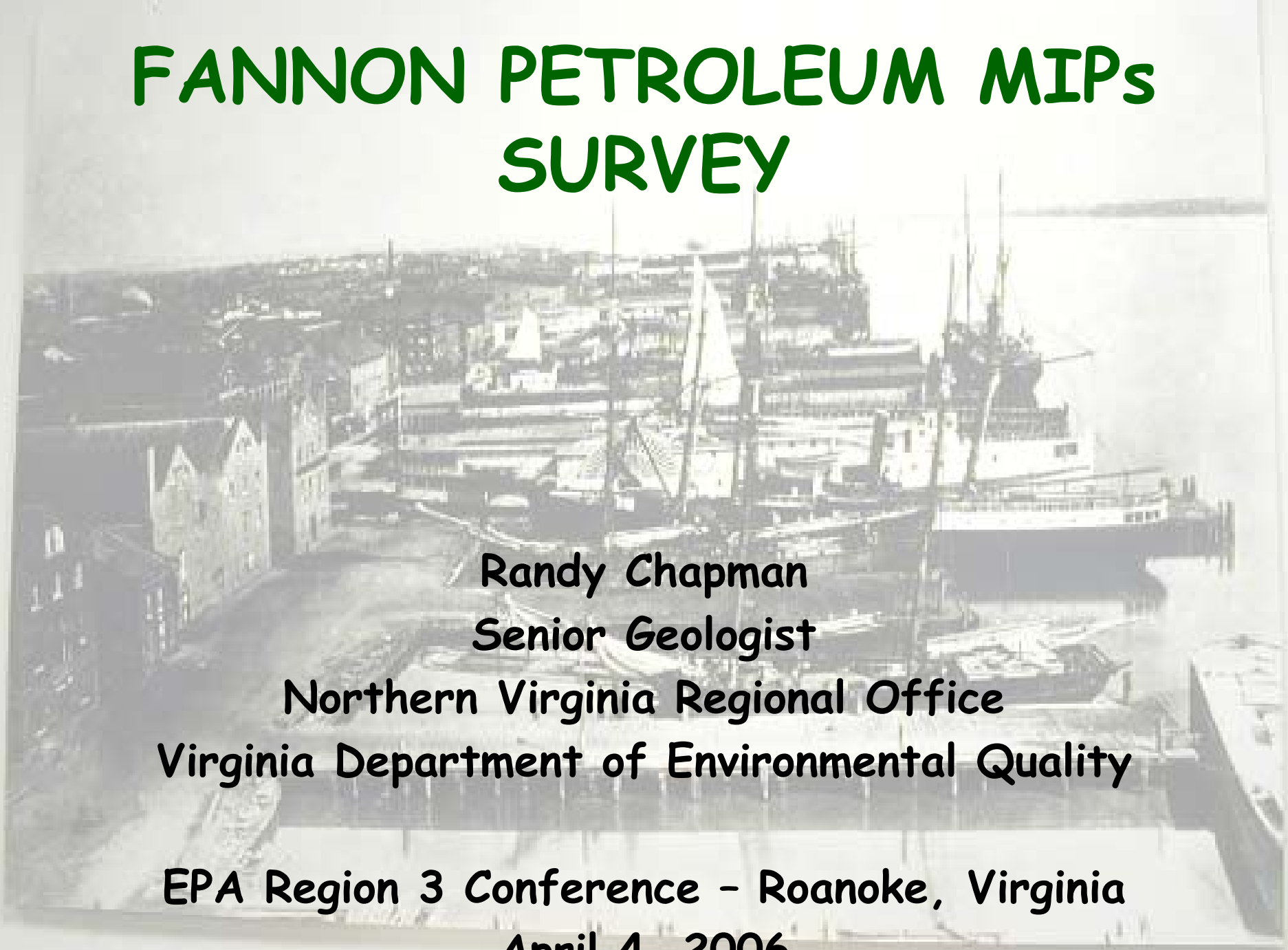
FANNON PETROLEUM MIPs SURVEY



Randy Chapman
Senior Geologist
Northern Virginia Regional Office
Virginia Department of Environmental Quality

EPA Region 3 Conference – Roanoke, Virginia
April 4, 2006

Arlington
Washington DC
FANNON PETROLEUM
Alexandria
alexandria, VA
Image © 2006 Sanborn
Google
Pointer 38°50'42.25" N 77°03'28.71" W elev 67 ft
Streaming 100%
Eye alt 44469 ft

- Fuel Depot since late 1800's
- Current facility since 1962

- ASTs and USTs
- > 500,000 gallon capacity
- Early 1980's release

THE EARLY 80's

Fannon Log

5-6-82 2 hours at Fannon with Ed C.

Inspected the property. Looked at site where petroleum was found in the street several blocks from Fannon.

Spoke with Dave Fannon. Convinced him to bring in a backhoe to dig ditch across driveway to determine if any petroleum is in the groundwater.

5-9-82 – Trench installed

5-14-82 1 hr. at Fannon with Ed. C

They had reopened the ditch in driveway. Some petroleum was observed, but not nearly the quantity seen by Ed C. & Greg B. on 5-10-82.

At this time most constructive conversation was at a standstill. Seems they were just hoping we would go away.

NDUM

State Water Control Board

Hamilton Street P. O. Box 11143 Richmond, VA. 23230

CT Fannon Oil Company - PC 82-757

PReP Central

Steve Crowther

August 11, 1982

S: File

he following is a summary of events of PC 82-757. This PReP investigation gun by Ed Carlson and later picked up by myself after Ed's resignation.

n May 6, 1982, Ed Carlson and I inspected Fannon Oil Company. In previous petroleum had been discovered in a street trench several blocks from Oil. Ed and I spoke with Mr. Dave Fannon and convinced him that some ination was necessary as to whether or not petroleum was in the groundwater property. On May 10, 1982, a trench was installed on the property of Oil and petroleum was found to be in the groundwater.

r. Fannon eventually hired a geological consultant to determine the extent contamination. On May 25, 1982, Bill Murray of Johnston and Associates, delivered to the SWCB a plan for installation of monitoring wells around operty of Fannon Oil. By June 15, 1982, construction of these wells was near completion. Samples were collected by Johnston and Associates on June 21, 1982, to be analyzed for petroleum type.

On June 30, 1982, Mr. Murray met with Ernie Watkins and myself. At this time Ernie expressed the need for actual site clean-up to begin. Mr. Murray explained that clean-up could not (should not) begin until all monitoring wells are installed and their groundwater study of the property is complete.

On July 27, 1982, I spoke with Mr. Murray. He explained that additional monitoring wells were installed on the Fannon property. One of the wells was showing as much as 40 inches of petroleum. He stated that in approximately two weeks recovery wells would begin to be installed.

E: April 30, 1982 & May 1-2, 1982 PReP

April 30, 1982:

0815 PIEDMONT REGION: Virginia Wood Preser
P82-754 sote at their 2000 Peyton Street, Rich
cleaned up by company personnel.

0915 NORTHERN REGION: Arlington Co. Fire Dept. reported a minor spill (less than 5 gal.)
P82-755 of unleaded gasoline into a tributary to Four Mile Run. Wayne Chrismore to investigate.

1150 WEST CENTRAL REGION: Received complaint that Hollingsworth and Vane Co. might be
P82-756 improperly disposing of sewage sludge. SHD notified.

1245 NORTHERN REGION: Alexandria Fire Dept. reported that a city work crew had struck
P82-757 an underground oil line near Cameron Run. Wayne Chrismore to investigate.

1420 PIEDMONT REGION: A major train derailment near the James River was reported by
P82-758 Tim Perry, PRO. Initial investigation revealed no hazardous materials were involved and no water pollution was occurring--some diesel fuel was spilled. Martha Hunter and Pete Trexler on scene Friday night.

THE EARLY 80's

per year is 15-18 million gallons. In one January 3-4 years ago he sold 4 million gallons. They've been selling fuel since 1962 at that site 1000 - 2000 gallons of fuel could easily have been lost per year. Years ago oil was only .04 a gallon and there were no environmental regulations at all. He feels they may have 50,000 gallons in all & a 2 year recovery project.

5/26/83

Don Downs advised 14,700 gallons recovered as of 5/15 5/25. No decision made on pressure testing gas tanks yet.

6/21/83 Called Dave Fannon

Advised samples collected from ground H_2O were negative for blue dye. He advised 15,950 gallons of prod

1.25 hrs spent 19 miles on pool car

5/21/84 Called Don Downs As of May 15, 23,737 gallons have been recovered. Handex well logs have been showing a steady decline of product levels.

9/12/84 26,468 gallon cumulative product recovery .6 gal per hour recovery. Elevation of R.W. higher than well Recovery rate is ... Handex to clean

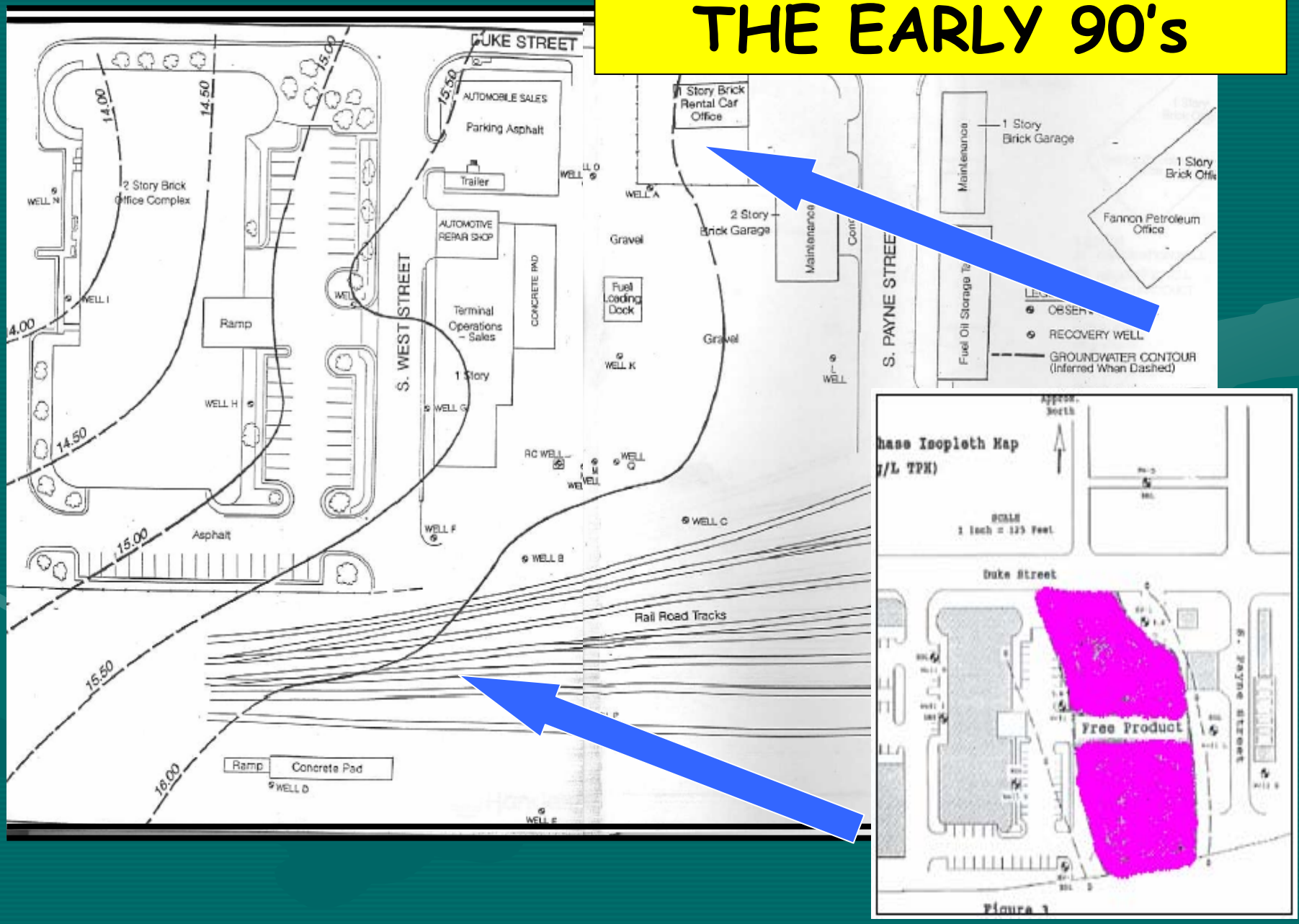
Feb 7, 1985 I talked with Don Short. He advised that they will be putting in a higher volume recovery pump to lower the cone. Recovery has declined to .3 gal hour. They are awaiting warmer weather to facilitate the exchange. I requested they let me know when it occurs so I can be there. As of Jan 15, Fannon has recovered 27,184 gallons of product.

FANNON PETROLEUM
1200 DUKE STREET
ALEXANDRIA, VIRGINIA
TANK INVENTORY

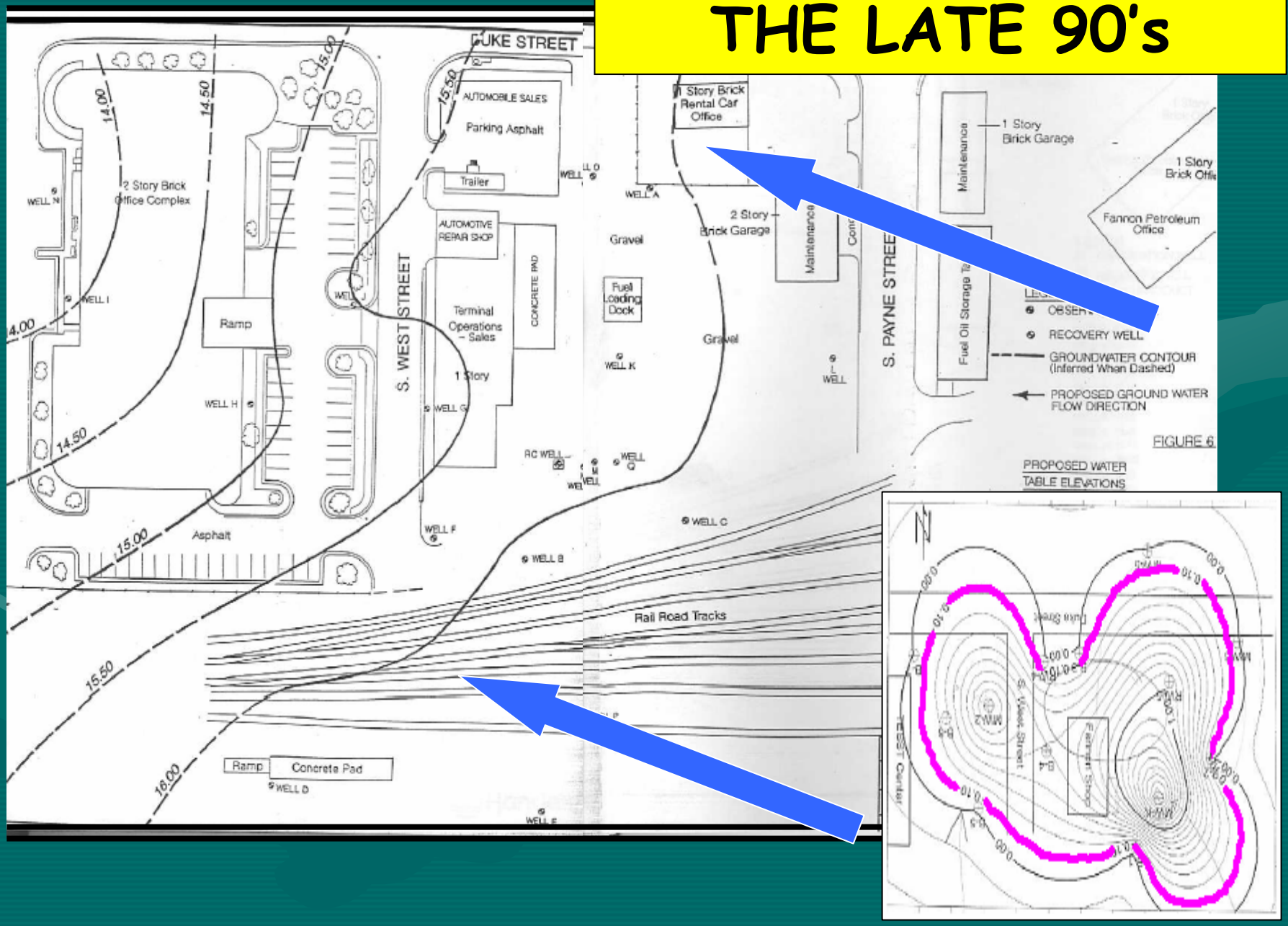
Number of Tanks	Above (AG) or Below (BG) Ground	Tank Size Gallons	Contents
7	AG	18,000	Kerosene
10	BG	30,000	Fuel Oil
6	BG	8,000	Motor Oil
1	BG	30,000	Ethanol
2	BG	30,000	Regular Unleaded Gasoline
1	BG	2,000	Kerosene
1	BG	2,000	Diesel
1	BG	10,000	Methanol
1	BG	2,000	89 Octane Unleaded Gas
1	BG	4,000	89 Octane Unleaded Gas
1	BG	4,000	Super Unleaded Gasoline
TOTAL: TANK NUMBER AND VOLUME			
32		588,000	

CAN ANYONE SAY…OSHA?

