

# **NATIONAL DREDGING QUALITY MANAGEMENT (DQM) PROGRAM**

## **NATIONAL DREDGING MEETING**

**MARCH 8, 2019  
MEMPHIS, TN**

**VERN GWIN, PROGRAM DIRECTOR  
NATIONAL DQM CENTER**



# **PRESENTATION OUTLINE**

- **PROGRAM STATUS/ADVANCEMENTS**
- **CURRENT SIGNIFICANT ACTIVITIES**
- **FUTURE OBJECTIVES**



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# PROGRAM STATUS

**SINCE LAST YEAR....**

- **NEW DQM VIEWER (JAVAS)**
- **NEW SECURITY ACCESS**
- **PIPELINE MONITORING**
- **DQM ON GOVERNMENT PIPELINE PLANT**
- **REVISING SPECS FOR NON-NUCLEAR DENSITY METERS**



# 2018/2019

- **NEW CUSTOMERS/MORE CUSTOMER SERVICE**
- **NEW PIPELINE “STATE” ENTRY TOOL**
- **CLOUD DATABASE/SERVER ENVIRONMENT**
- **DEV**
  - ▶ **V3.0, DESKTOP TOOLS, MANAGEMENT TOOLS**



# MORE 2019

- **PERSONNEL CHANGES**
- **PIPELINE DATA ANALYSIS**
- **HOPPER DREDGE UTILIZATION SUPPORT**
- **CYCLE LOGIC REVISION**



# SECURITY / ACCESS

- **SECURITY MATRIX ROLES AND ACCESS**
  - ▶ **PASSWORD ACCESS – CONTRACTOR ACCESS**



# **PIPELINE MONITORING**

- **FULLY IMPLEMENTED IN 2018**
- **GOVERNMENT PLANT PILOT MONITORING 2015-2017**
- **UPGRADE GOV PLANT TO LATEST DQM SPECS**
- **FINAL SPEC VERSIONS**
- **FY18 PRIVATE PIPELINE MONITORING (SBA EXEMPT, REQUIRED ON ALL UNRESTRICTED PROJECTS)**





# National Dredging Quality Management Program (DQM)

## Pipeline Data Flow Sensor-Based Parameters (per Compliance Specification)



### Pump Sensors

- Pump Vac
- Pump Press
- Density
- Velocity

### Position Sensors

- Position
- Heading
- Vert Correction (Tide)
- CH Depth

### Discharge Sensors

- (radio link)
- Discharge Position
- Discharge Elevation
- Discharge Heading

### Notes

\*Dredge Positioning Computer—Data is compiled and converted to JSON format

\*\*DQM Onboard Computer—Minimum Specifications

CPU: Intel/AMD processor; 3 GHz (non-overclocked) clock speed

Hard Disk: 250 GB; internal

RAM: 2 GB

Ethernet Adapter: 10/100 Mbps internal network card; RJ-45 connector

Video Adapter: Supports 1024x768 resolution at 16-bit color depth

Monitor: 17" viewable display; supports 1024x768 resolution at 16-bit color depth

Keyboard: Standard 101-key

Mouse: Standard 2-button

CD-ROM Drive: 16X read speed/8X write speed

Ports: 2 free serial ports (standard 9-pin connectors); 1 free USB port

Cables: Cat-5 cable; standard RJ-45 plugs connecting the network adapter to the network hub; 1 spare cable

Software: Windows 7 Professional (fully licensed); any necessary manufacturer-provided drivers for the installed hardware

