

VOLTAGE AT CANAL SURFACE

Design Branch

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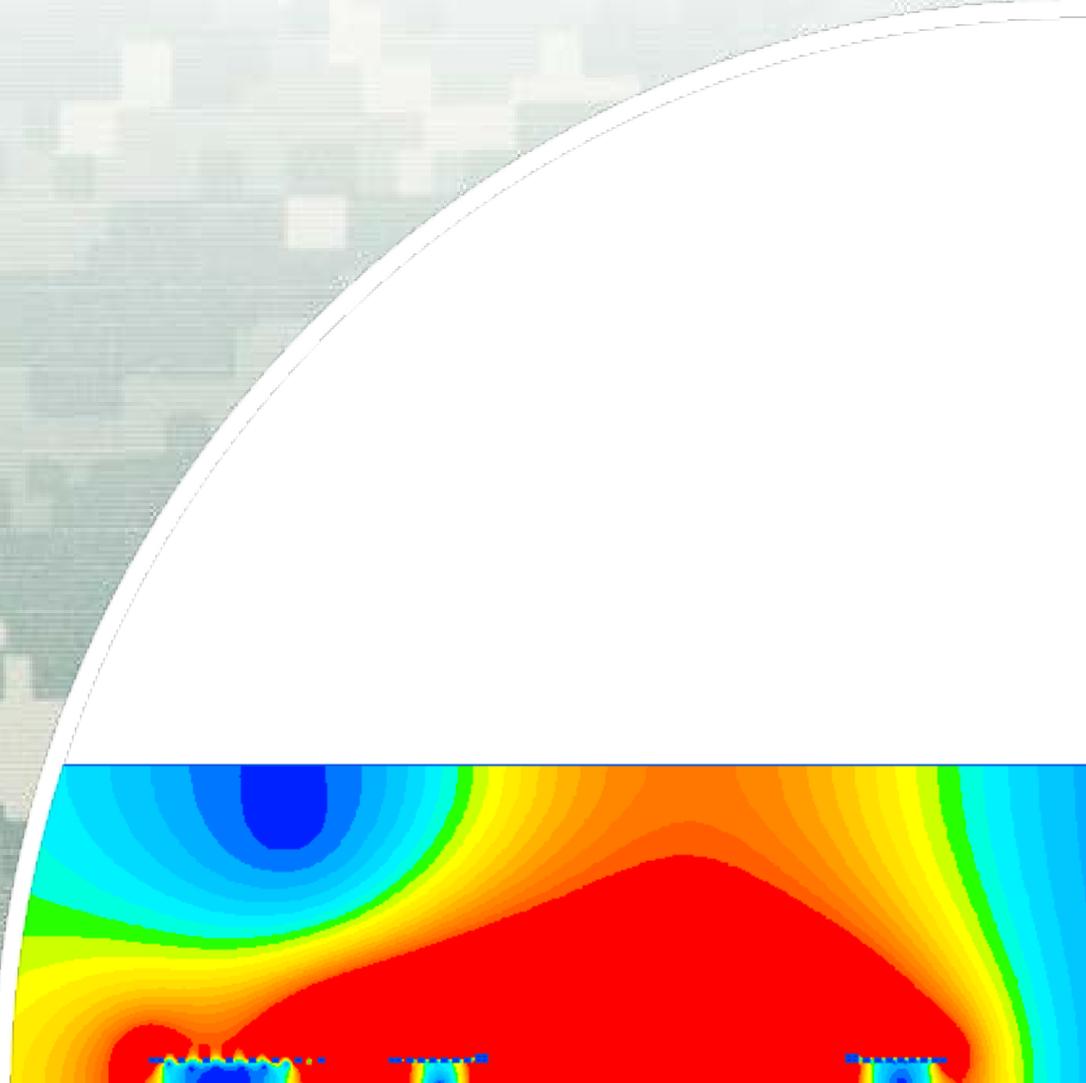
USACE Chicago District

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BLUF

(Bottom Line Up Front)

