

Washington State Municipal Stormwater Conference, Yakima, WA
May 17, 2017



IDDE Data Evaluation for Western Washington

Funding provided by NPDES municipal
stormwater permittees

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BACKGROUND

- IDDE Evaluation is one task of a Source Control Effectiveness Study
 - Project supports the Source Identification Information Repository (SIDIR) :
 - SIDIR: Municipal NPDES permit monitoring section S8.D
 - SIDIR activities directed by Source ID group
 - subgroup of the Stormwater Work Group (SWG)
 - SWG oversees regional Stormwater Action Monitoring efforts (SAM, previously RSMP)
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SIDIR

■ Goals

- Stormwater pollutant source identification and elimination methods
- Regional solutions to common illicit discharge problems

■ Objectives

- Set priorities on reducing sources of stormwater pollution
 - Best ways to solve issues (reduce or eliminate)
 - Evaluate IDDE data to inform regional funding for SIDIR work (2016-17 SWG Work Plan)
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2014 DATA EVALUATION

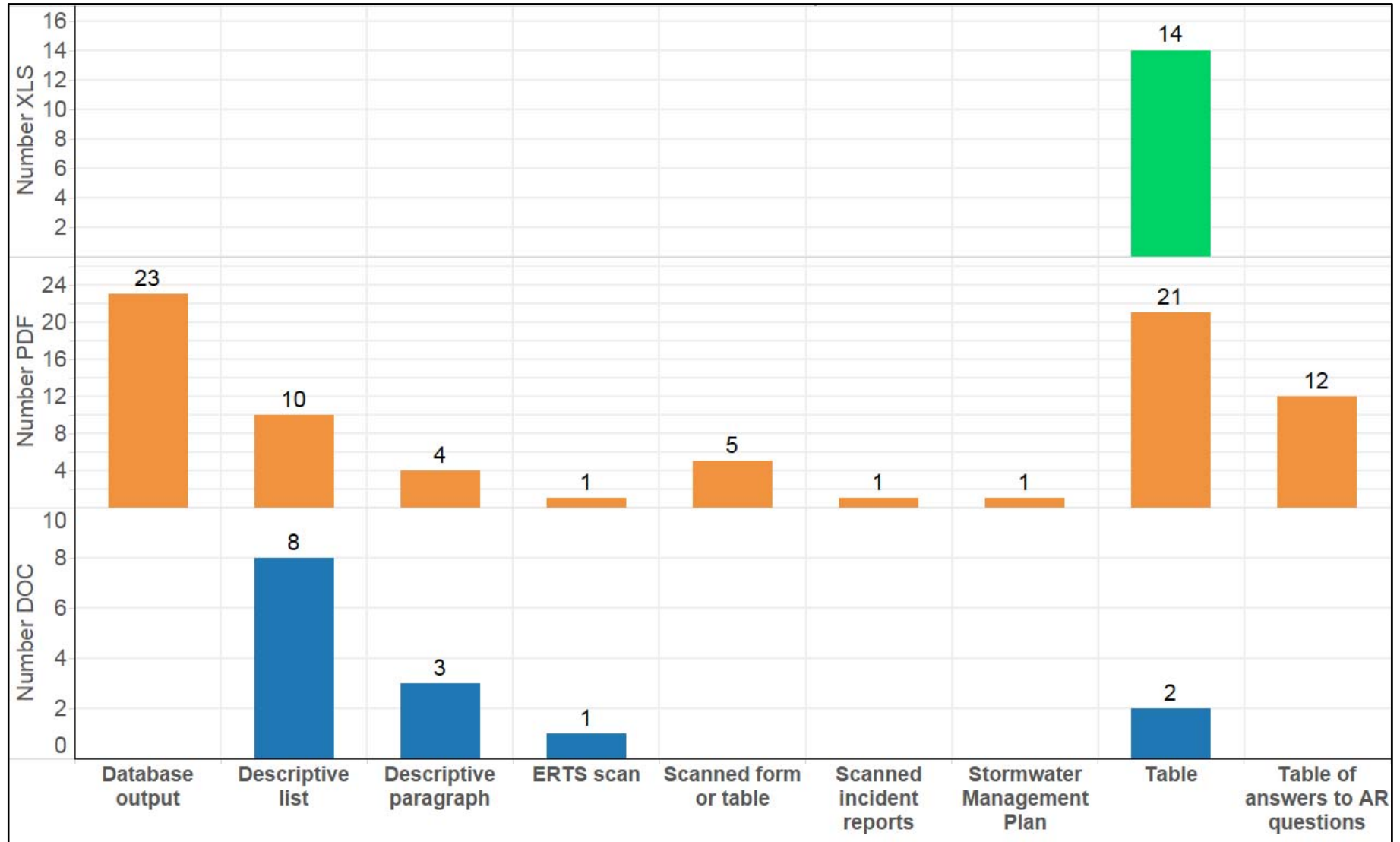
- Collect and assemble one year's worth of IDDE data as reported by permittees.
- Questions to address:
 - How are permittees submitting IDDE data?
 - File types, data formats, data quality
 - What methods are being used for IDDE work?
 - What type of IDDE events are being reported?