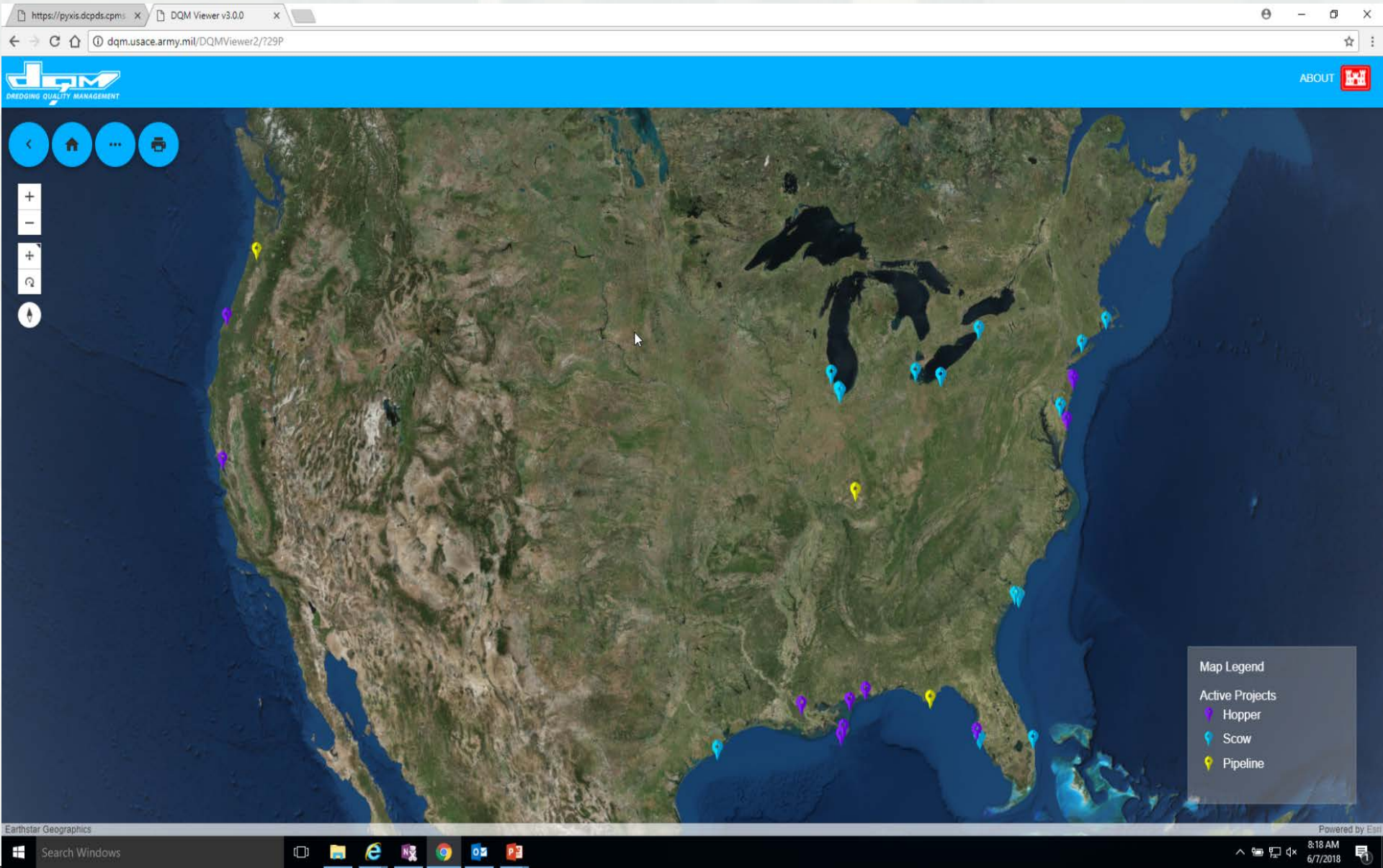




# DQM ON-BOARD SOFTWARE (DQMOBS)

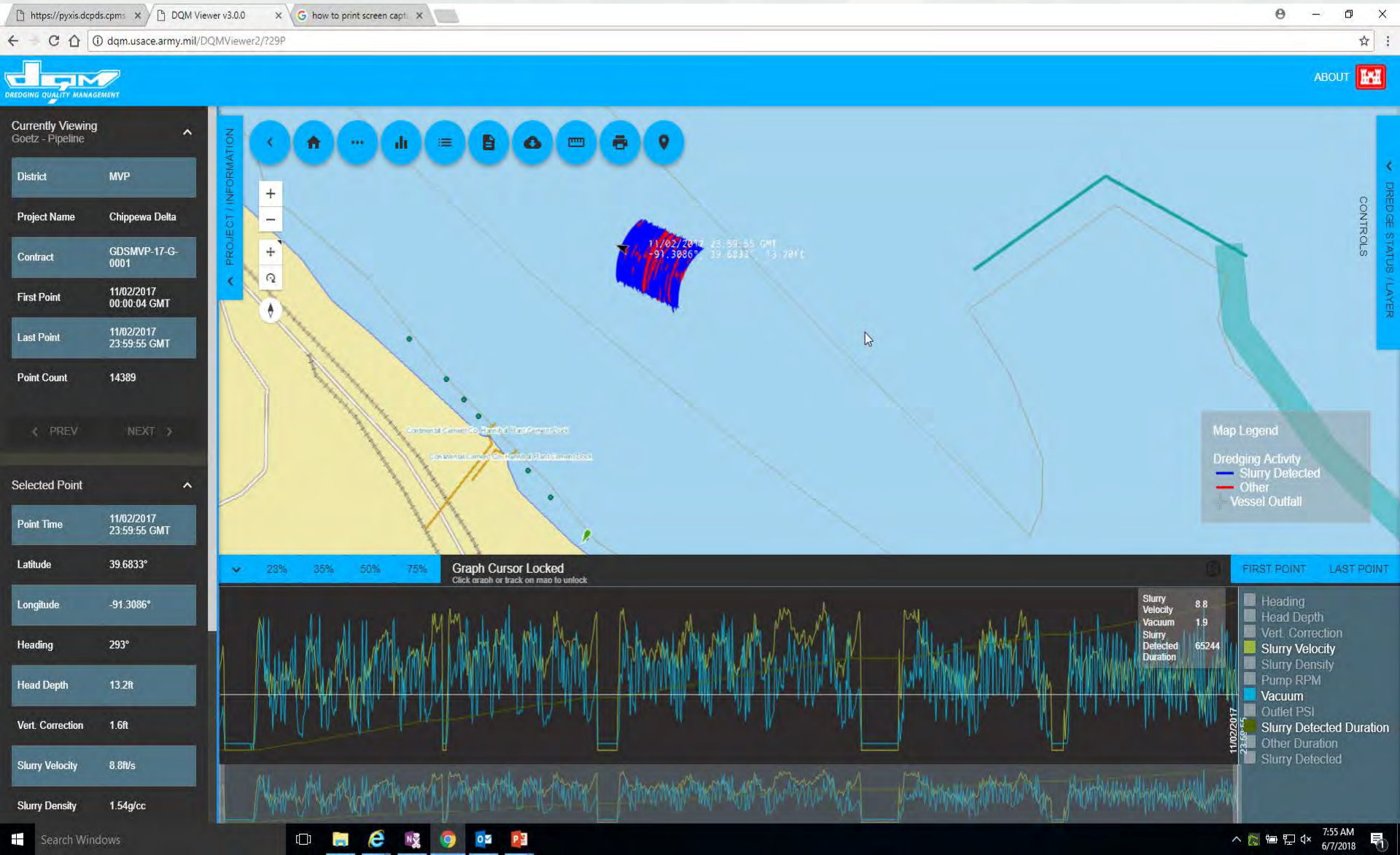
[illegible]