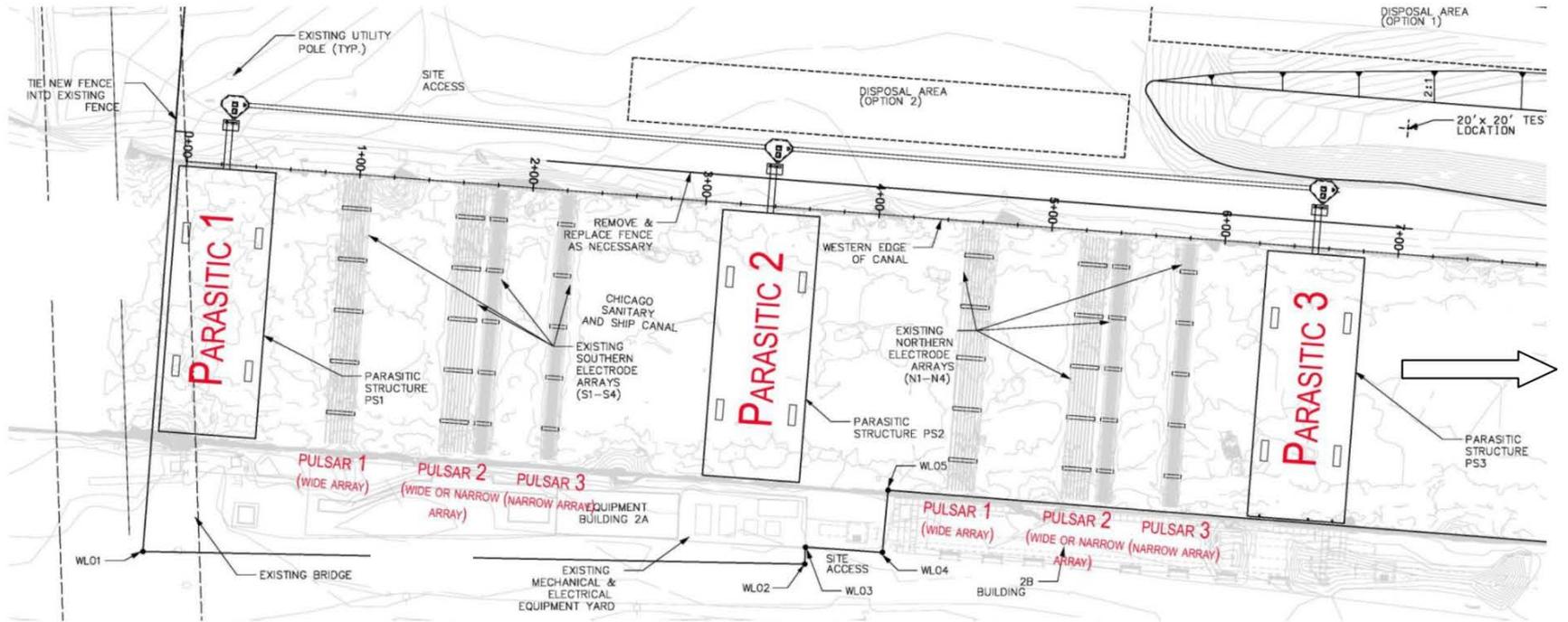
- Maintain a minimum voltage at the canal surface during periods of high conductivity may present challenges.
- Monitoring a pulsed wave at the surface of the water presents physical and electrical challenges.