SOURCE OF DATA

- Permittee submittals from annual reports.
 - Annual Report Questions
 - Number of illicit discharges and connections eliminated.
 - Summary of actions taken to characterize, trace and eliminate each illicit discharge found by or reported to the permittee.
 - Description of actions according to required timelines.
 - 7 days to respond to illicit discharges
 - 21 days to respond to illicit connections
 - 6 months to eliminate illicit connections

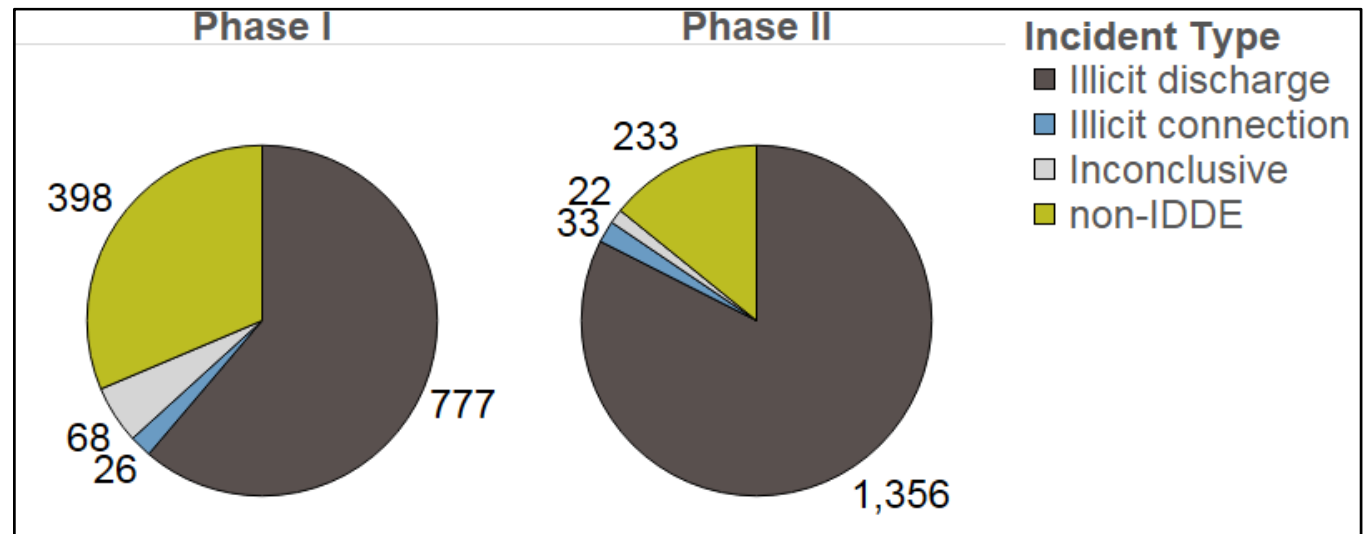
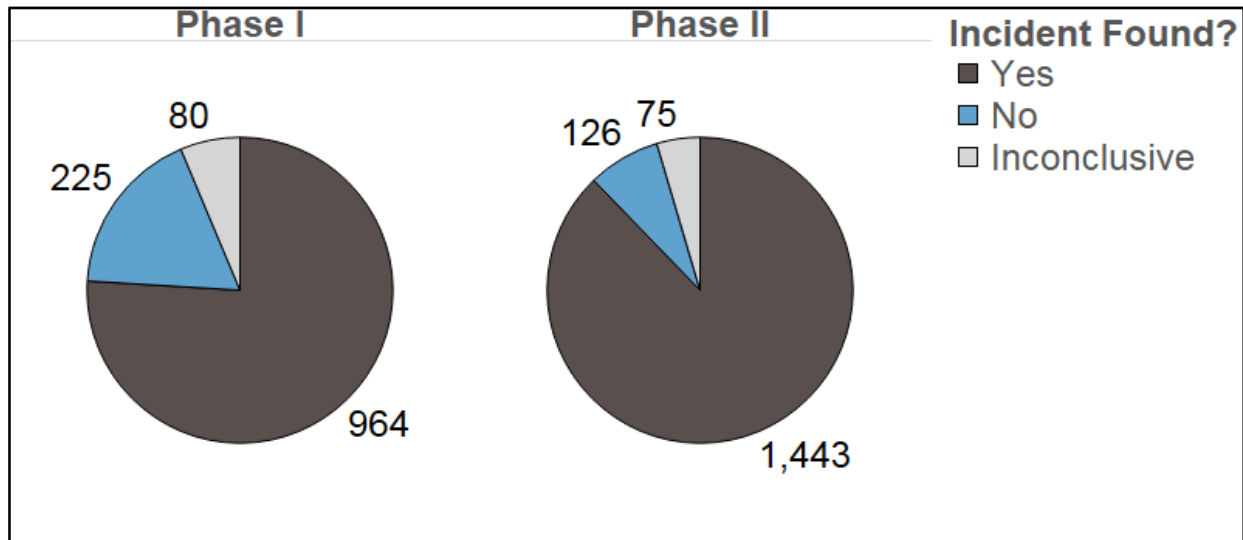
DATA TYPES