# New DQM Viewer





# NEW V3.0 VIEWER



# NEW V3.0 VIEWER





# NEW V3.0 VIEWER

Browser tabs: <https://pyvis.dcpds.cpmc...> | DQM Viewer v3.0.0

Address bar: [dqm.usace.army.mil/DQMViewer2/729P](https://dqm.usace.army.mil/DQMViewer2/729P)

**DQM**  
DREDGING QUALITY MANAGEMENT

ABOUT

Currently Viewing  
Potter - Pipeline

District: MVS

Project Name: UMR Squaw Island

Contract: GDSMVS-17-G-0001

First Point: 08/10/2017 00:00:04 GMT

Last Point: 08/10/2017 23:59:59 GMT

Point Count: 13687

PREV NEXT

Selected Point

Point Time: 08/10/2017 08:22:01 GMT

Latitude: 38.8883°

Longitude: -90.1927°

Heading: 102°

Head Depth: -0.77ft

Vert. Correction: 0.1ft

Outfall Latitude: 38.8867°

Outfall Longitude: -90.1927°

Map Legend

Dredging Activity

- Slurry Detected
- Other
- Vessel Outfall

Dredge Status  
\* end of day status

Daily Advance\* 31147 ft

Pipe Length\* Data Not Available

Boosters\* Data Not Available

Slurry Detected Duration\* 00:00:00 hrs

Other Duration\* 23:59:55 hrs

Density g/cc

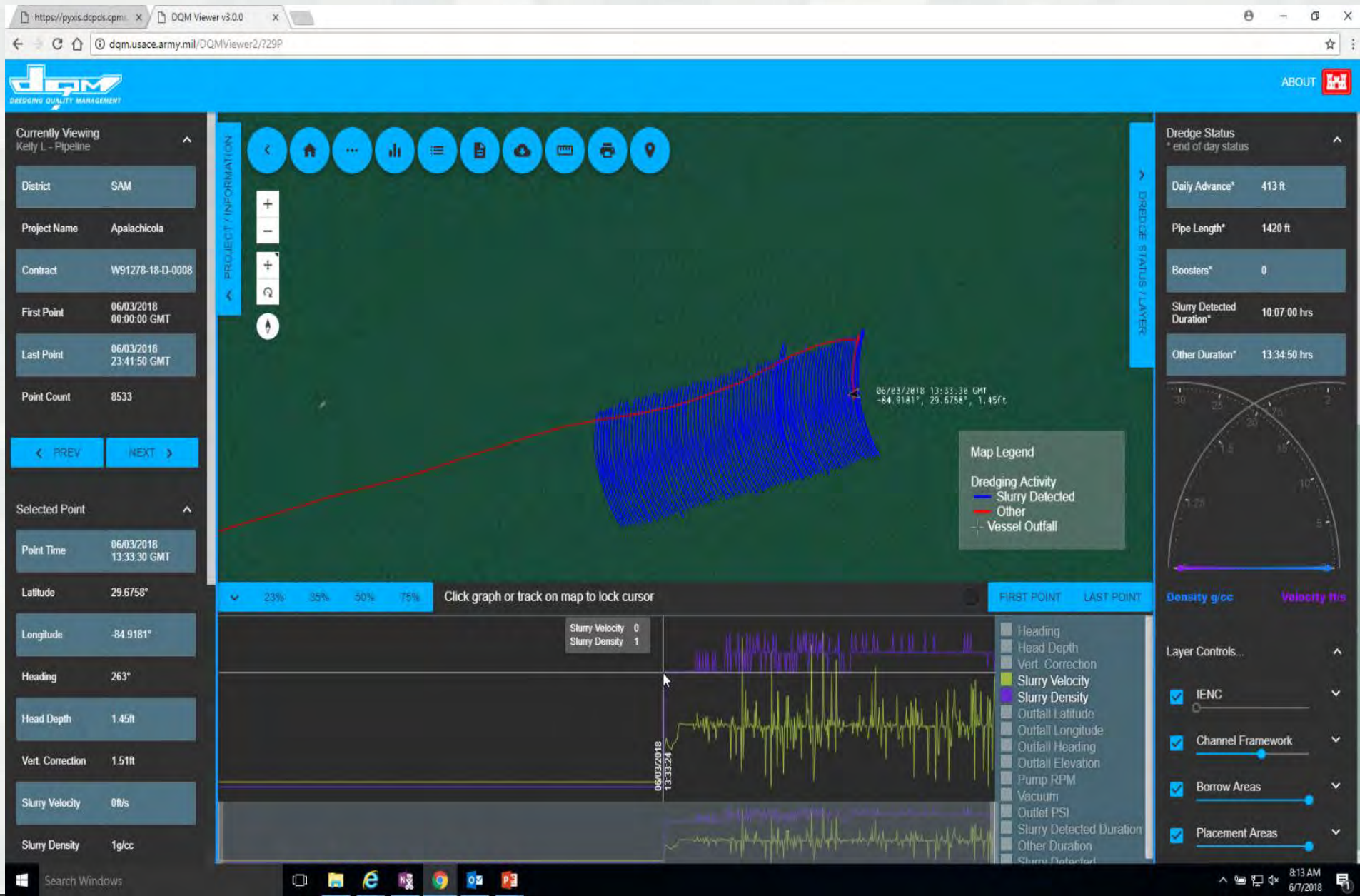
Velocity ft/s

Layer Controls...

- ☒ IENC
- ☒ Channel Framework
- ☒ Borrow Areas
- ☒ Placement Areas

08/10/2017 08:22:01 GMT  
-90.1927° 38.8883° -0.7711

# NEW V3.0 VIEWER






# NEW V3.0 VIEWER

Browser tabs: <https://pyxis.dcpds.cpmc...> | [DQM Viewer v3.0.0](#) | [how to print screen capti...](#)

Address bar: [dqm.usace.army.mil/DQMViewer2/729P](https://dqm.usace.army.mil/DQMViewer2/729P)

**DQM**  
DREDGING QUALITY MANAGEMENT

ABOUT 

Currently Viewing  
Bill Holman - Pipeline

District: LRL

Project Name: Ohio River, Newburgh, IN

Contract: W912QR-18-D-0021

First Point: 06/05/2018 00:00:04 GMT