BARRIER OVERVIEW



Site Overview



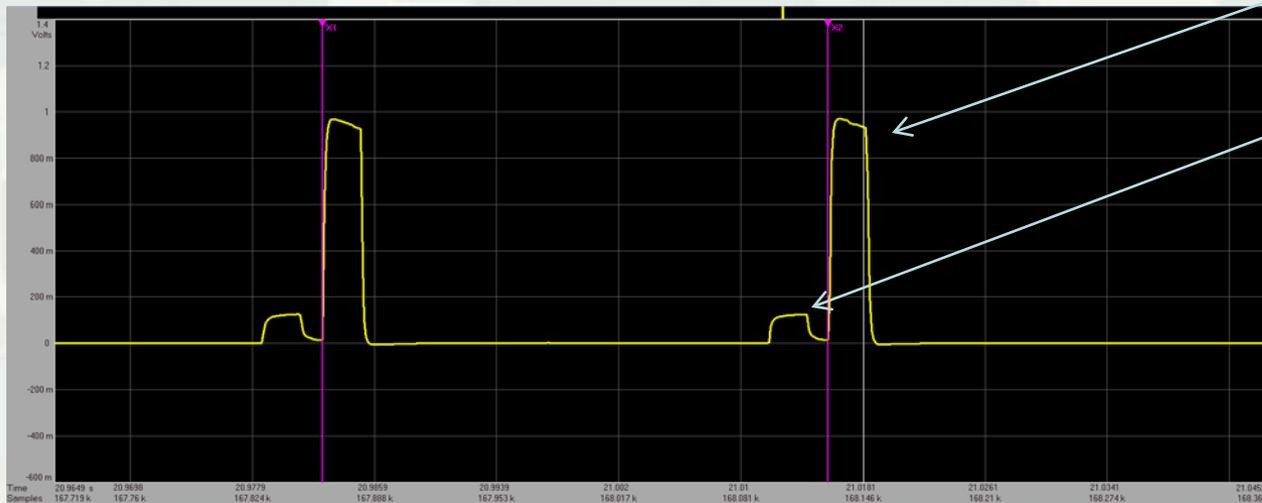
Operating Parameters

Barrier	Frequency	Pulse Width
Demonstration	5 Hz	4 ms
2A	34 Hz	2.3 ms
2B	34 Hz	2.3 ms