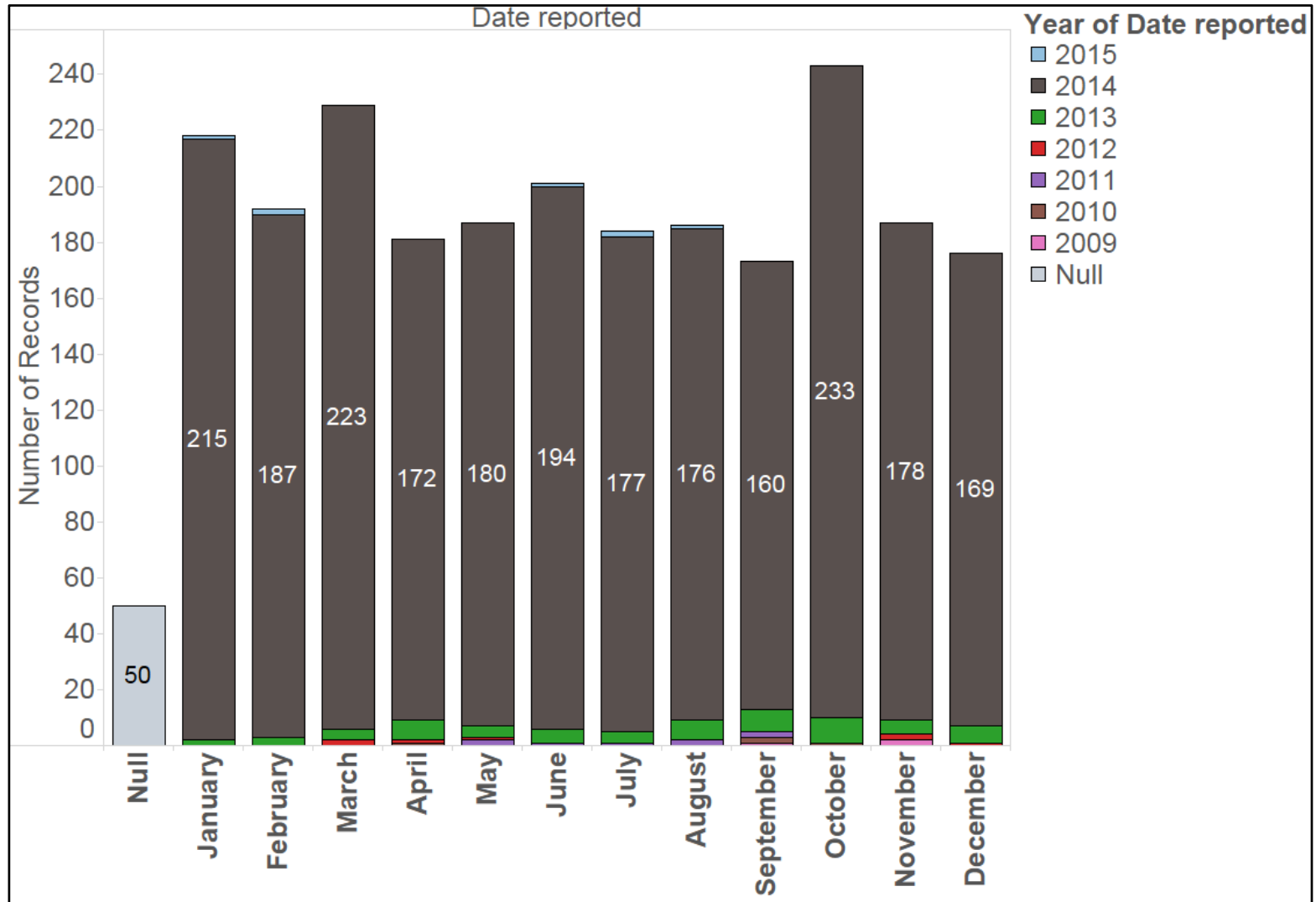
DATA ENTRY

- Multiple data formats required multiple data entry approaches:
 - Copy and paste
 - Hand-entry
 - Read notes and interpret
 - Standardize responses
 - Quality control:
 - Review by other data entry staff
 - Adaptive process
 - Final database: 71 data fields
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RECORDS