Last Point: 06/05/2018 23:59:53 GMT

Point Count: 7583

[< PREV](#) [NEXT >](#)

Selected Point

Point Time: 06/05/2018 23:07:40 GMT

Latitude: 37.9335°

Longitude: -87.3768°

Heading: 149°


Head Depth: 18.85ft


Vert. Correction: 350.1ft


Slurry Velocity: 25.27ft/s

Slurry Density: 1.02g/cc

**PROJECT INFORMATION**







**DREDGE STATUS / LAYER**

Dredge Status  
\* end of day status


Daily Advance\* 376 ft

Pipe Length\* 2330 ft

Boosters\* Data Not Available

Slurry Detected Duration\* 11:32:11 hrs

Other Duration\* 12:27:38 hrs



Density g/cc Velocity ft/s

Layer Controls...

☒ IENC

☒ Channel Framework

☒ Borrow Areas

☒ Placement Areas

Map Legend

Dredging Activity

- Slurry Detected
- Other
- Vessel Outfall

06/05/2018 23:07:40 GMT  
37.9335° -87.3768° 18.85ft

Windows taskbar: Search Windows, 8:02 AM 6/7/2018

# NEW V3.0 VIEWER

https://pyxis.dcpds.cpmc... x DQM Viewer v3.0.0 x

dqm.usace.army.mil/DQMViewer2/729P

**DQM**  
DREDGING QUALITY MANAGEMENT

ABOUT

Currently Viewing  
Potter - Pipeline

District MVS

Project Name UMR Squaw Island

Contract GDSMVS-17-G-0001

First Point 08/12/2017 00:00:02 GMT

Last Point 08/12/2017 23:59:59 GMT

Point Count 14074

PREV NEXT

Selected Point

Point Time 08/12/2017 23:05:17 GMT

Latitude 38.8184°

Longitude -90.1132°

Heading 13°

Head Depth 21.2ft

Vert. Correction 0ft

Outfall Latitude 38.8172°

Outfall Longitude -90.1161°

PROJECT INFORMATION

Dredge Status  
\* end of day status

Daily Advance\* 41 ft

Pipe Length\* Data Not Available

Boosters\* Data Not Available

Slurry Detected Duration\* 00:00:00 hrs

Other Duration\* 23:59:57 hrs

DREDGE STATUS PLAYER

Density g/cc

Velocity ft/s

Layer Controls...