1.0 Volts/in surface

2.3 Volts/in surface

2.3 Volts/in surface



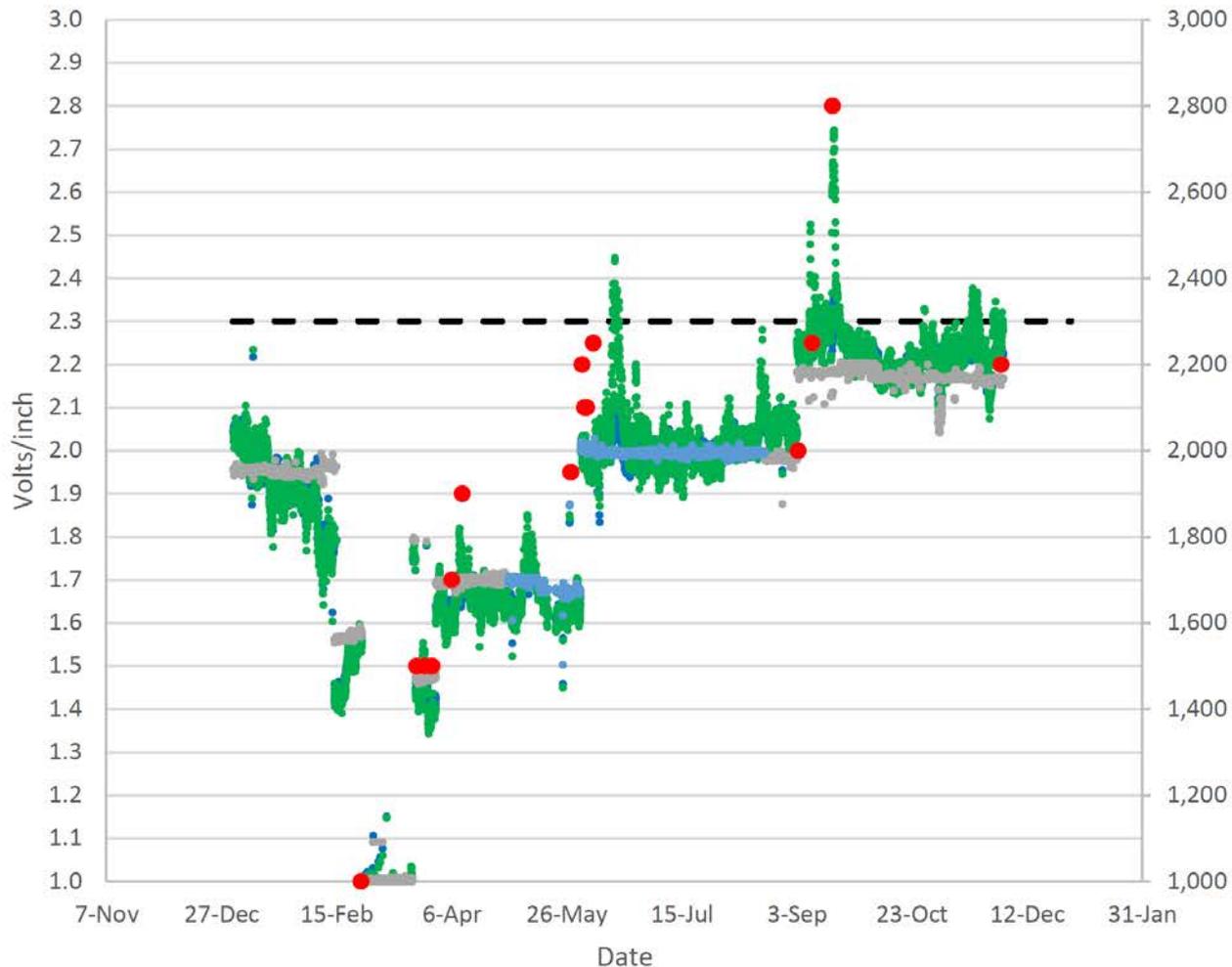
Narrow array pulse

Wide array pulse



Matching V/in Surface

Estimated V/in at Canal Surface and Voltage Applied - IIB - Using Fitted Electrode Resistance - including drawdown



$$\frac{2.3 \text{ V/in}}{2000 \text{ V}} = \frac{V_{exp}}{V_{applied}}$$

- readings at canal surface
- target - 2.3 V/in
- Volts/inch - using average electrode resistance
- V/in - including drawdown
- electrode - pulser 1
- electrode - pulser 2
- Series7

MONITORING DIFFICULTY



Harsh Environment

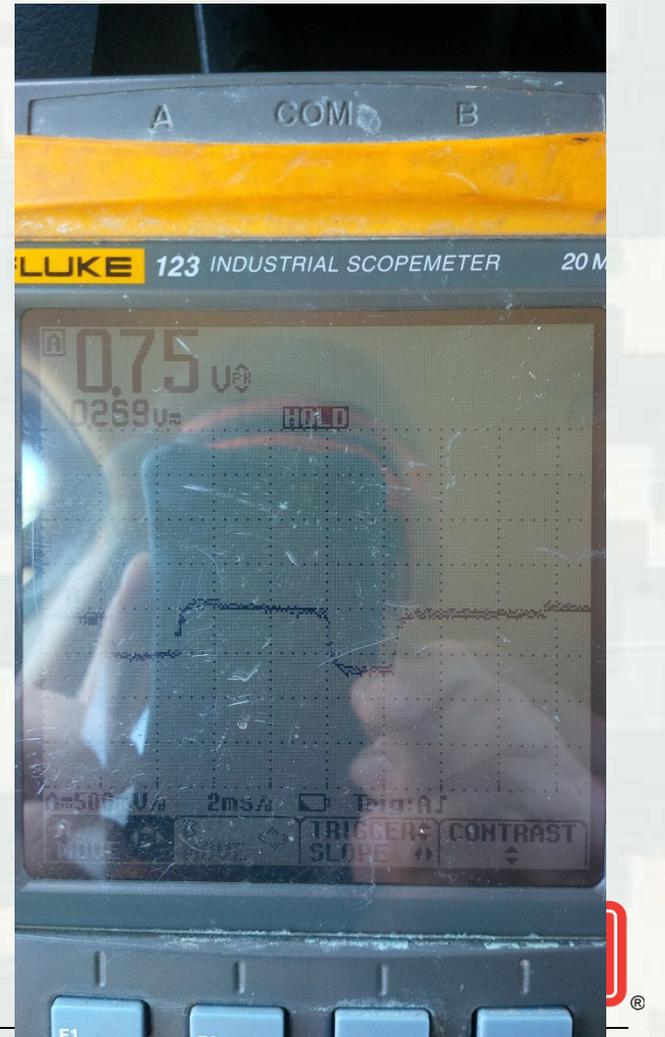
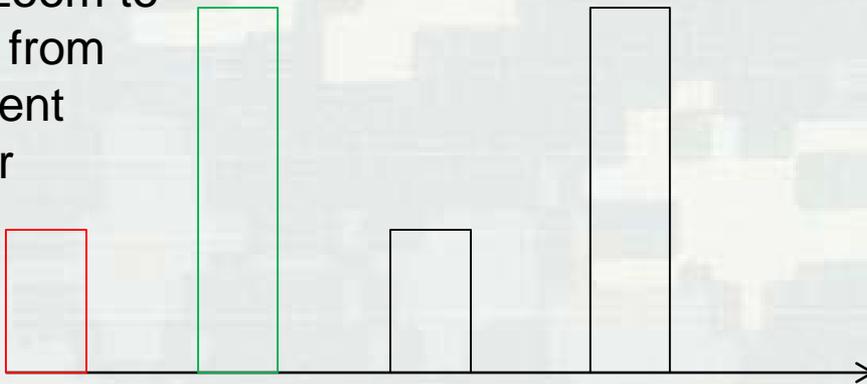
- Past probes mounted to the canal wall have been destroyed by barge traffic