RECORDS



DATA ANALYSIS

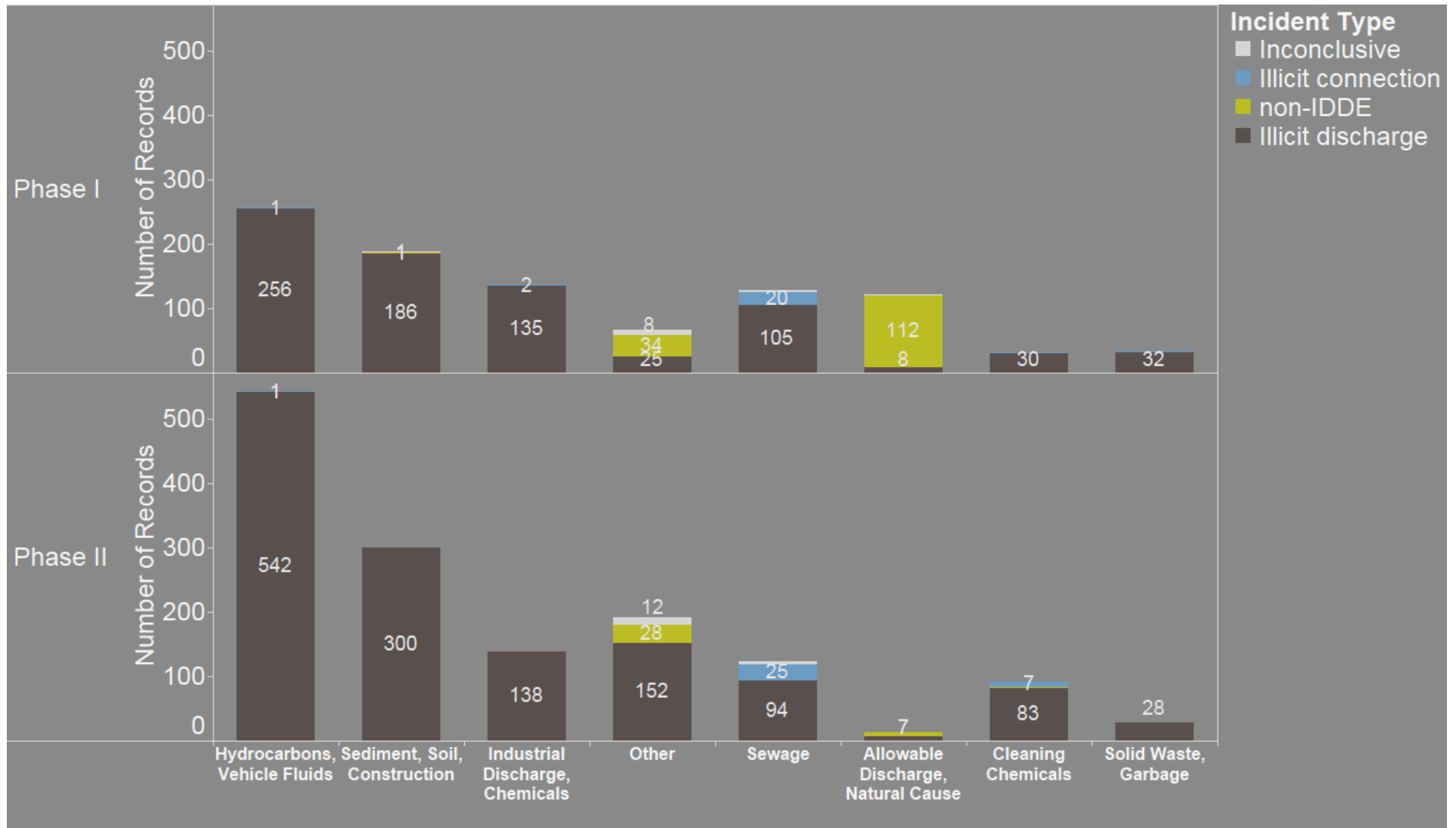
- Almost entirely categorical data
 - Visual distributional analysis
 - Statistics: Frequency Analysis
 - Maximum Likelihood Chi-square (χ^2) “Goodness of Fit”.
 - Tested if pairs of variables have a non-random association in their distributions.
 - Highlights incident types and how they were addressed.
 - Not causative, rather finds connects between data fields.
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DATA CATEGORIZATION