THE EARLY 90's



THE LATE 90's


DUKE STREET
AUTOMOBILE SALES
Parking Asphalt
Trailer
AUTOMOTIVE REPAIR SHOP
CONCRETE PAD
Terminal Operations - Sales
1 Story
S. WEST STREET
2 Story Brick Office Complex
Ramp
Asphalt
Ramp
Concrete Pad
Gravel
Fuel Loading Dock
Gravel
Rail Road Tracks
1 Story Brick Rental Car Office
2 Story Brick Garage
Maintenance
S. PAYNE STREET
Maintenance
1 Story Brick Garage
Fuel Oil Storage Tank
Fannon Petroleum Office
RECOVERY WELL
GROUNDWATER CONTOUR (Inferred When Dashed)
PROPOSED GROUND WATER FLOW DIRECTION
FIGURE 6
PROPOSED WATER TABLE ELEVATIONS

THE NEW MILLENIUM

- We needed a change -

THE NEEDS

- Needed to define extent and severity of plume with high confidence.
- Needed to identify all problem areas that required remediation.
- Needed to know what would be left behind.
- Needed concurrence / acceptance from affected parties (City, Owners, Citizens).
- Needed to address RISK.
- We looked to our needs for solutions

THE SOLUTION

We found it in the form of…

- Membrane Interface Probe
- TRIAD Philosophy
- Redevelopment

THE SOLUTION

- Needed to define extent and severity of plume with high confidence. MIPS
- Needed to identify all problem areas that required remediation. MIPS
- Needed to know what would be left behind MIPS
- Needed concurrence / acceptance from affected parties (City, Owners, Citizens) TRIAD
- Needed to address RISK. Redevelopment

MIP SURVEY

Columbia Technologies - SmartData Client Login - Microsoft Internet Explorer

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COLUMBIA TECHNOLOGIES

Friday, March 31, 2006

Client Login

SmartData Solutions™

News

1/23/2006

SmartData Solutions version 6.0 from COLUMBIA Technologies is now available!

This state-of-the art information processing package includes all elements needed for the fastest, most reliable maps of underground contamination that saves our clients money.

Included in *SmartData Solutions*:

fannon
Username

Password

Login

Remember my username next time I login from this computer

Resources

For the latest information on MIP technology, visit:.
SmartData University

Consult the latest white papers (pdf files).
White papers

Assistance

Customer services
We strive to provide all our customers with the best service possible. If you

COLUMBIA TECHNOLOGIES

Fax: 410-536-0222
Email: info@columbiatechnologies.com
Ned Tillman: ntillman@columbiatechnologies.com
John Sohl: jsohl@columbiatechnologies.com

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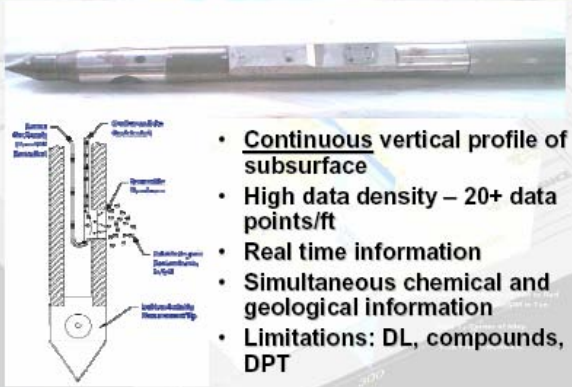
Membrane Interface Probe



- Continuous vertical profile of subsurface
- High data density – 20+ data points/ft
- Real time information
- Simultaneous chemical and geological information
- Limitations: DL, compounds, DPT

COLUMBIA TECHNOLOGIES

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Case Histories
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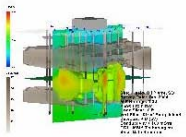
COLUMBIA TECHNOLOGIES

SmartData Solutions for the Environment®



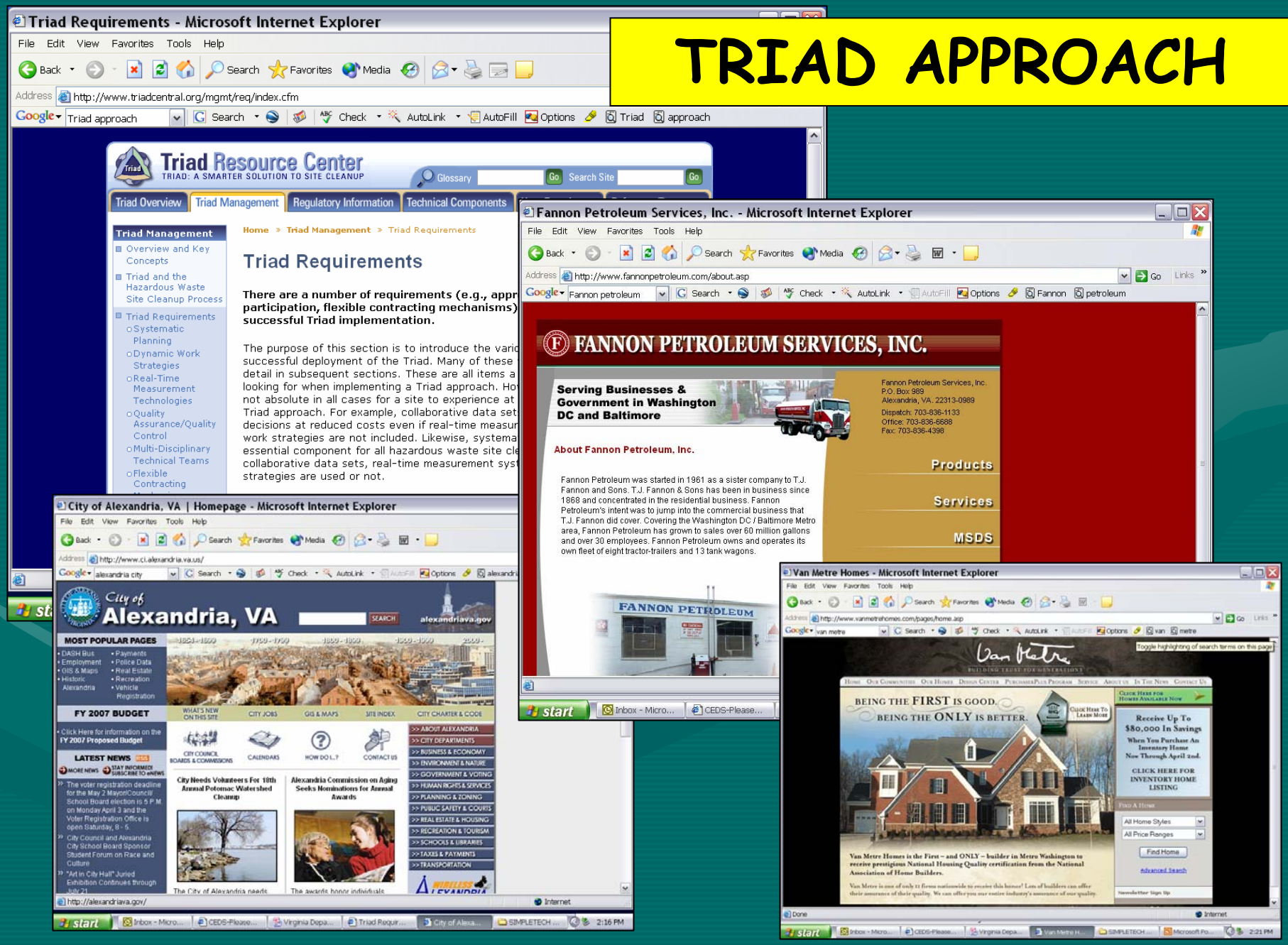
- *Real Time mapping of underground environmental contamination*
- *Easy to understand reports and 3D visualization packages*
- *Faster and better informed decisions for site management*

SmartData Solutions® by Columbia Technologies delivers high quality 3D maps of underground contamination to your computer daily while in the field permitting the environmental professional to make better, cost-effective decisions quickly and easily.

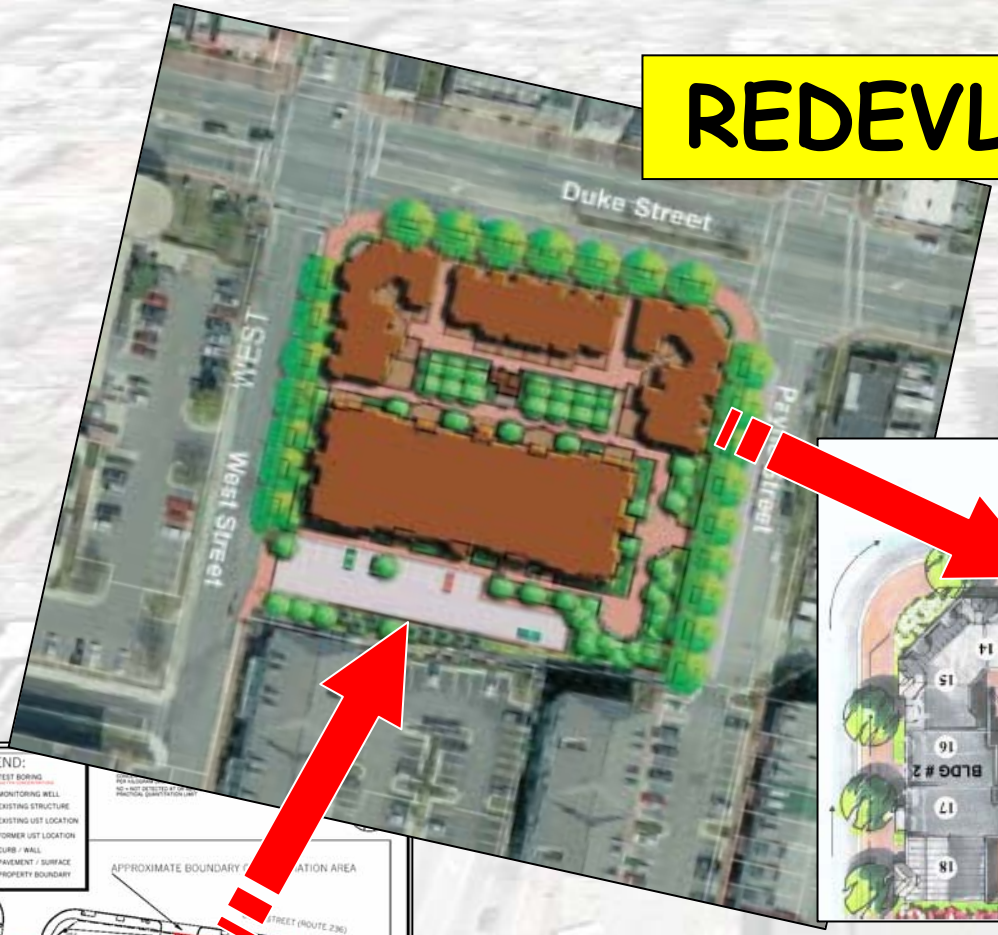
SmartData Solutions® from Columbia Technologies is like an "underground MRI" and offers environmental consultants and property owners several benefits not possible with other technologies:

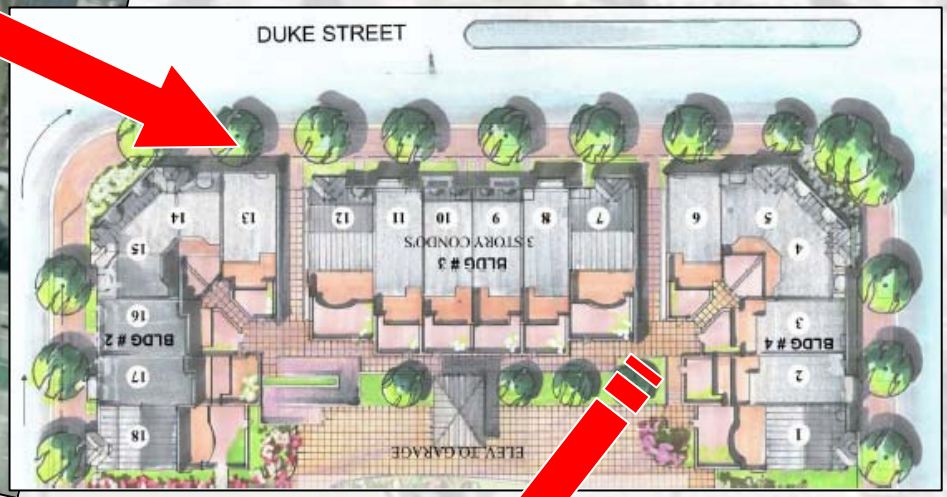
- Faster and better-informed decisions about site characterization, risk assessment and cleanup design as data results are provided in hours, not weeks later.
- Lowers the costs dramatically for property transfers, site cleanup, and insurance underwriting

TRIAD APPROACH



REDEVLOPMENT PLANS



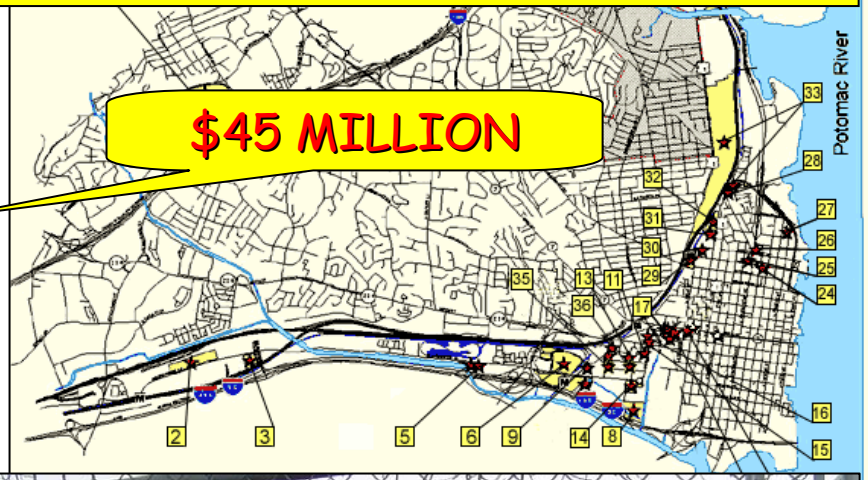


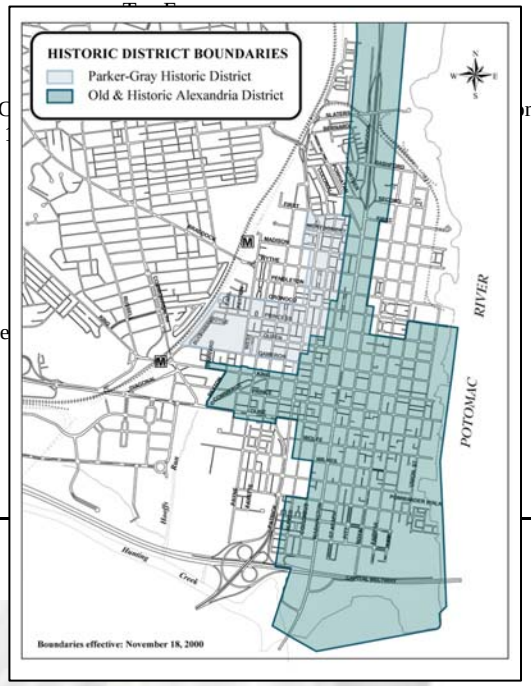
FRUSTRATION SLIDE

REDEVLOPMENT PLANS

VAN METRE COMPANIES
FANNON PROPERTY - DUKE STREET
ALEXANDRIA, VIRGINIA
20 YEAR ECONOMIC BENEFIT ANALYSIS
February 2005

Multi-family Units	60
Retail Square Feet	0
Parking Spaces	140
Real Estate Valuation Upon Completion	**$45,000,000**
City of Alexandria Economic Benefits	
Year 1	
Property Taxes	$447,750
Affordable Contribution	$84,888
Tap Fees	$60,000
Total	**$1,182,750**
20 Year Total	
Property Taxes	$14,805,281
Affordable Contribution	$84,888
	$60,000
	$14,950,168
Sum of C	omic Benefits
Year	
	$447,750
	$1,350,000
	$0
	$84,888
	$60,000
	$1,942,638
20 Ye	
	$14,805,281
	$10,007,808
	$0
	$84,888
	$60,000
	$24,957,976





