.pflaumer@dep.nj.gov](mailto:jack.pflaumer@dep.nj.gov)

New Jersey Department of Environmental Protection

Division of Water Monitoring and Standards

Bureau of Environmental Analysis, Restoration, and Standards