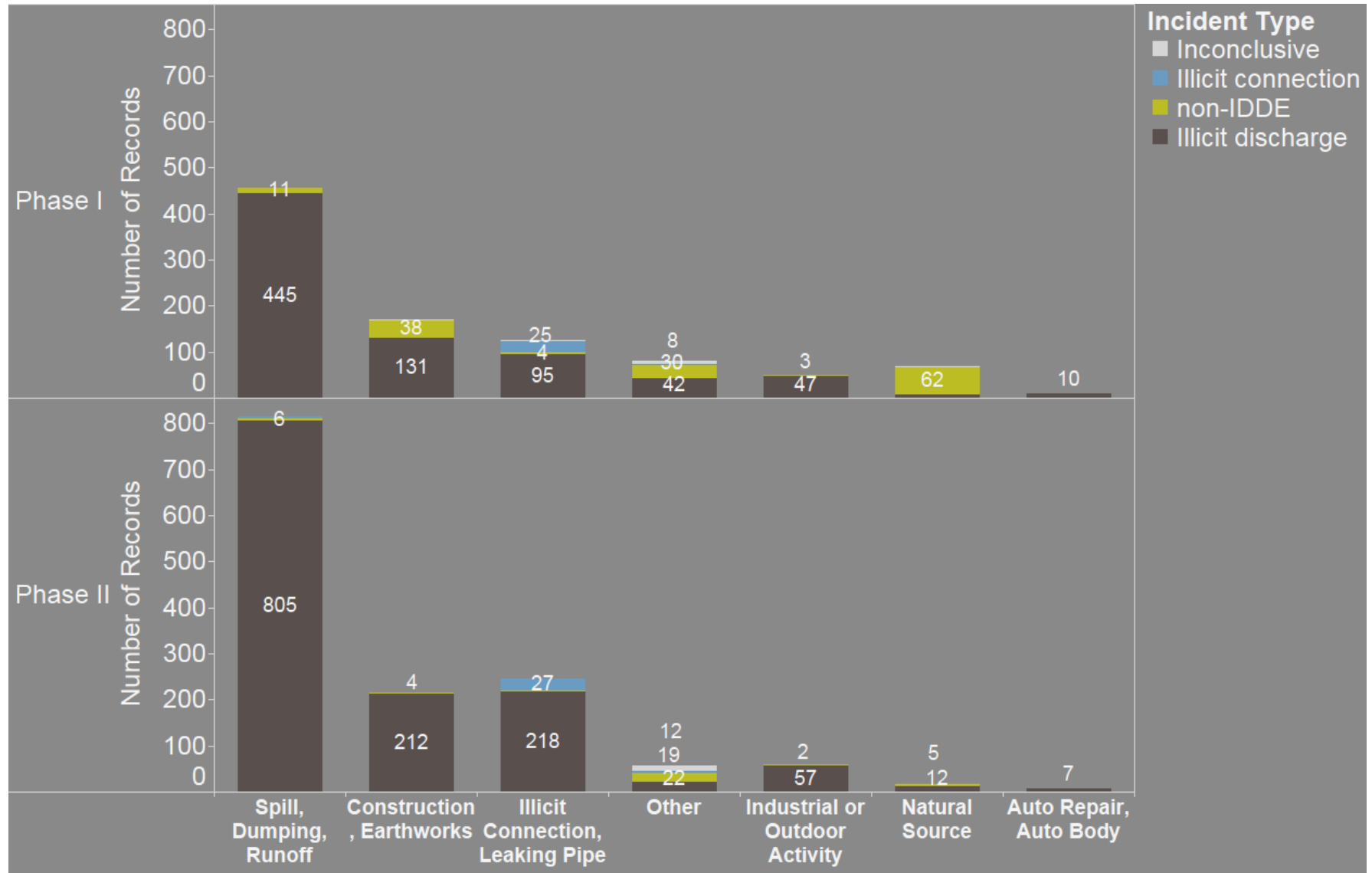
Pollutant Category	Pollutant Source Category	How Learn Category
53 pollutants	58 sources	19 ways
Allowable Discharge, Natural Cause	Auto Repair, Auto Body	Hotline, Reported to Jurisdiction
Cleaning Chemicals	Construction, Earthworks	Inspection or Observation by staff
Hydrocarbons, Vehicle Fluids	Illicit Connection, Leaking Pipe	Intra- or Interagency referral
Industrial Discharge, Chemicals	Industrial or Outdoor Activity	N/A
Other	Natural Source	
Sediment, Soil, Construction	Other	
Sewage	Spill, Dumping, Runoff	
Solid Waste, Garbage		

Indicator Category	Source Tracing Category	Correction/Elimination Category	Discharge quantity category
18 methods	10 methods	13 actions	174 descriptions
Visual, turbidity, flow	Visual, empirical	BMPs or Cleanup	Very small
Odor, pH, fecals	In-pipe testing	Enforcement	Small
Chemical testing	Other	Other	Medium
Other		Refer to Other Agency/Dept	Large
		No Action Needed	Very large
			None
			N/A