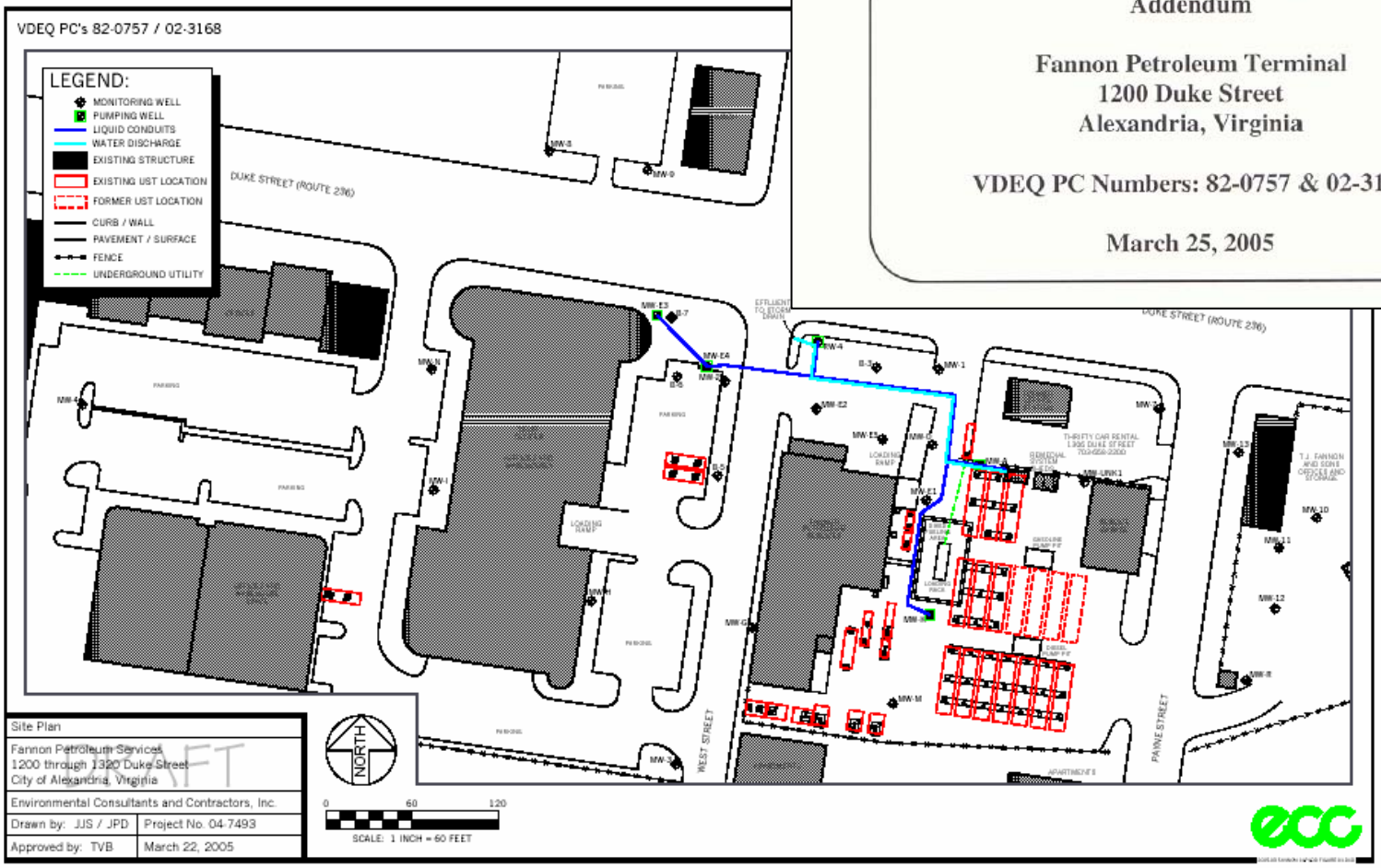
THE PROCESS

Corrective Action Plan
Addendum

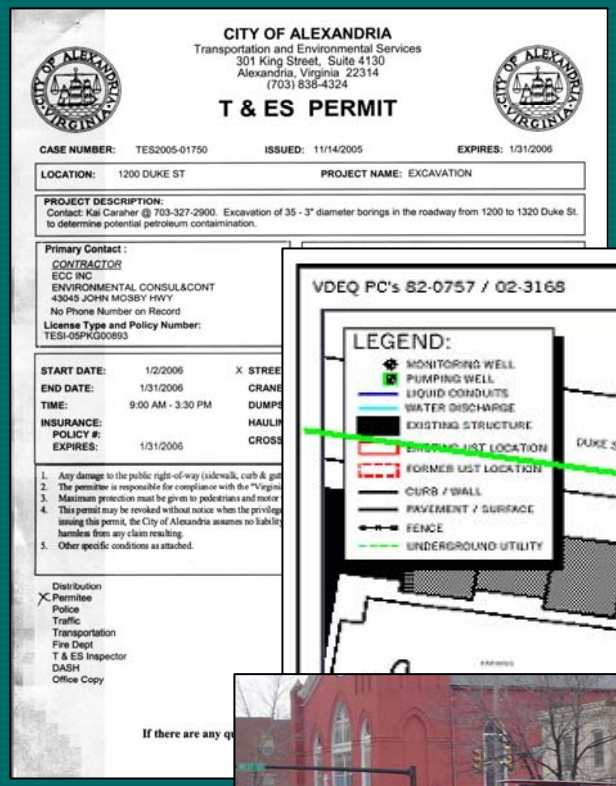
Fannon Petroleum Terminal
1200 Duke Street
Alexandria, Virginia

VDEQ PC Numbers: 82-0757 & 02-3168

March 25, 2005



THE PROCESS



CITY OF ALEXANDRIA
Transportation and Environmental Services
301 King Street, Suite 4130
Alexandria, Virginia 22314
(703) 838-4324

T & ES PERMIT

CASE NUMBER: TES2005-01750 ISSUED: 11/14/2005 EXPIRES: 1/31/2006

LOCATION: 1200 DUKE ST PROJECT NAME: EXCAVATION

PROJECT DESCRIPTION:
Contact: Kai Caraher @ 703-327-2900. Excavation of 35 - 3" diameter borings in the roadway from 1200 to 1320 Duke St. to determine potential petroleum contaimination.

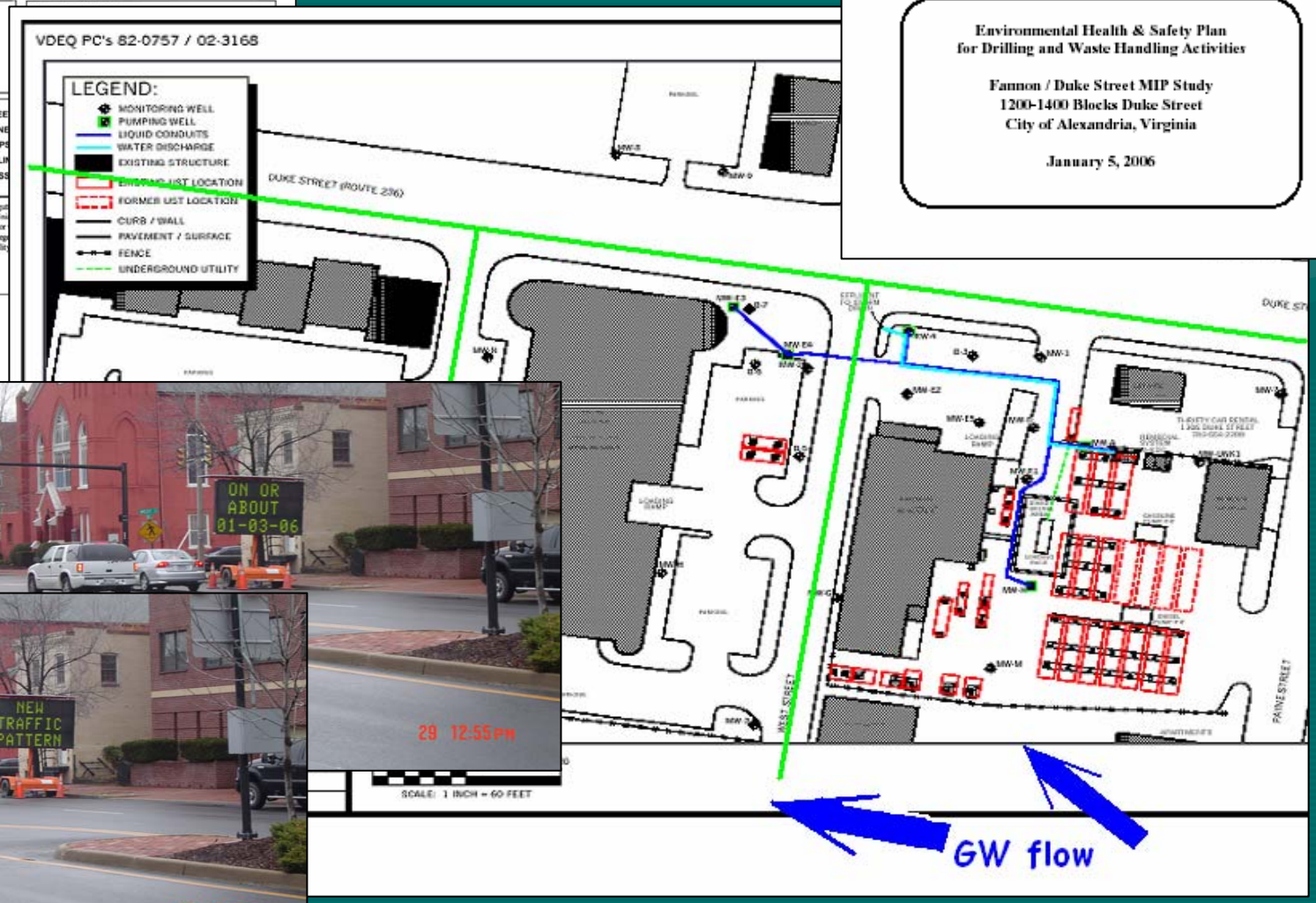
Primary Contact :
CONTRACTOR
ECC INC
ENVIRONMENTAL CONSUL&CONT
43045 JOHN MOSBY HWY
No Phone Number on Record
License Type and Policy Number:
TESI-05PKG00893

START DATE: 1/2/2006
END DATE: 1/31/2006
TIME: 9:00 AM - 3:30 PM
INSURANCE:
POLICY #:
EXPIRES: 1/31/2006

1. Any damage to the public right-of-way (sidewalk, curb & gut
2. The permittee is responsible for compliance with the "Virgini
3. Maximum protection must be given to pedestrians and motor
4. This permit may be revoked without notice when the privileg issuing this permit, the City of Alexandria assumes no liability harmless from any claim resulting.
5. Other specific conditions as attached.

Distribution
X Permitee
Police
Traffic
Transportation
Fire Dept
T & ES Inspector
DASH
Office Copy

If there are any qu

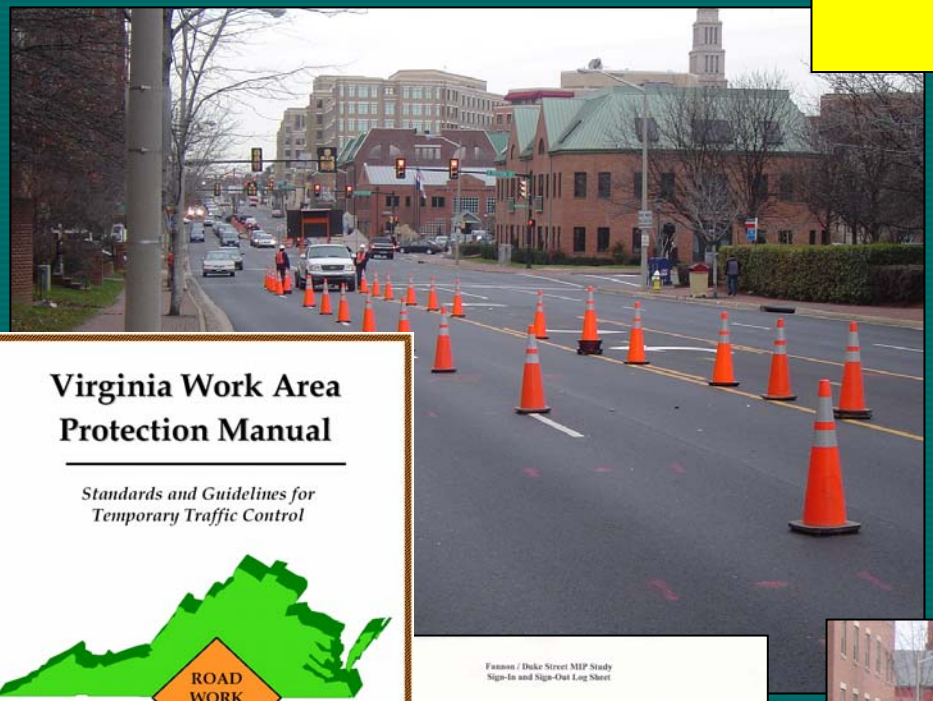


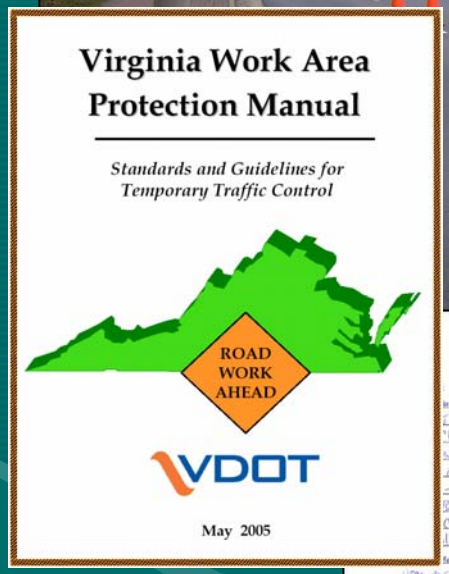
Environmental Health & Safety Plan
for Drilling and Waste Handling Activities

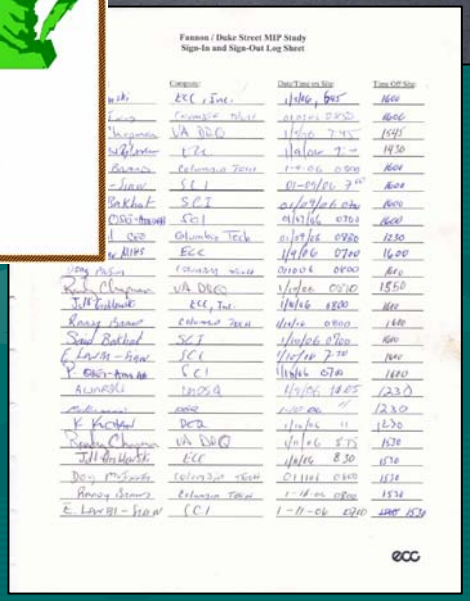
Fannon / Duke Street MIP Study
1200-1400 Blocks Duke Street
City of Alexandria, Virginia