☒ IENC

☒ Channel Framework

☒ Borrow Areas

☒ Placement Areas

Map Legend

Dredging Activity

Slurry Detected

Other

Vessel Outfall

08/12/2017 23:05:17 GMT  
-90.1132°, 38.8184°, 21.20ft

8:08 AM  
6/7/2018

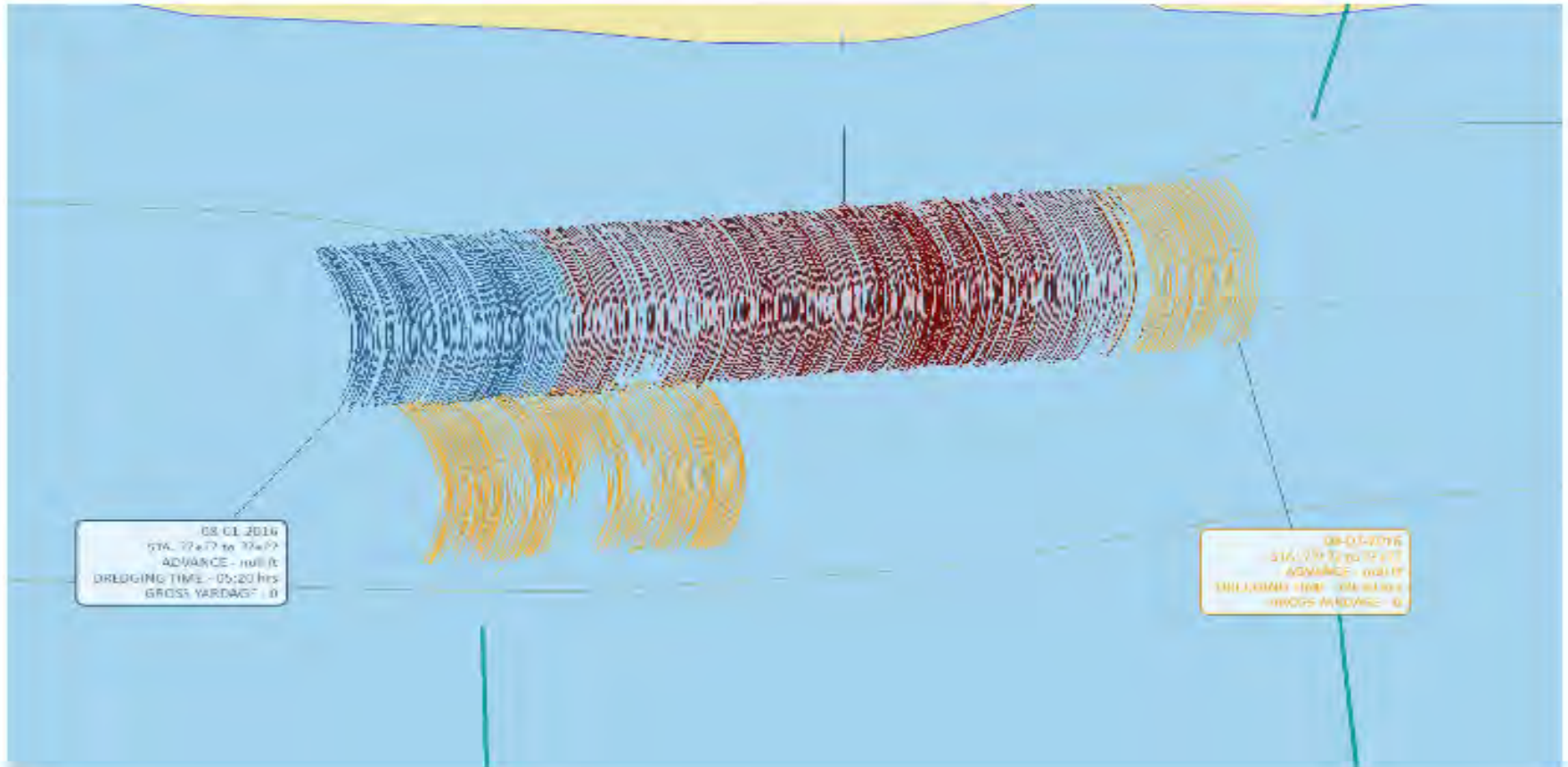


# PIPELINE DAILY ADVANCE REPORT



Date: 08/01/2016 - 08/03/2016

DQM Pipeline Viewer v0.97

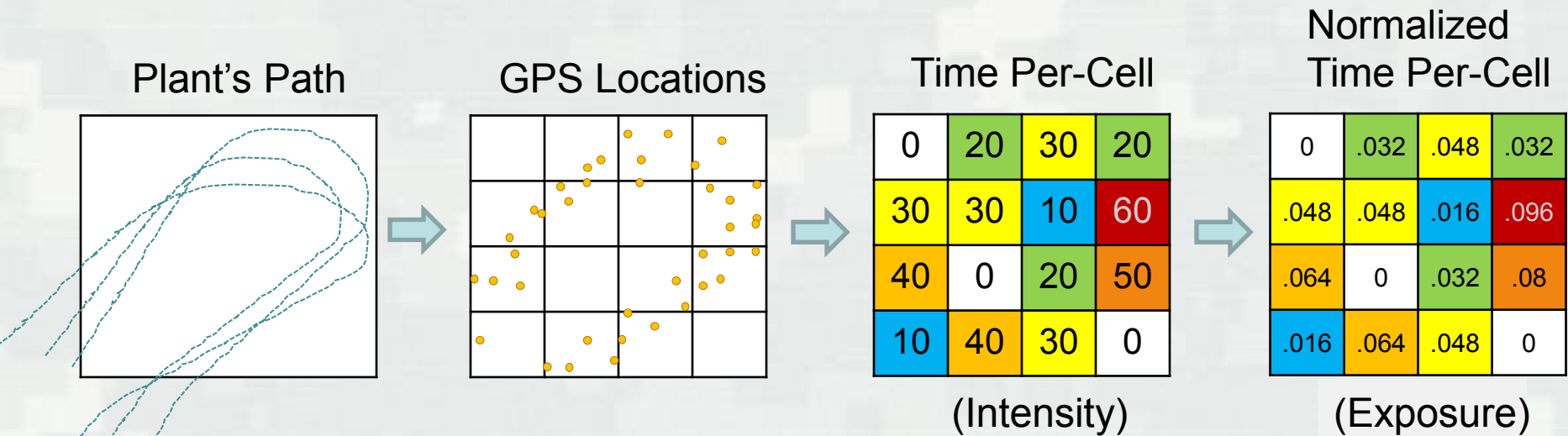


# Dredge Intensity Model

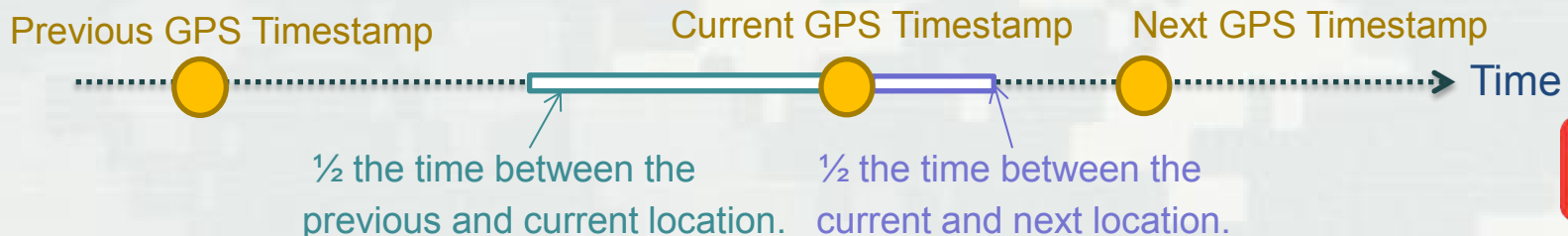
- ✓ Software tool which takes the results of the mathematical model and creates products compatible with prominent GIS applications
- ✓ Vessel transit/dredge tracks delineating areas of high traffic or dredge activity
- ✓ Generation of relevant geospatial metadata for the product including processing history sections