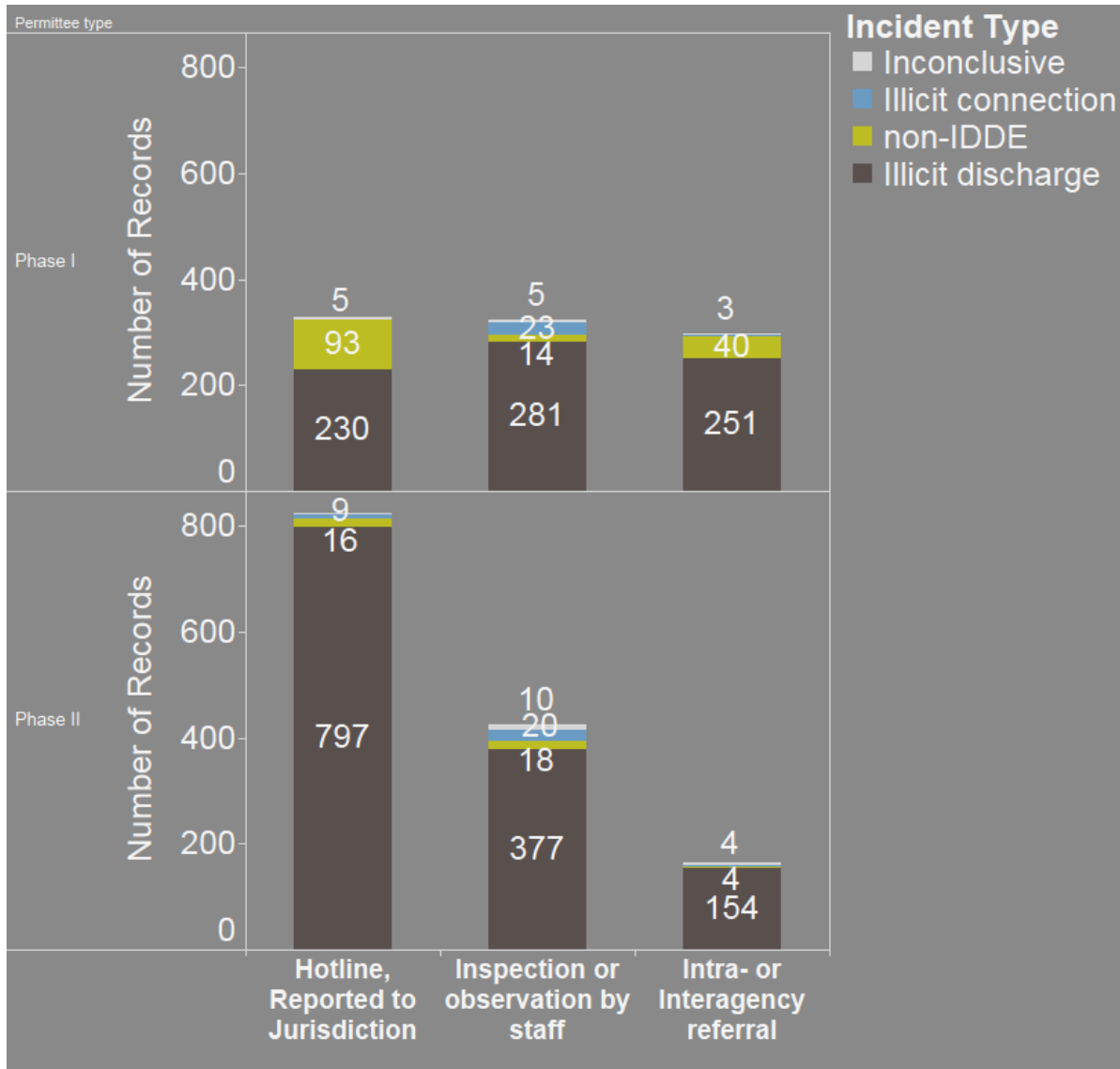
RESULTS - POLLUTANTS



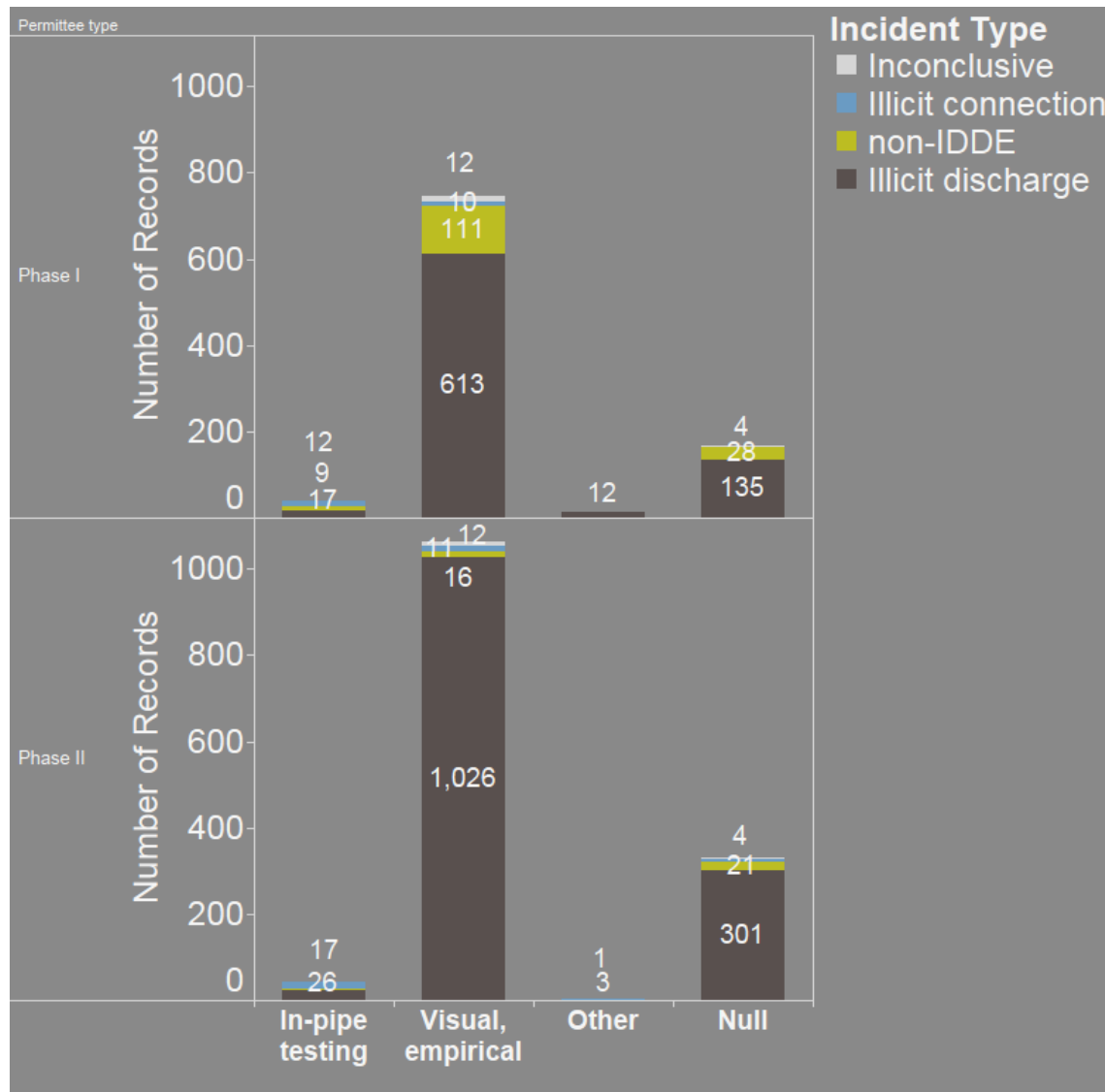
RESULTS - SOURCES



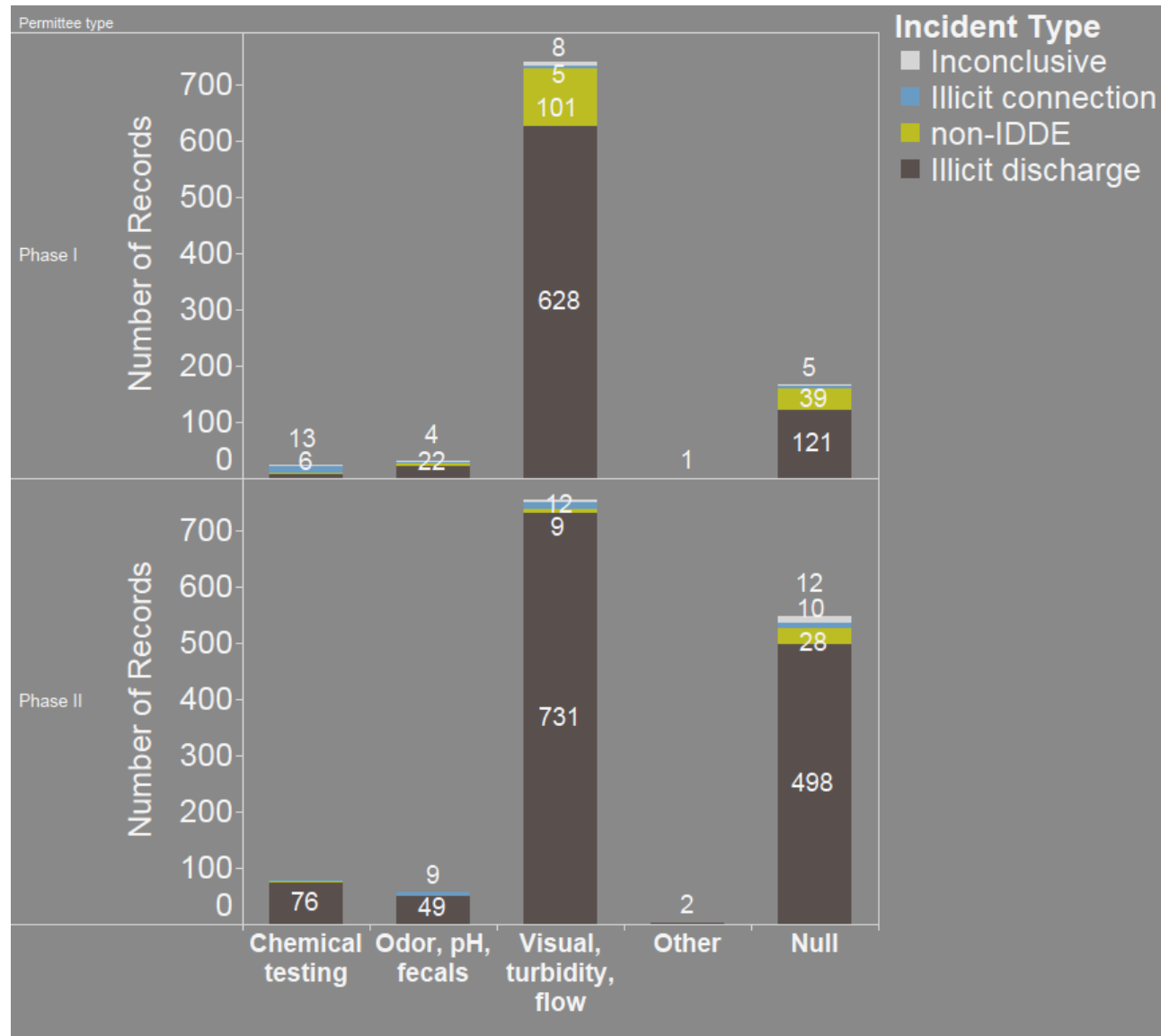
RESULTS - NOTIFICATION



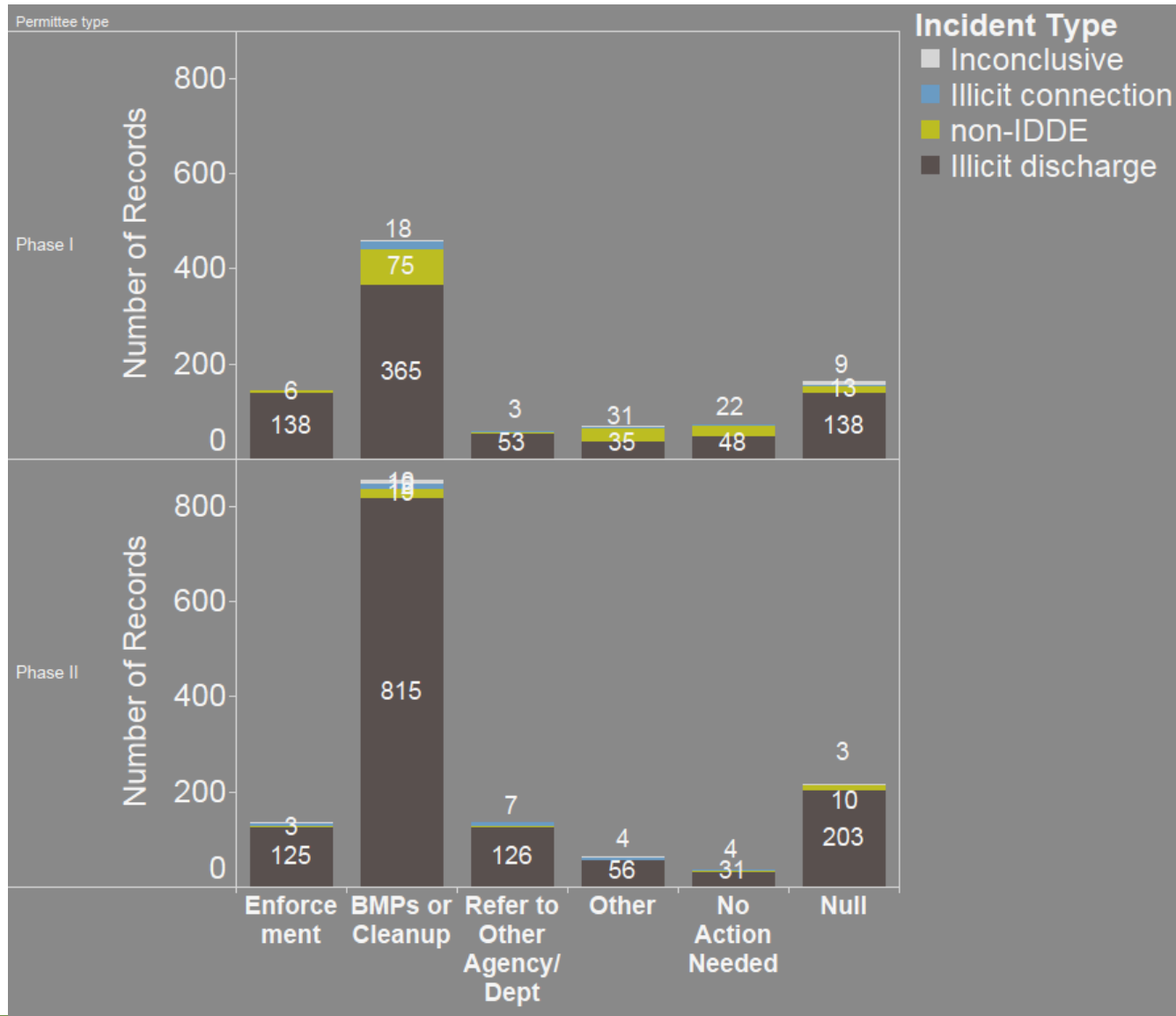
RESULTS – SOURCE TRACING



RESULTS - INDICATORS



RESULTS - CORRECTION



RESULTS - STATISTICS

- Chi-Square (χ^2) tested for non-random associations between pairs of variables:

Pollutant Type compared to:
How problem was learned about
Pollutant source
Source tracing method
Correction/elimination method
Discharge quantity

Source Tracing Method compared to:
How problem was learned about
Indicator testing
Correction/elimination method

- 7 of 8 comparisons significant ($\alpha=0.05$).
- Points to what information is associated in the characteristics of IDDE incidents.
- Many other comparisons possible - define questions.

CONCLUSIONS - DATA

- For 2014 data:
 - Most common pollutants: hydrocarbons
 - Most common pollutant sources: spills
 - Most common source tracing: visual
 - Most common indicator test: visual
 - Most common corrective action: cleanup or using BMPs

- Frequency of occurrence is only part of the picture.

CONCLUSIONS – DATA FORMAT

- IDDE data being provided in many formats.
 - Need for standardizing IDDE reporting to meet SIDIR goals.
 - Optional data entry form (2014) updated for this assessment.
 - Number of fields remained the same at 16 but more detail about incident
 - Efficient data entry, may include drop-down menus with answer options
 - Updated form under consideration for 2018 permit.
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CONCLUSIONS - DATABASE

Some uses of a regional IDDE database.

INQUIRE

- Local inquiry: look up how specific discharges in specific areas have been addressed.

SHARE

- Jurisdictional inquiry: compare enforcement methods among jurisdictions.

TRACK

- Regional inquiry: look up what type of pollution occurred over time in multiple areas.
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Questions?



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