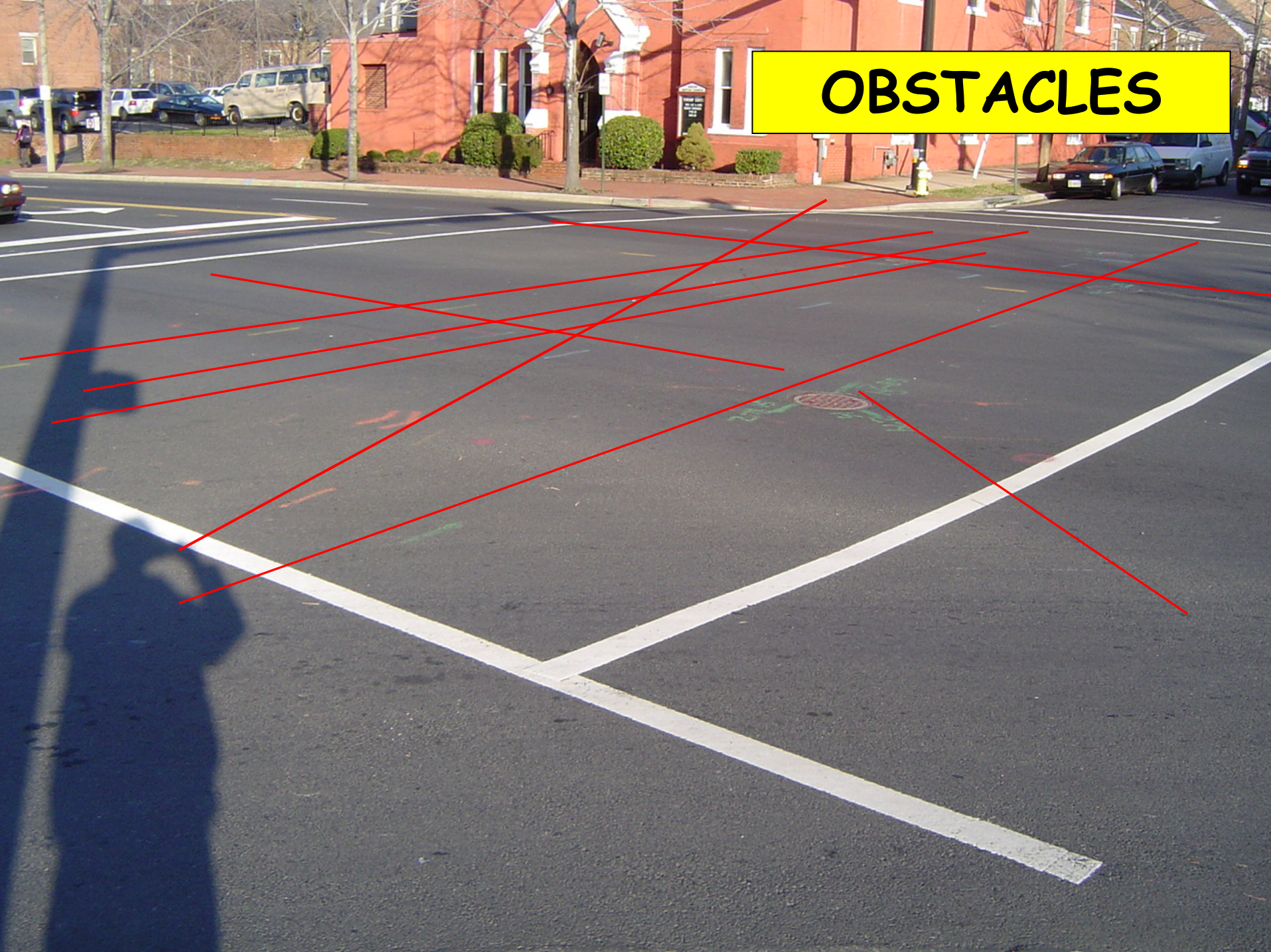
January 5, 2006

THE MIP SURVEY





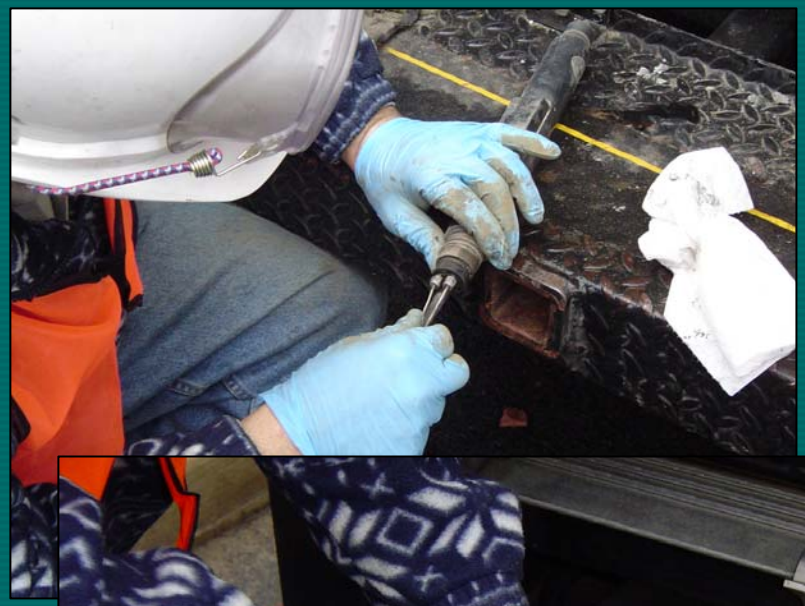



OBSTACLES

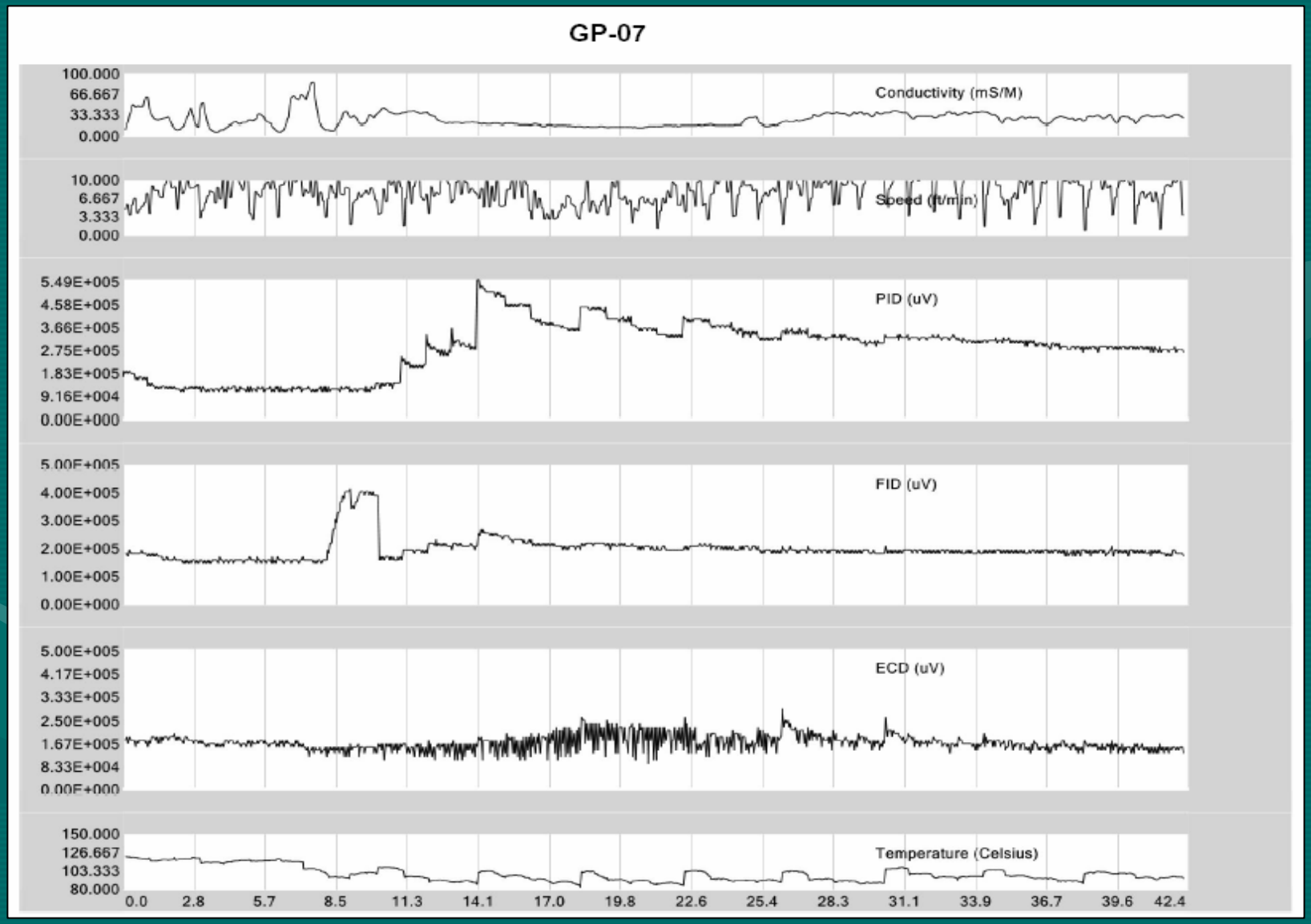
THE MIP SURVEY

THE MIP SURVEY

THE MIP SURVEY



THE MIP RESULTS



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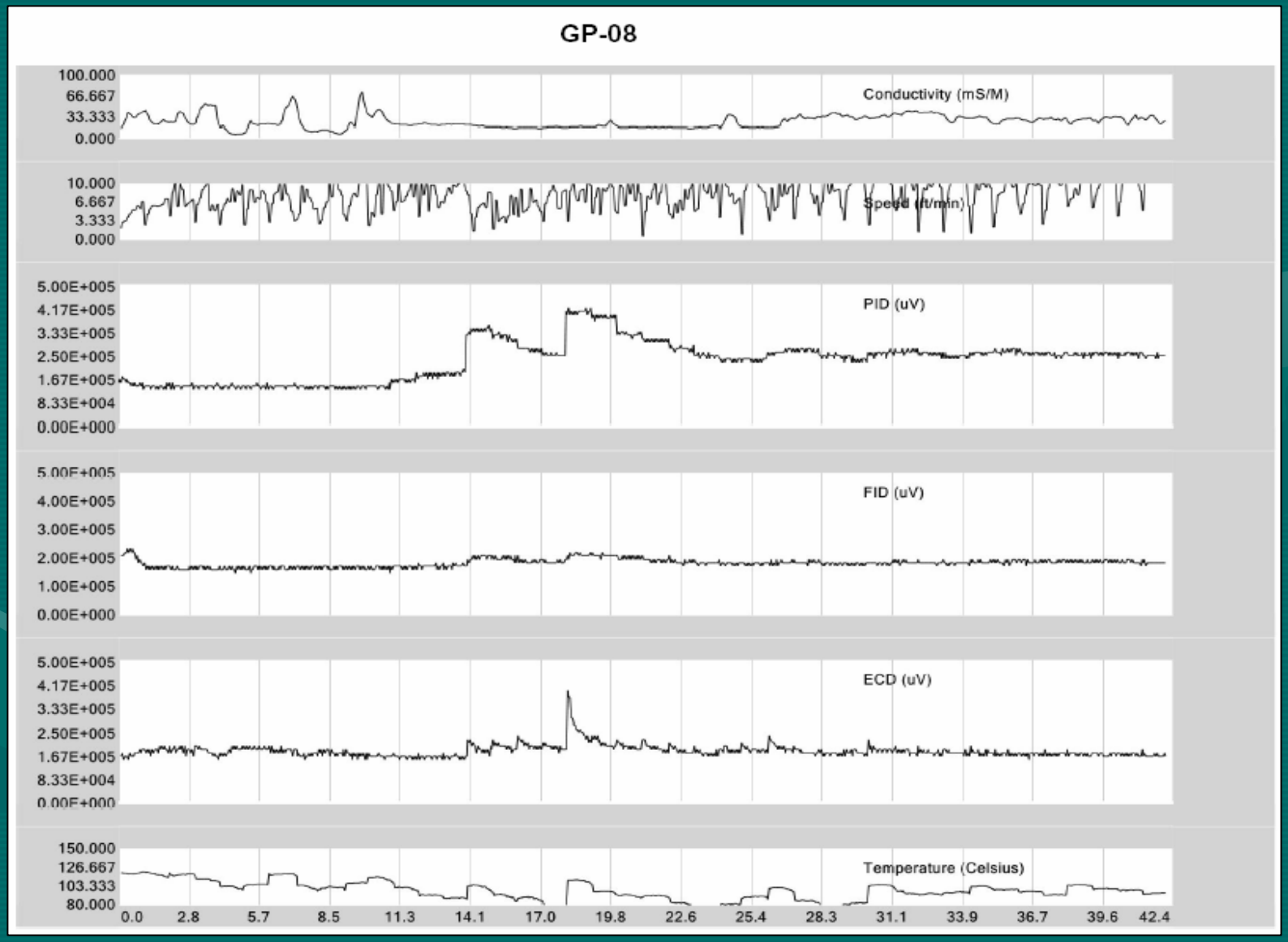

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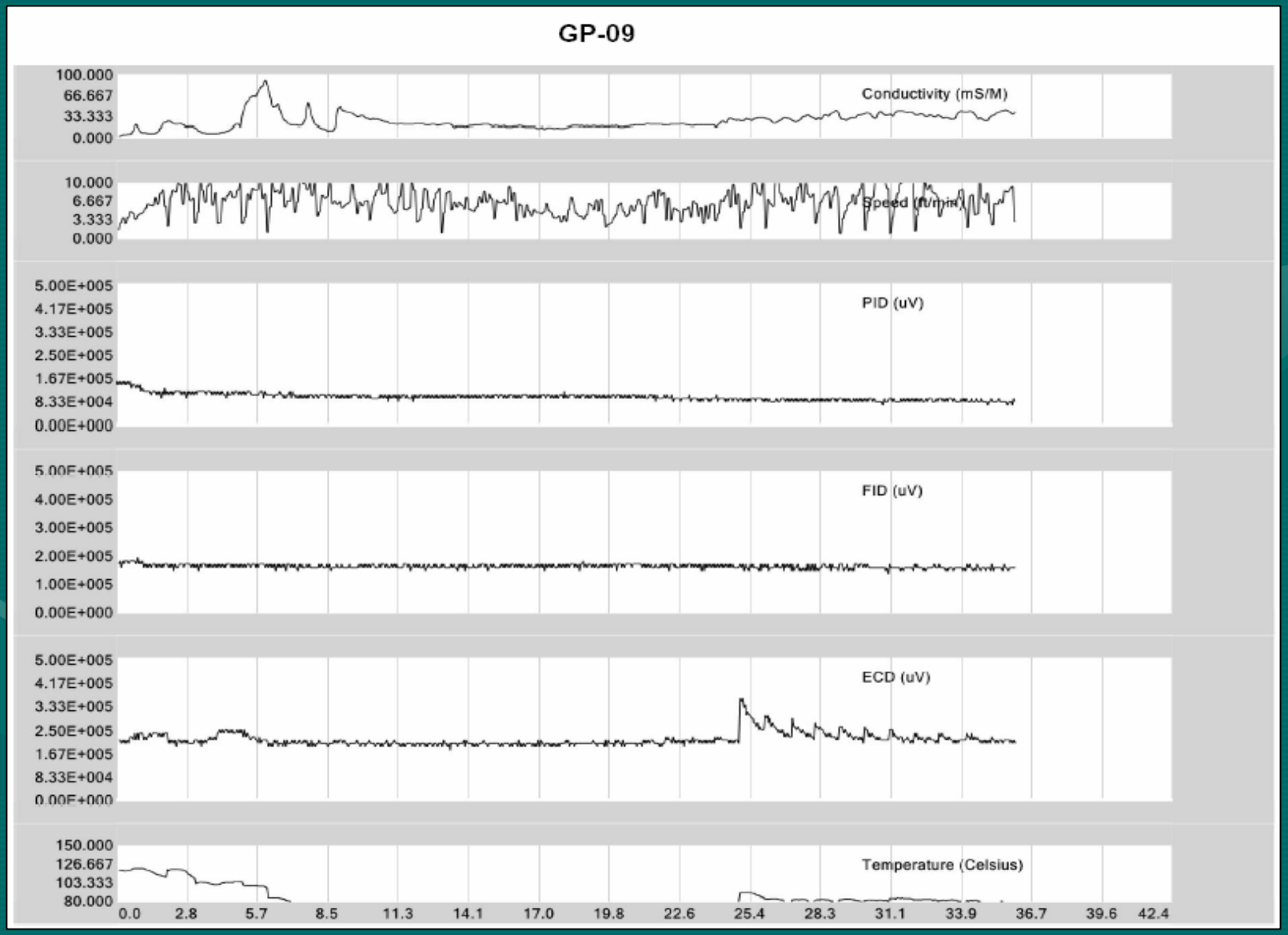