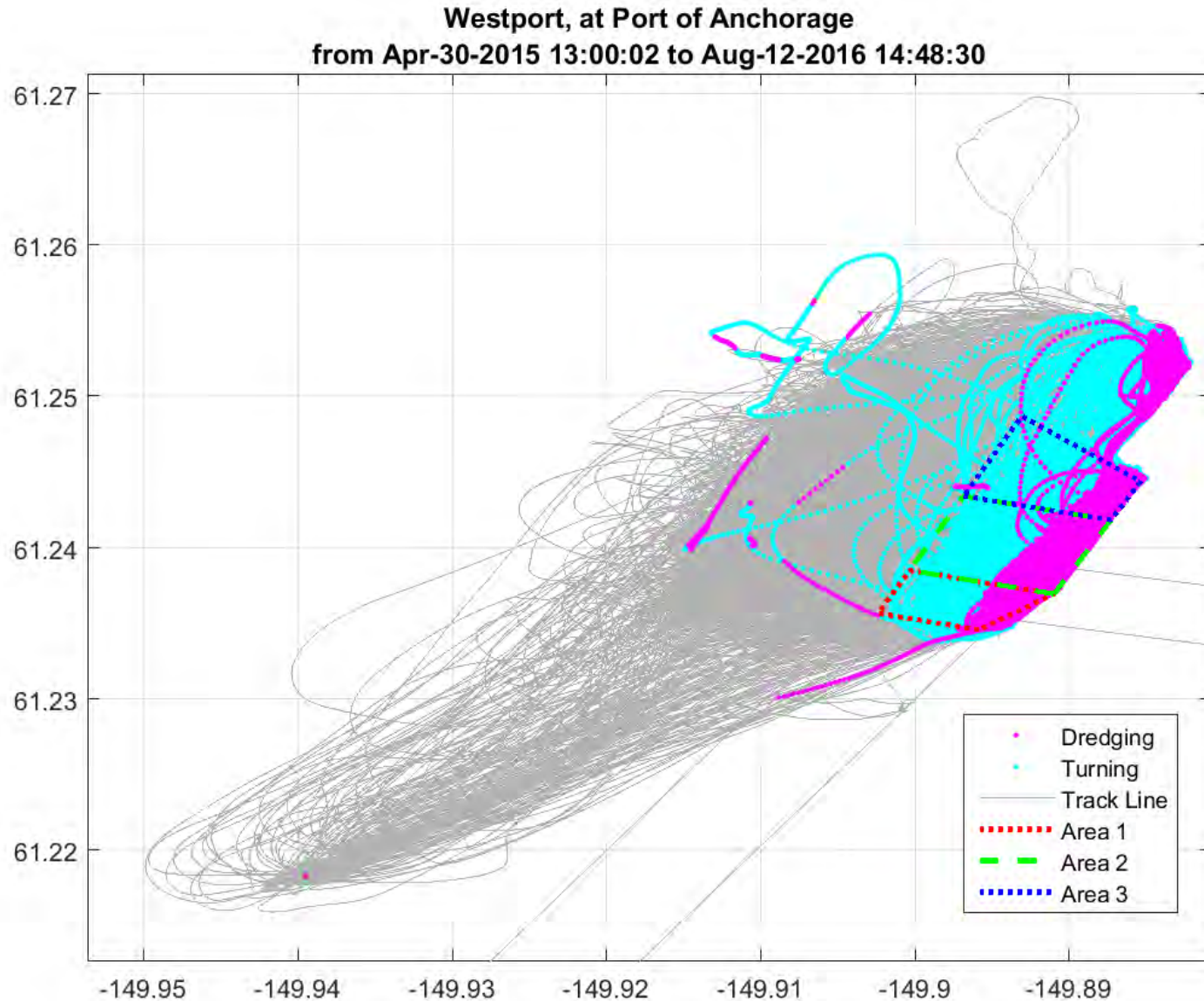
# Dredge Intensity Model



- Time spent at each location is calculated
- GPS locations are converted to UTM, and a grid is constructed
- Time per-location is accumulated within cells of a grid
- Values are normalized based on the cell size, final units are seconds per meter squared.