Square Wave (s)

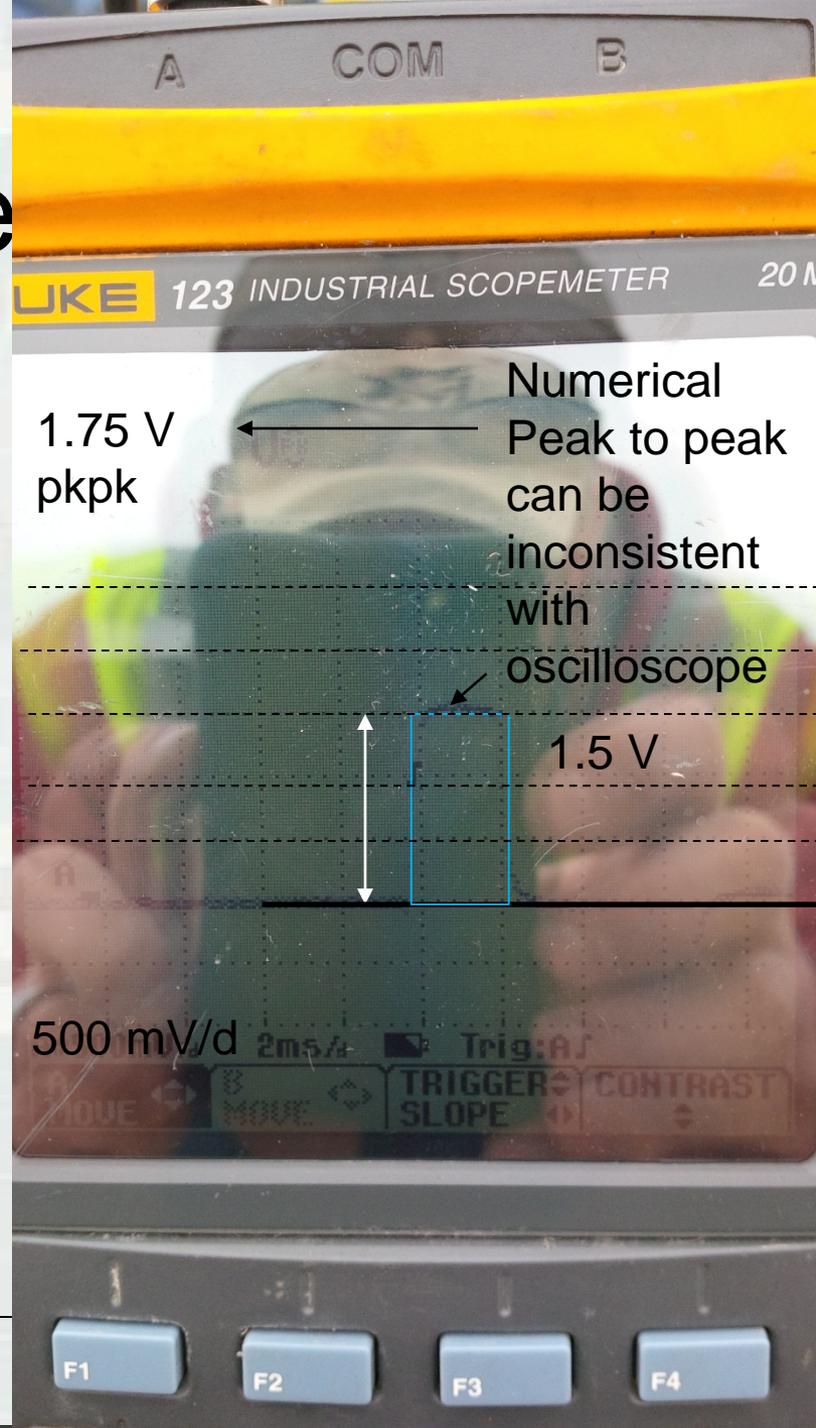
- Multiple waves
– need to
choose correct
wave

Oscilloscope
may zoom to
wave from
adjacent
pulser



Measuring Amplitude

- We typically read visually because peak readings from the oscilloscope appear unreliable



Questions...?