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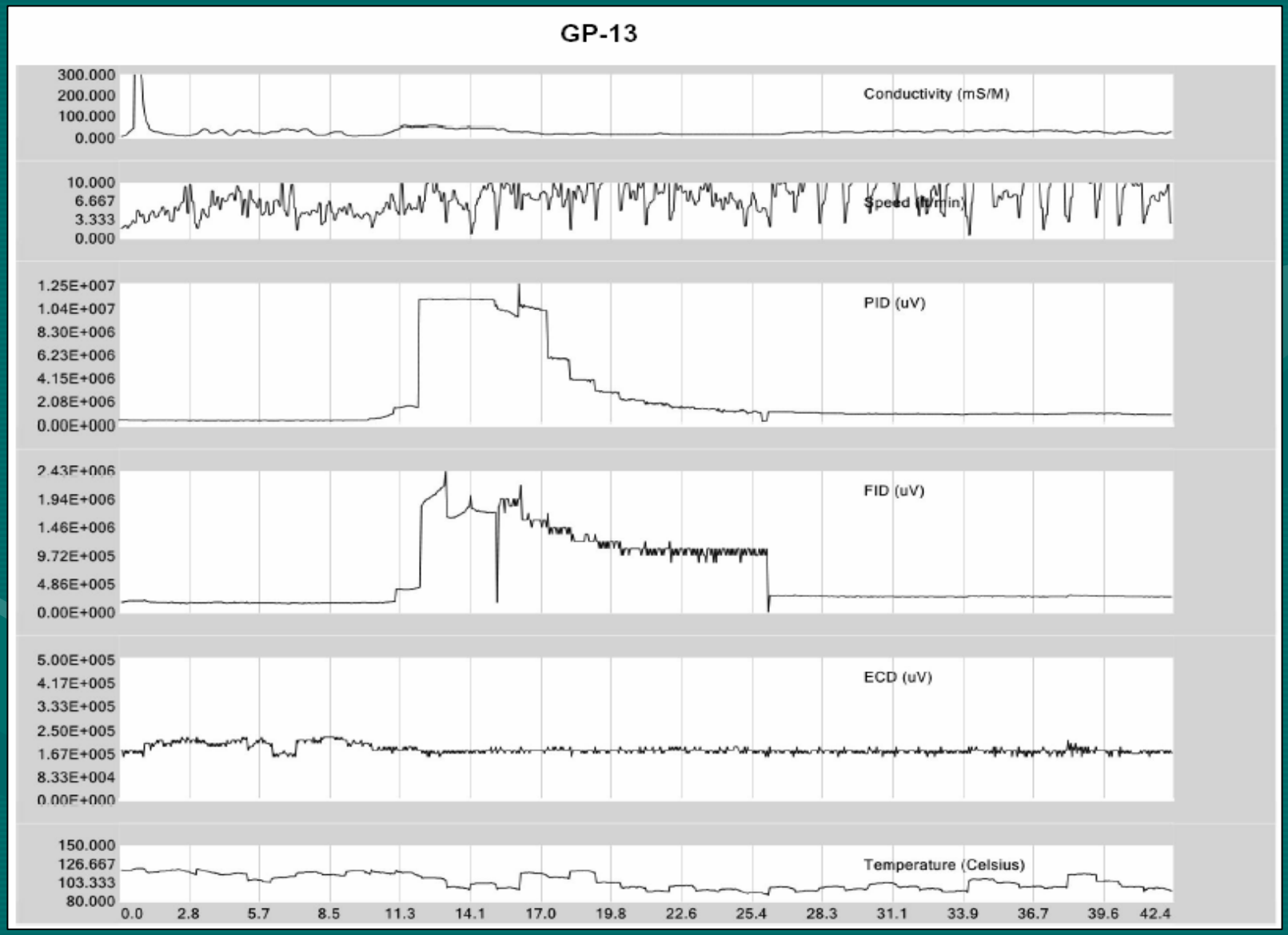
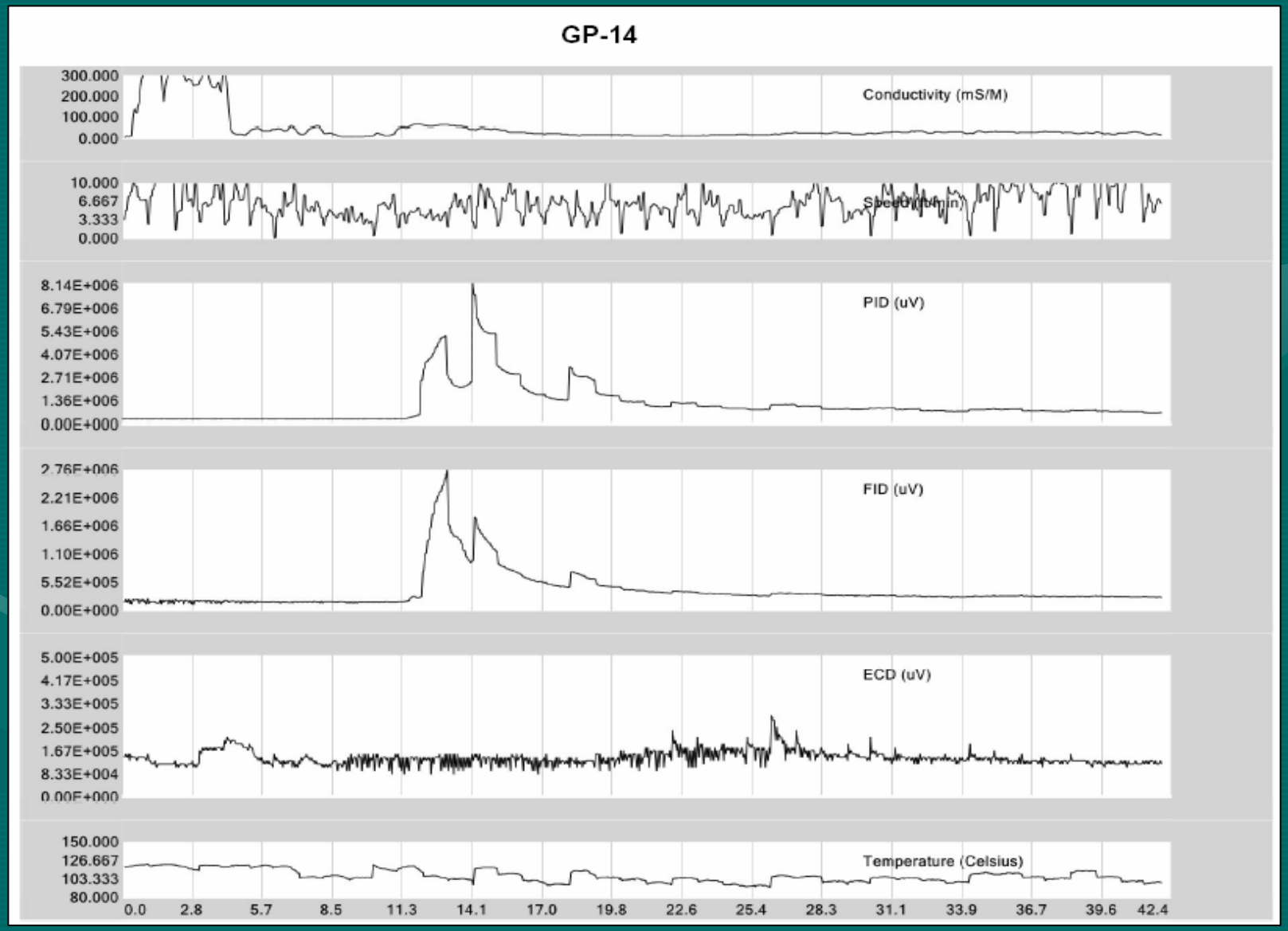


THE MIP RESULTS



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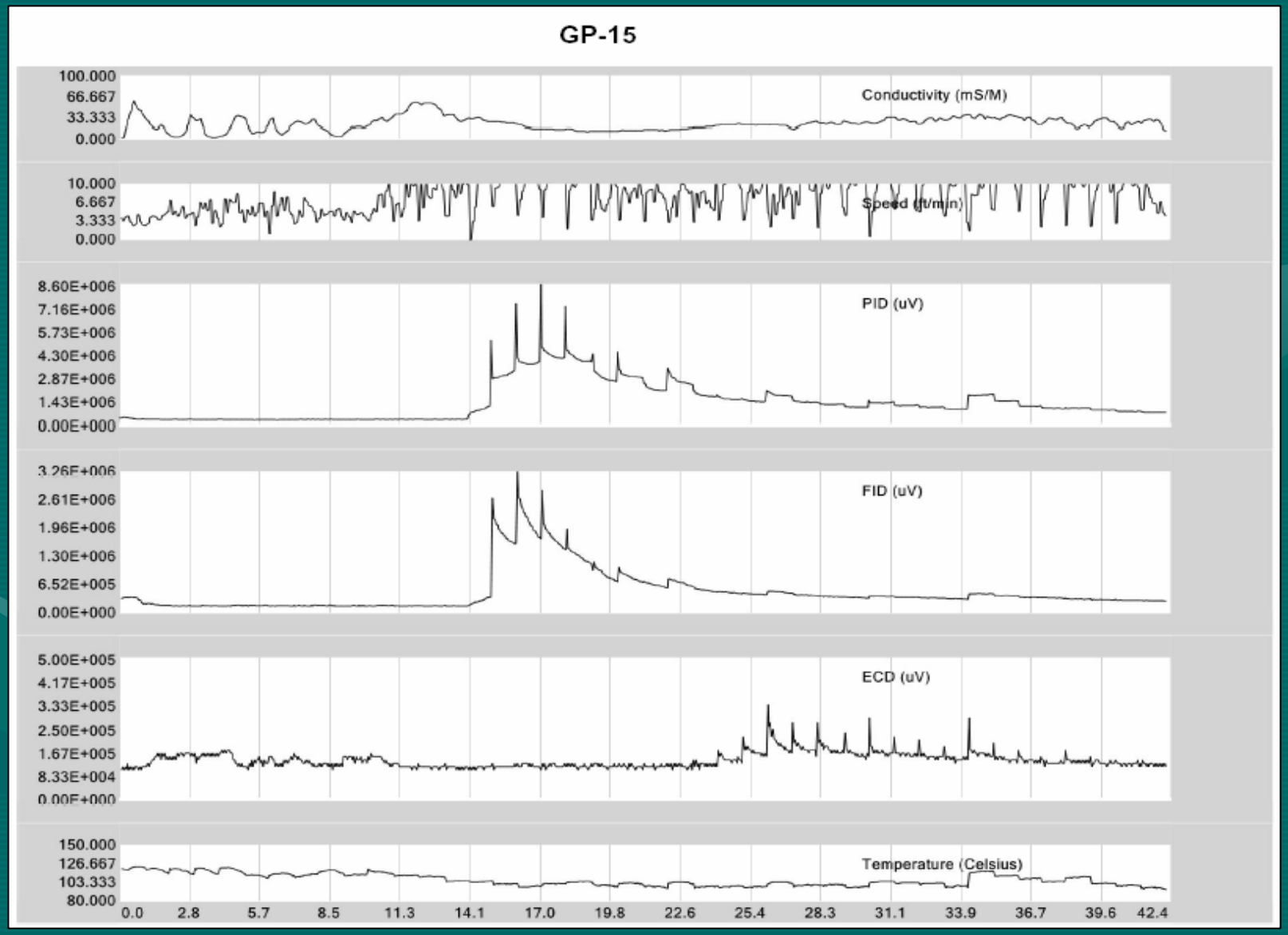
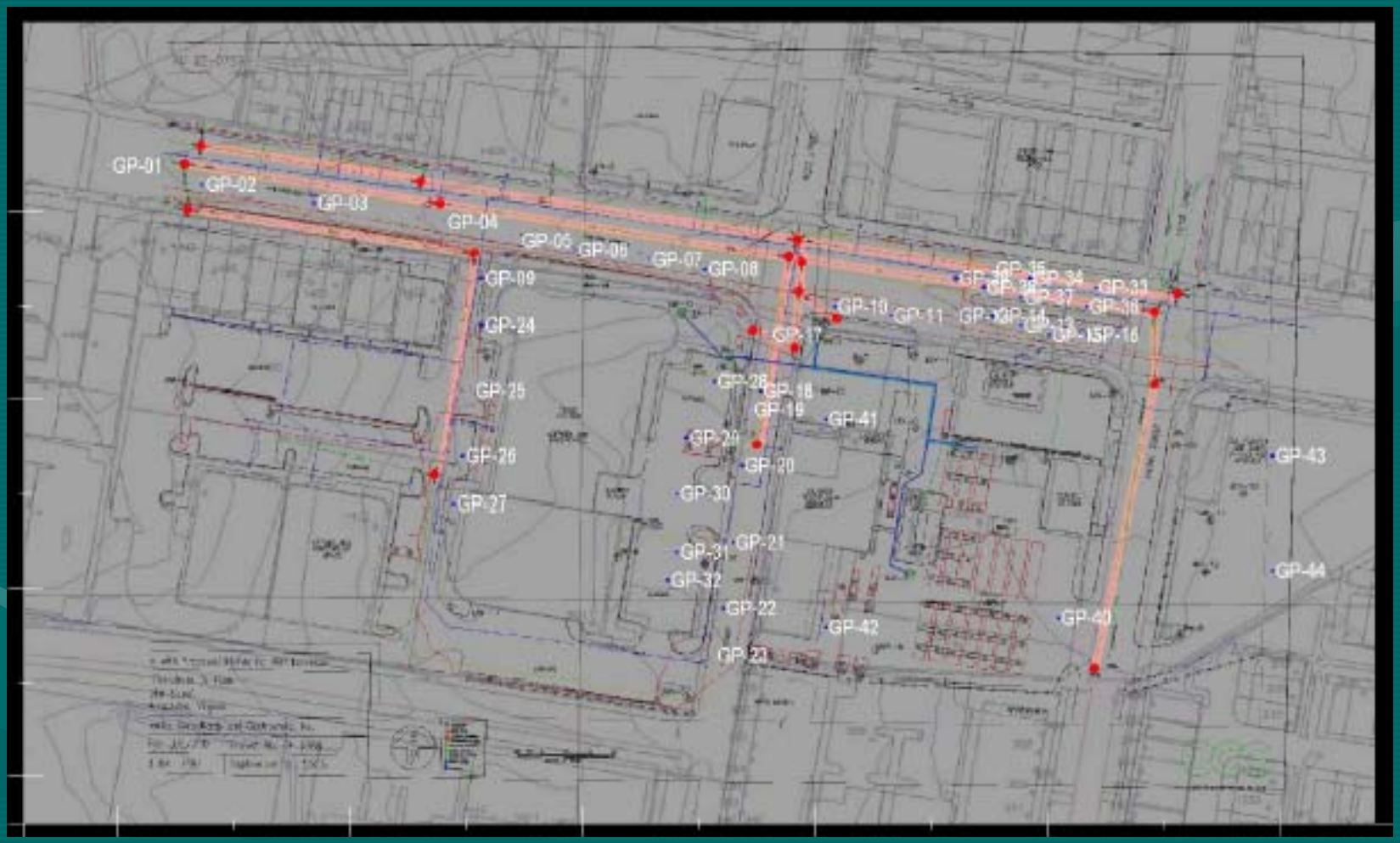
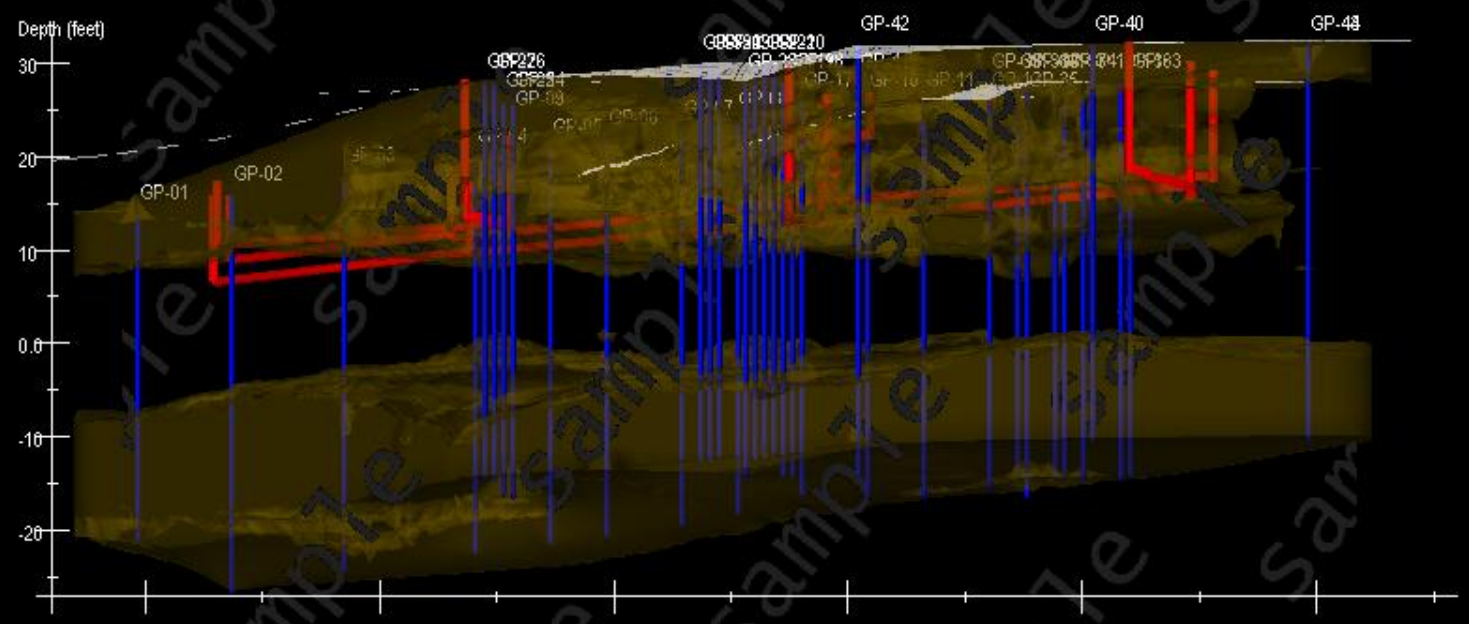