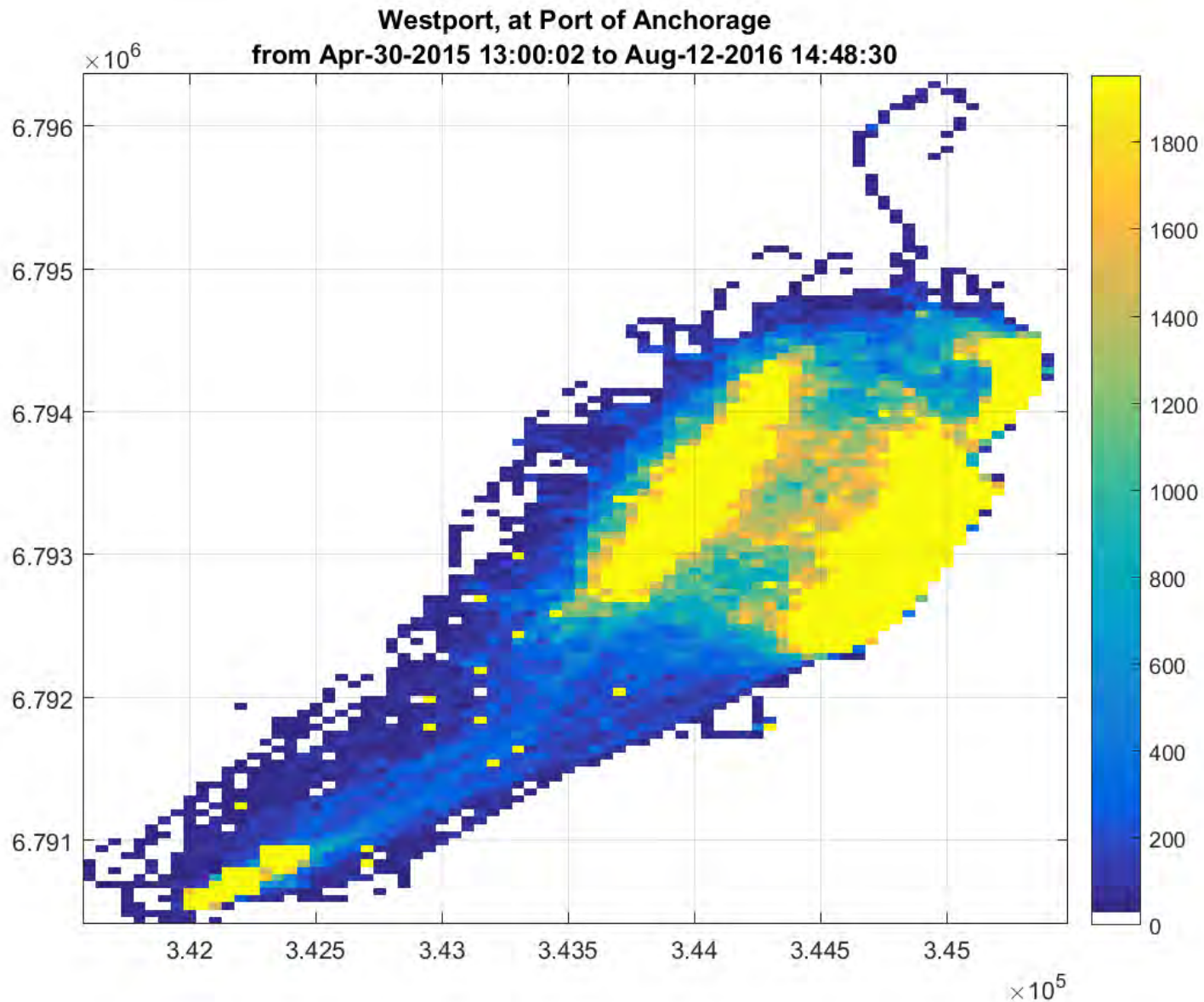


# Westport Tracks & Dredging





# Westport Heat Map

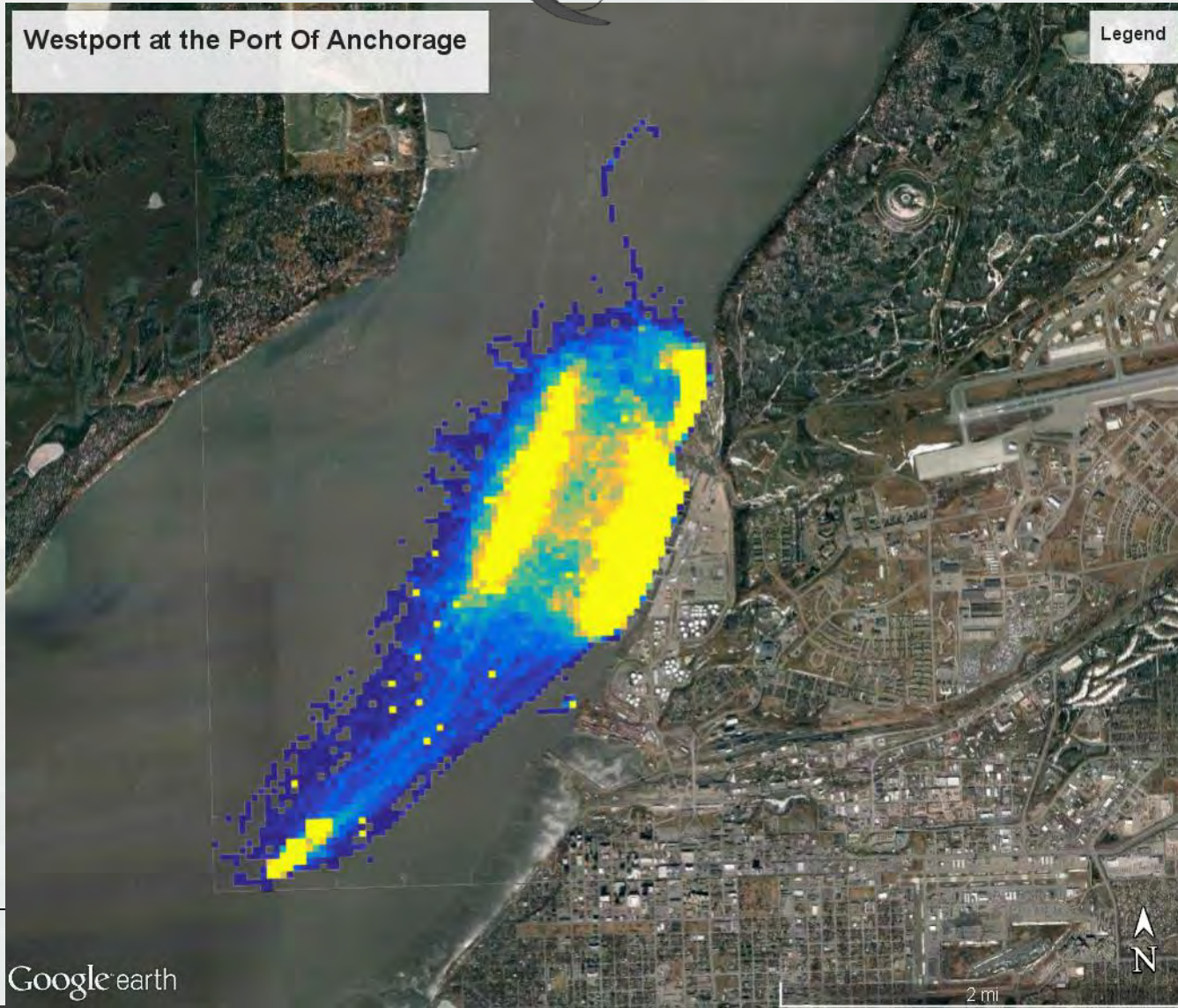


NATIONAL DREDGING QUALITY MANAGEMENT

# DQM

Westport at the Port Of Anchorage

Legend



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# Question/Comments?



NATIONAL DREDGING QUALITY MANAGEMENT  
**DQIM**



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# **THE NATIONAL DREDGING QUALITY MANAGEMENT PROGRAM**

The DQM Program is a partnership between the Corps and the dredging industry for automated monitoring of dredge activities.

Onboard sensors provide near-real-time data that allows for immediate response to emerging situations.

Districts can use the web-based DQM software to view, analyze, report on, and export dredging data.

The data can be used to improve business practice, ensure environmental compliance, and increase our understanding of dredging science and technology.