UTILITIES & MIPs



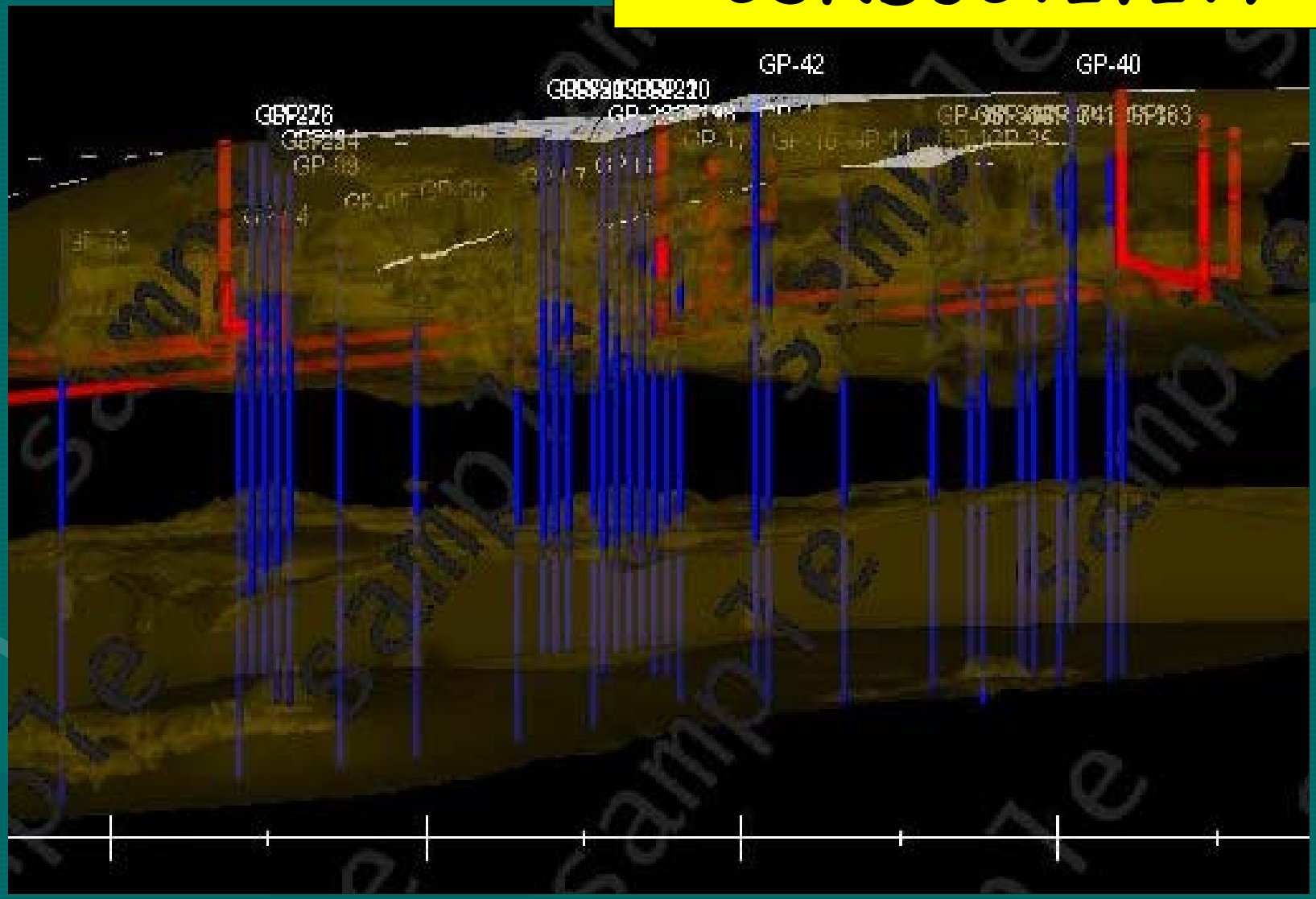
Plot of Conductivity > 20 mS/M
Relative Azimuth = 180°, Elevation = 0°
Marc

CONDUCTIVITY

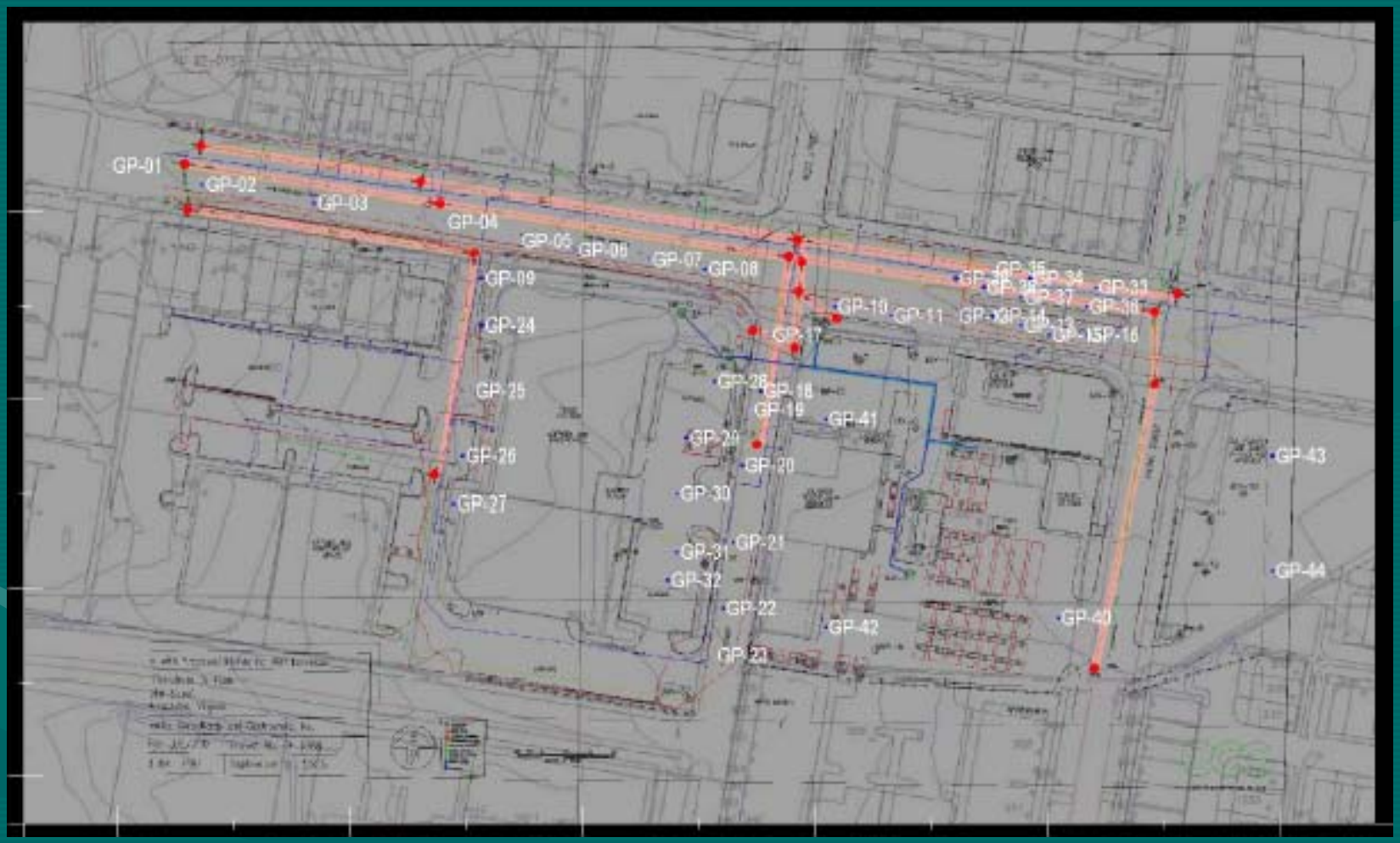


Fannon Petroleum Site
1200 Duke Street
Alexandria, Virginia
MIP Survey
SmartData Solutions®

CONDUCTIVITY

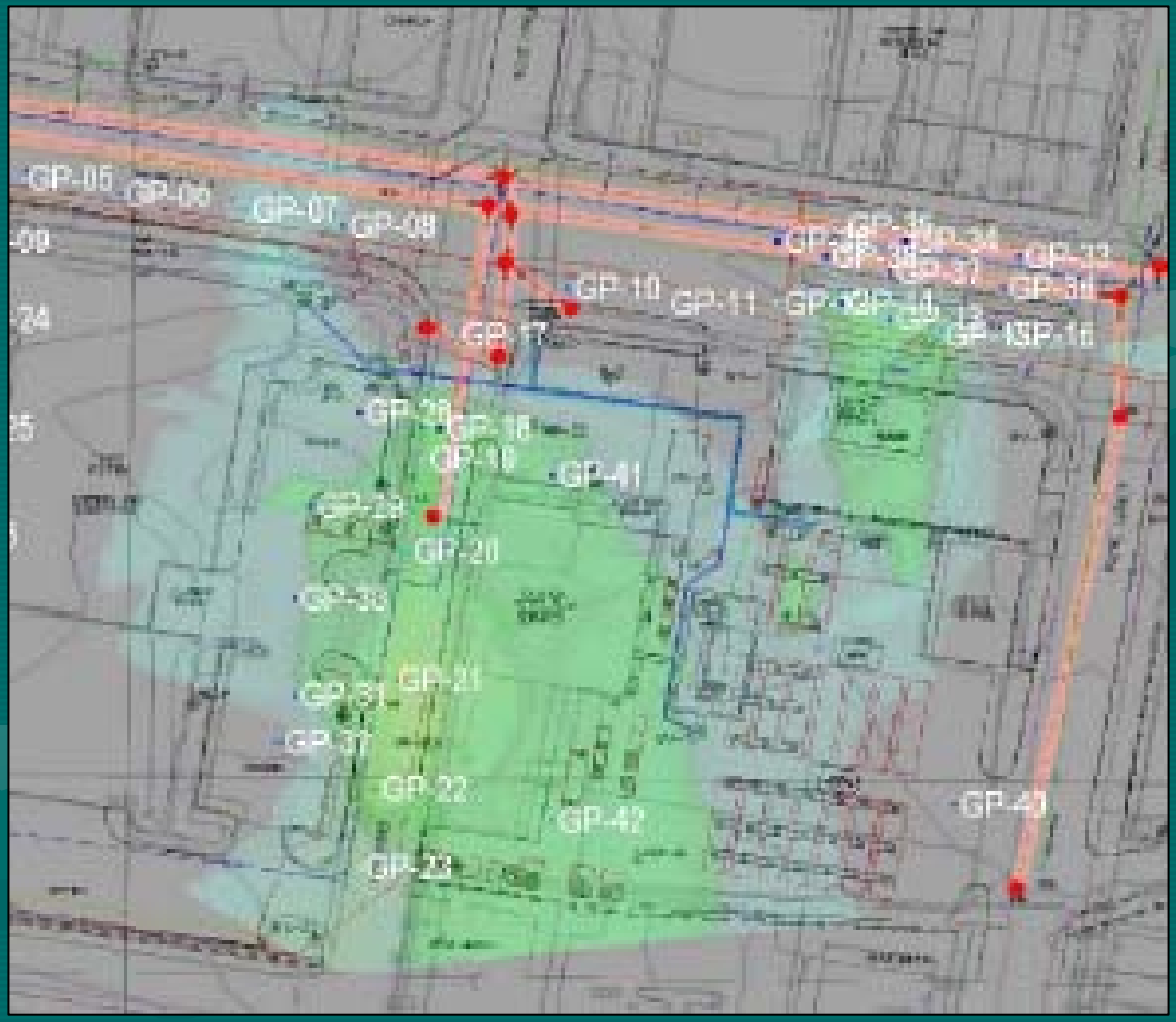


UTILITIES & MIPs

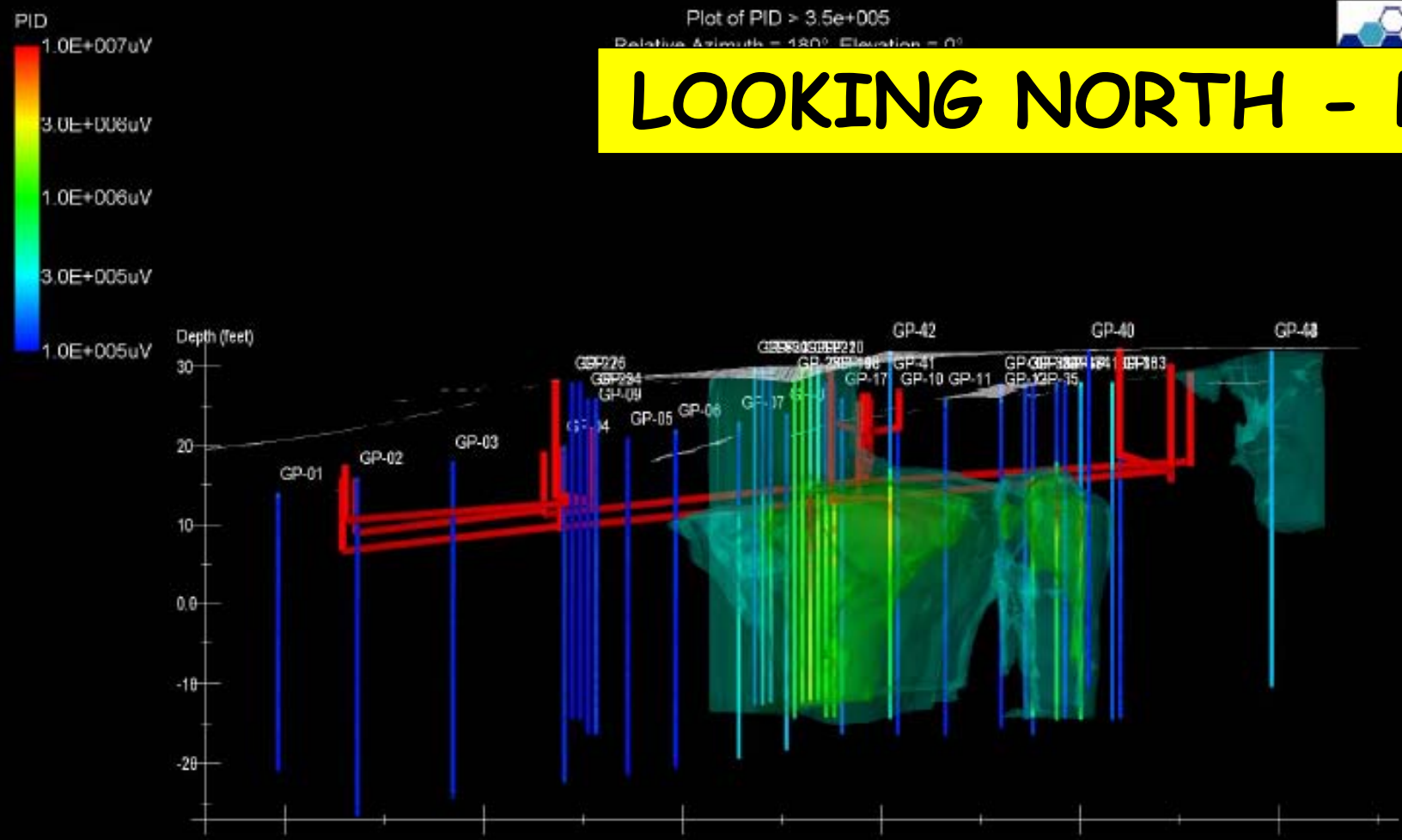


MIP RESULTS - PID

MIP RESULTS - PID

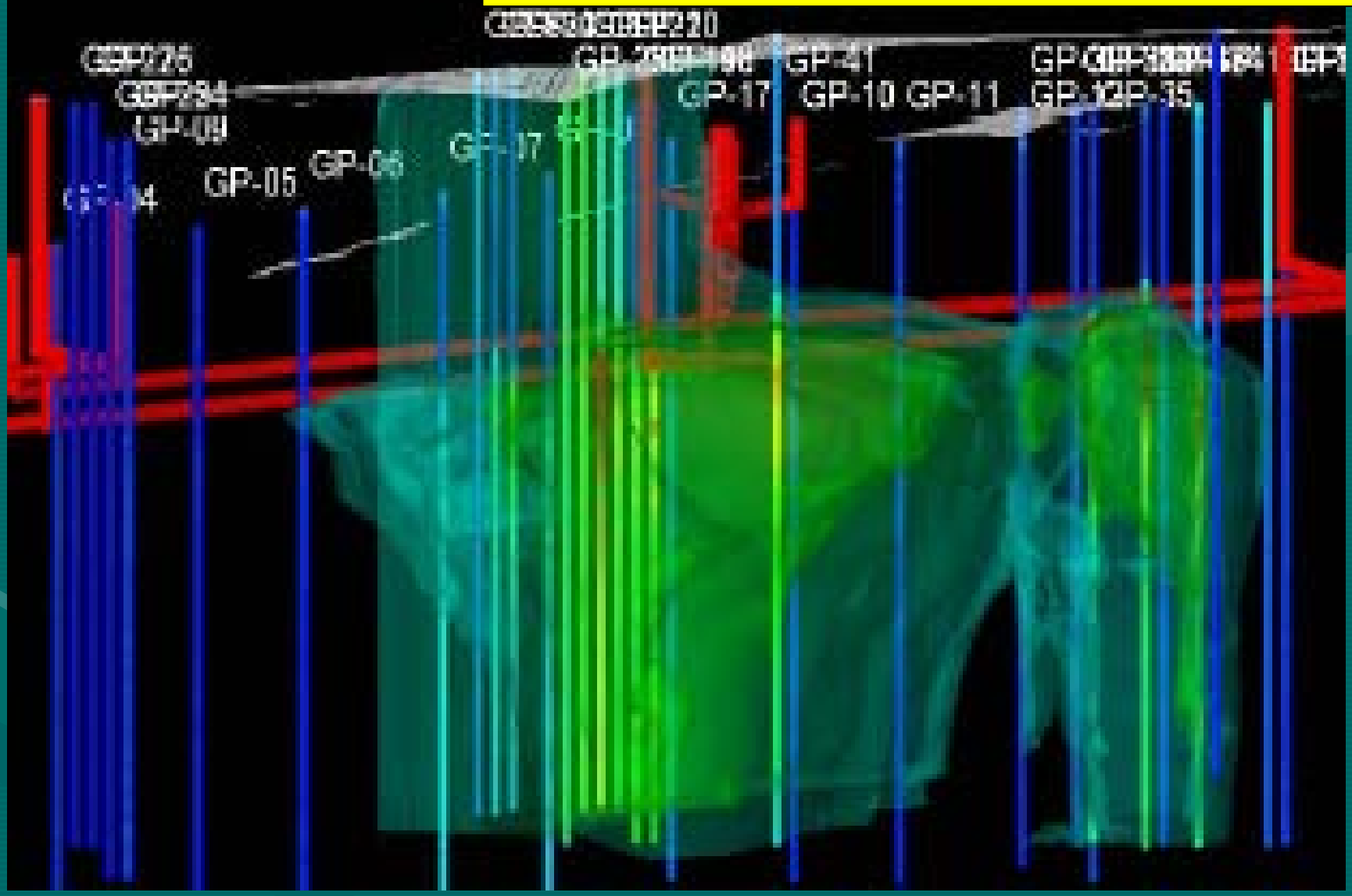


LOOKING NORTH - PID

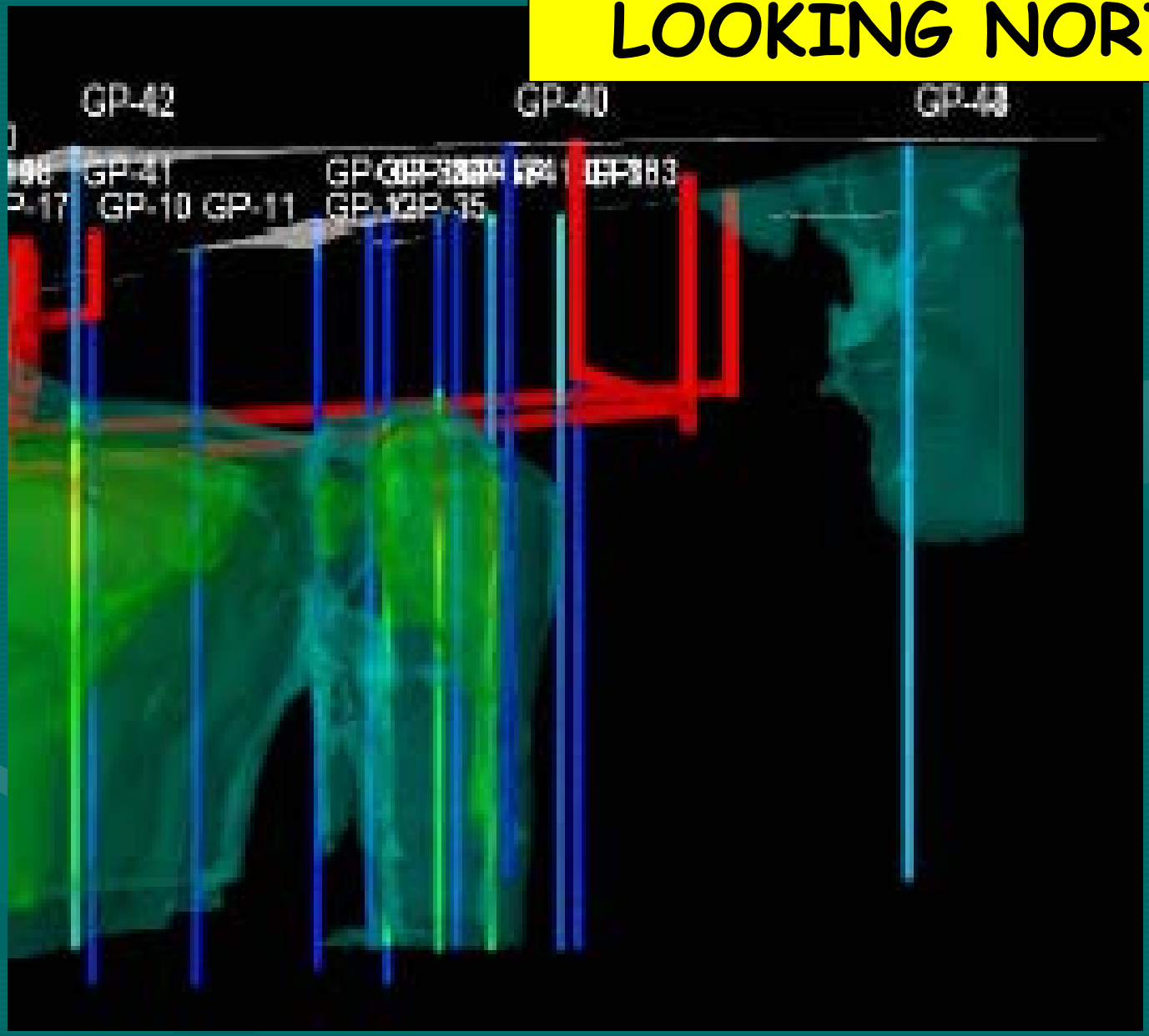


Fannon Petroleum Site
1200 Duke Street
Alexandria, Virginia
MIP Survey
SmartData Solutions®

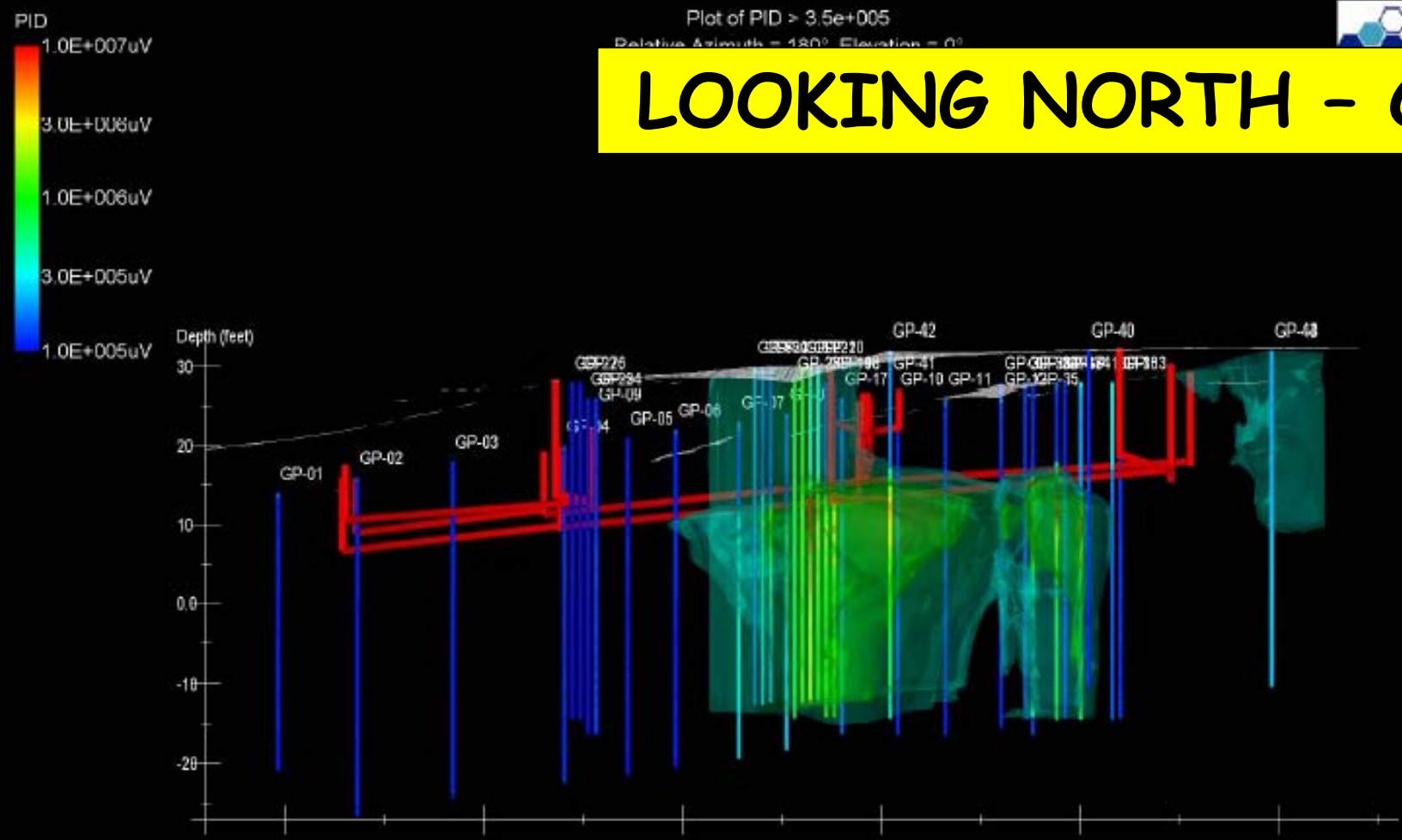
LOOKING NORTH - PID



LOOKING NORTH



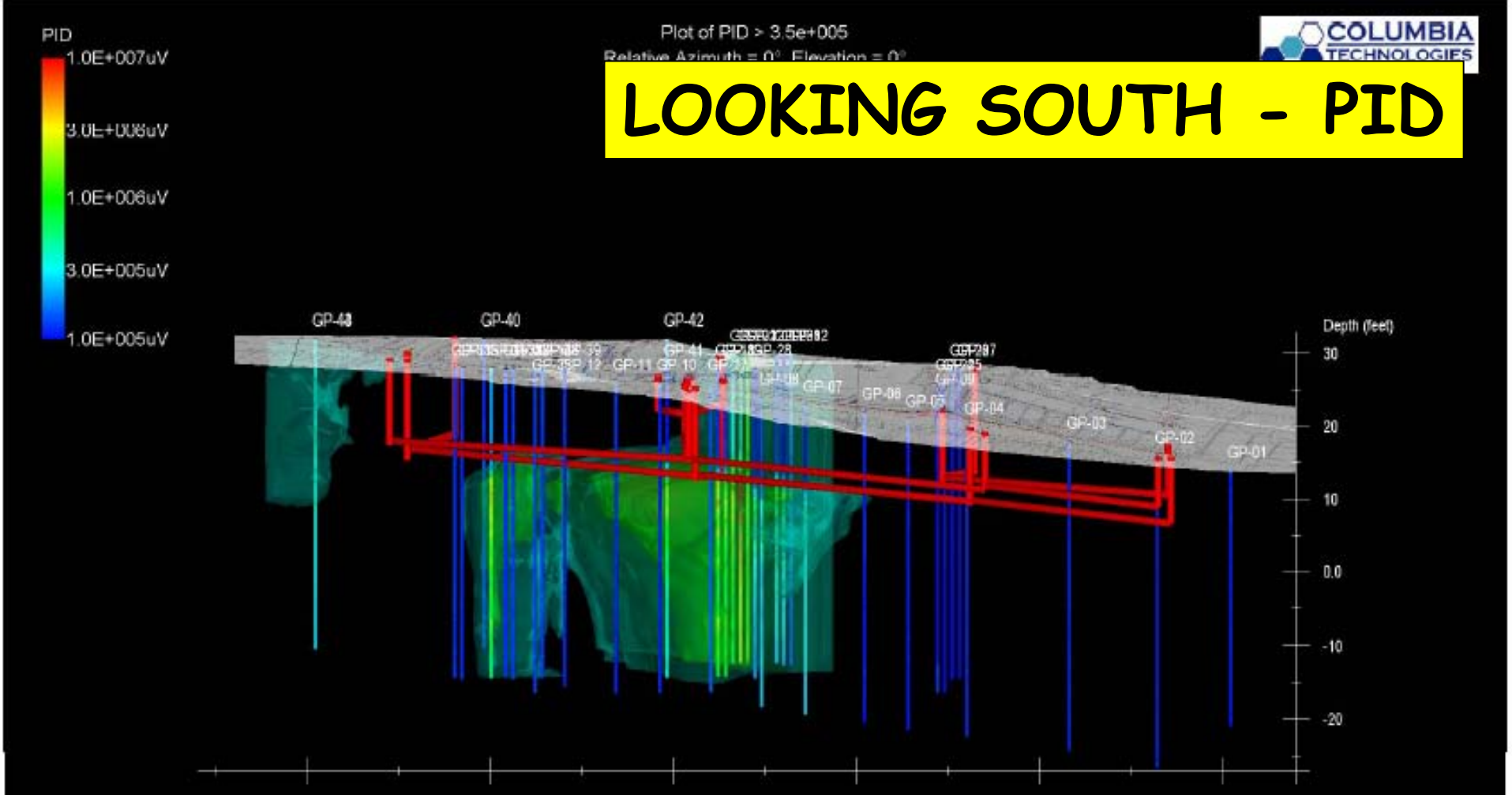
LOOKING NORTH - C&P



Fannon Petroleum Site
1200 Duke Street
Alexandria, Virginia
MIP Survey
SmartData Solutions®

MIP RESULTS - PID

LOOKING SOUTH - PID



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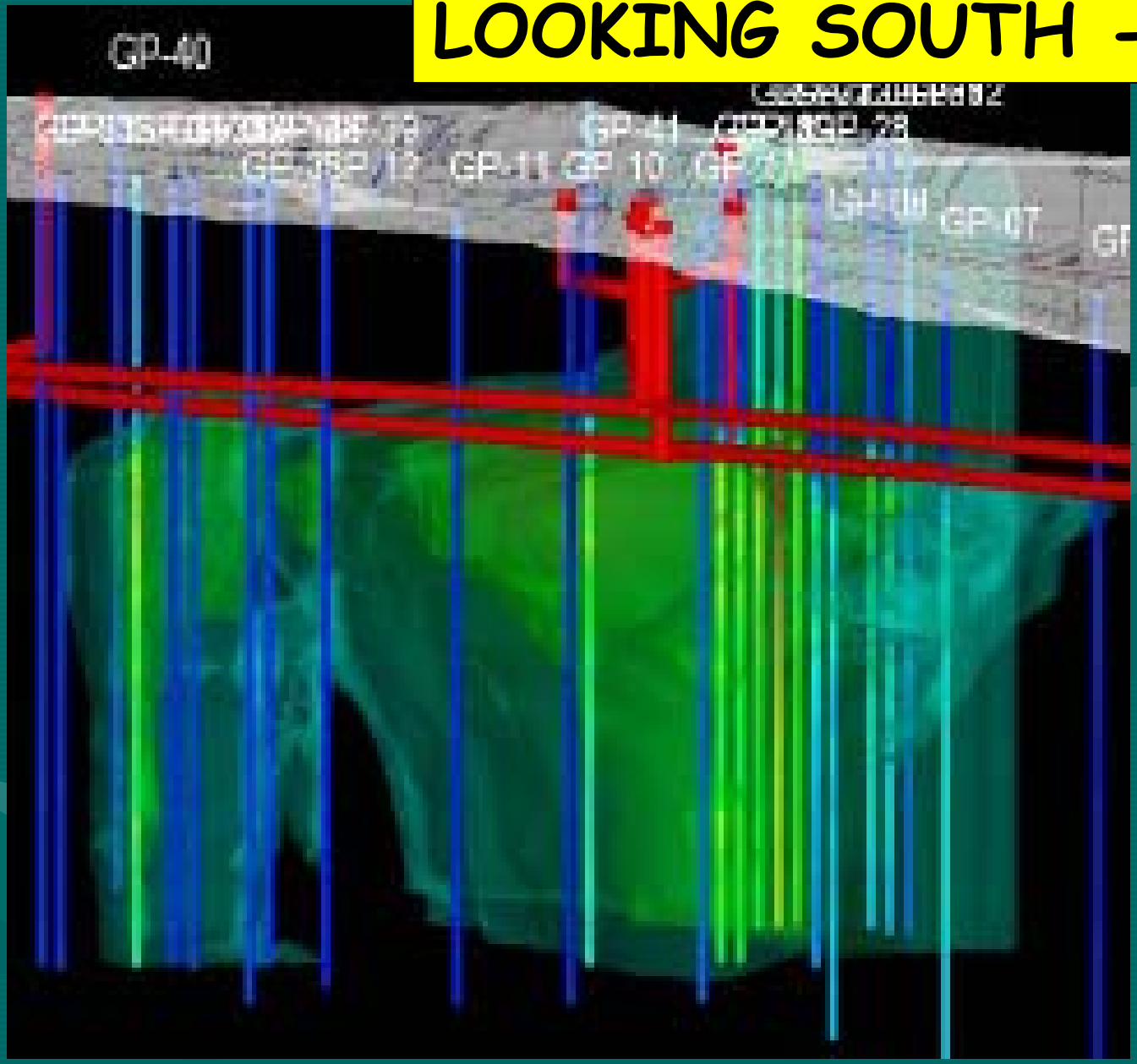
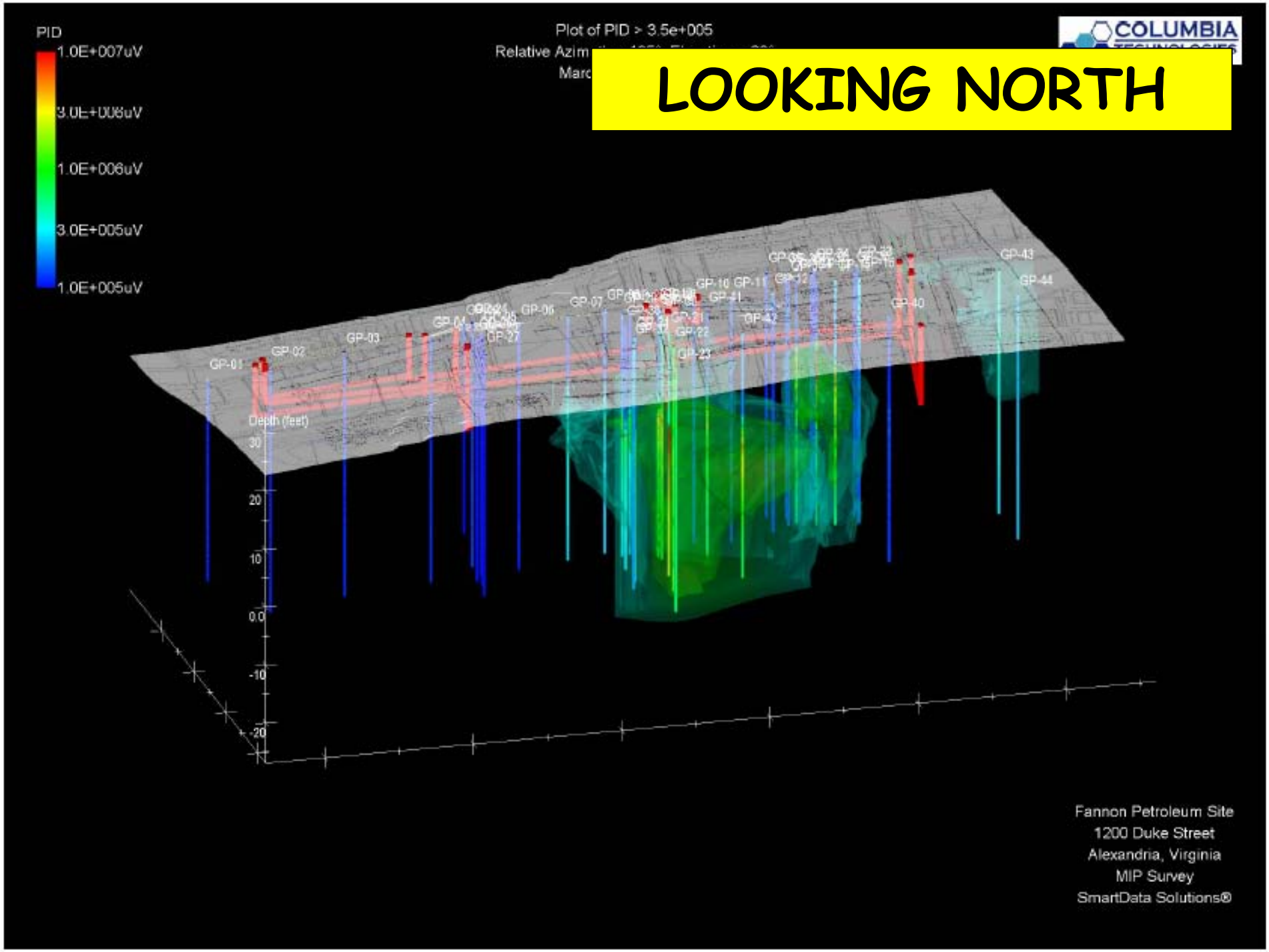
LOOKING SOUTH - PID




LOOKING NORTH
COLUMBIA
PID
1.0E+007uV
3.0E+006uV
1.0E+006uV
3.0E+005uV
1.0E+005uV
Plot of PID > 3.5e+005
Depth (feet)
30
20
10
0.0
-10
-20
GP-01
GP-02
GP-03
GP-06
GP-07
GP-27
GP-22
GP-23
GP-10
GP-11
GP-42
GP-40
GP-43
GP-44
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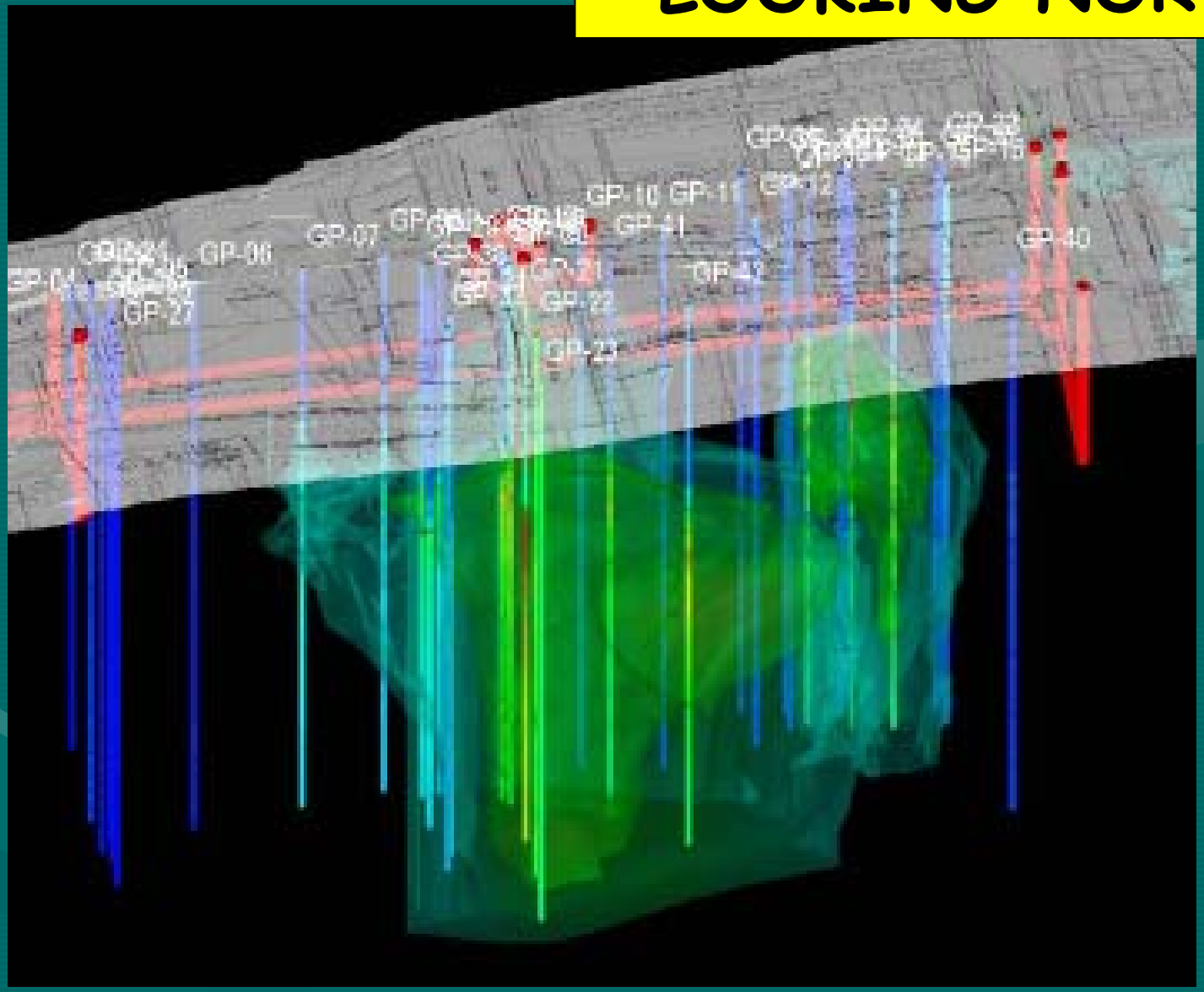
LOOKING NORTH



COMPARISON

- MIP results closely correlate with plume defined by traditional methods.
- MIP identified previously unknown vector.
- Plume appears to intersect sanitary / storm sewer system.
- Logical explanation for historic discovery.
- Once source area removed, additional impacts should be reduced.

NEXT PHASE

- Redevelopment of facility scheduled for this summer.
- Onsite source material will be removed.
- Aggressive offsite remediation during redevelopment.

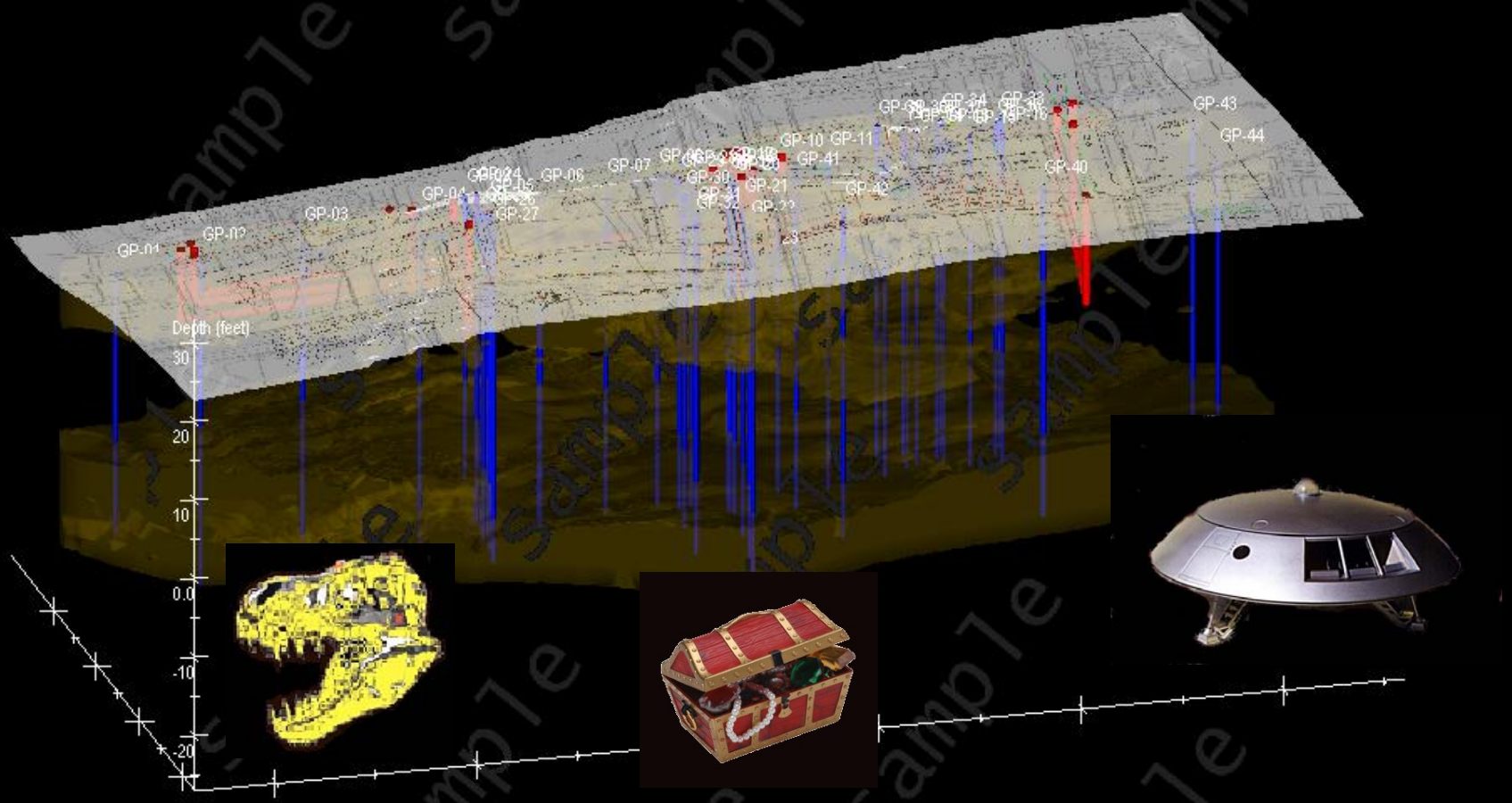
THE NEIGHBORHOOD

THE NEIGHBORHOOD

Plot of Conductivity > 20 mS/M
Relative Azimuth = 195°, Elevation = 20°

COLUMBIA TECHNOLOGIES

DIDN'T MISS A THING



Thanks to CO and NVRO Staff for all the help and support!

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