

“The New Hydrocarbon Remediation Paradigm”:

The Combined Products of

Hanby Environmental and OMG Solutions Provide:

Real Time and In-Situ (in place)

Testing and Treatment of

Hydrocarbon Contamination



Charles D. Fator, President & CEO, Hanby Environmental

Randy Cook, Owner and Jessica Innocenti HR & Cert. Lab Tech, OMG Solutions

Definition of Paradigm

- a typical example or pattern of something; a model.
- a model of something, or a very clear and typical example of something

Definition of Paradigm Shift

- a fundamental change in approach or underlying assumptions.
- an important change that happens when the usual way of thinking about or doing something is replaced by a new and different way.



“The New Remediation Paradigm”

Creating A Remediation Paradigm Shift

- **The Powerful Combination of Real Time Analysis and Real Time and In-Situ (in place) Remediation**
- **Hanby Environmental Field Test Kits**
 - **Providing Accurate, Fast and Economical Analytical Results**
- **OMG Solutions – ELMN8 and ELMN8+**
 - **Breaking down Hydrocarbon Contamination in Real Time and In-Situ (in place)**

The New Hydrocarbon Remediation Paradigm



Technology

The powerful combination of accurate, fast and economical real time feedback from Hanby Environmental Field Test Kits to monitor and document the in-situ (in place) and real time treatment of hydrocarbon contamination by OMG Solutions products ELMN8 (soil) and ELMN8+ (water) provide:

“The New Hydrocarbon Remediation Paradigm.”
ELMN8ing the need for sending samples for off site analysis and the need for hauling away and paying to dispose of hydrocarbon contamination, SAVES TIME and MONEY, while LOWERING ENVIRONMENTAL IMPACT!

Costs

Very economical

\$1,295 per Test Kit (includes 15 tests – initial cost of \$86 per test)

\$375 per Refill Set (includes 15 tests – reduced cost of \$25 per test)

ELMN8 (soil) – 55 Gallon Drum - \$1,375

ELMN8 (soil) – 275 Gallon Tot - \$6,875

ELMN8+ (water) - 55 Gallon Drum - \$2,640

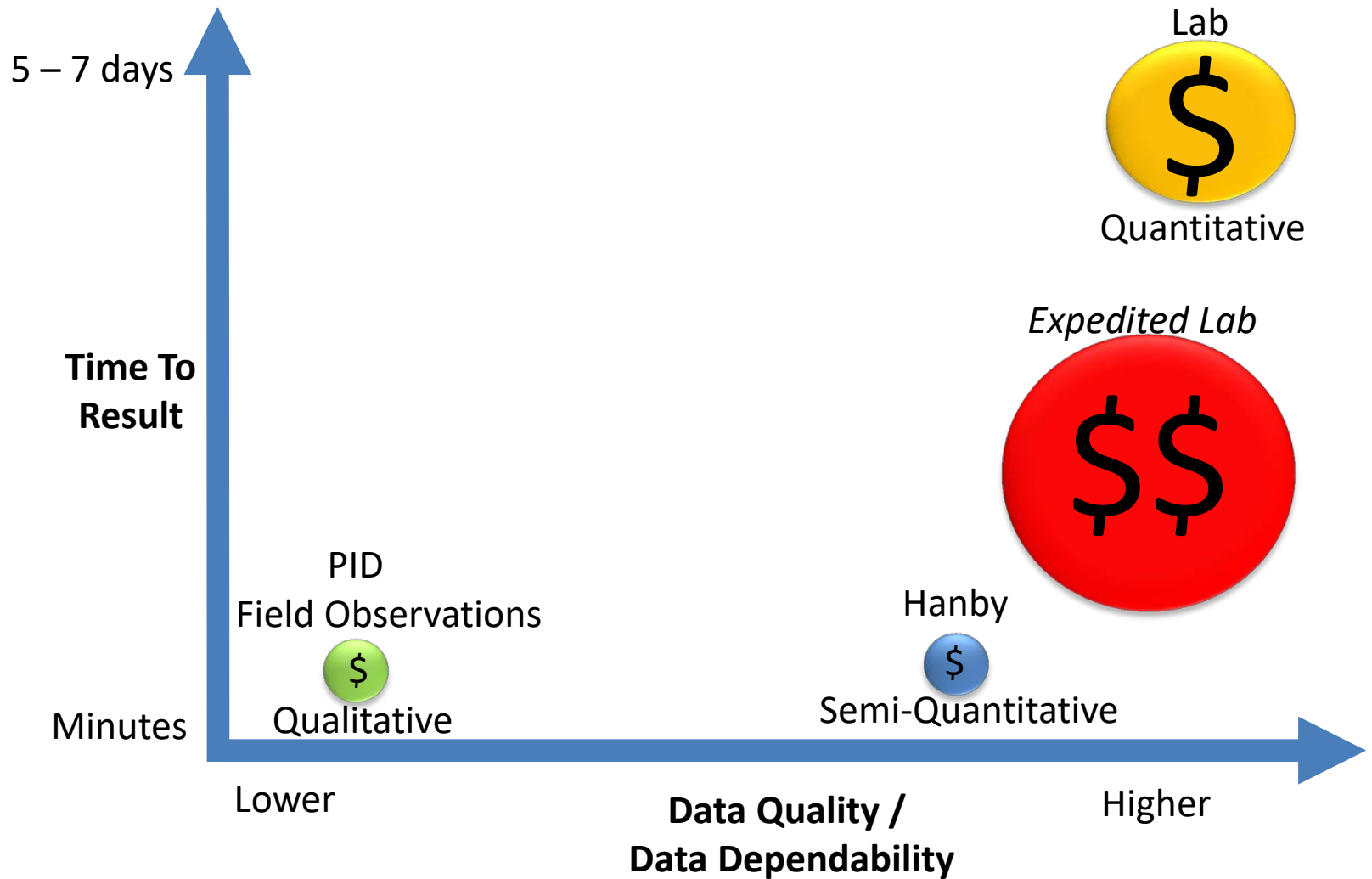
ELMN8+ (water) - 275 Gallon Tot - \$13,200

On average, Hanby Tests are a 75% savings over lab cost s
On average, ELMN8 products provide a 60% savings over hauling.

Applications and Benefits

- On site Immediate Analysis and treatment of Water and Soil for Total Petroleum Hydrocarbons; BTEX, Gasoline, Diesel, PCBs, PAHs, Jet Fuels, Crude Oils, Transformer Oils, Vegetable Oil
- Results of testing and treatment are immediate
- In-situ treatment lowers environmental impact, by not relocating the contamination
- Solution is non-hazardous and non-toxic
- Very well documented and proven

TPH Measurement Tools: Cost-Value Matrix



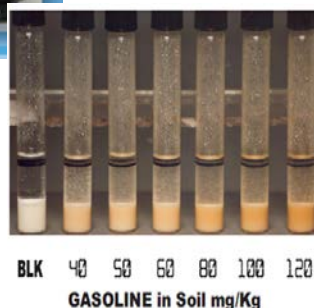
Summary: Hanby Environmental TPH Field Test Kits



Water Kit

Soil Kit

The lightweight, rugged and portable TPH Field Test Kits which require little or no training to use.



Technology

Hanby colorimetric test method was discovered in 1986 by John Hanby for identifying the presence of hydrocarbons in soil or water. The Hanby method offers a revolutionary solution to obtaining on-site samples that potentially contain petroleum related substances. Field testing is inherently costly, time consuming and, quite often, unreliable. The Hanby method is designed to provide a precise color indication of the concentration of petroleum (gasoline, diesel, crude oil, etc) in field samples. This rapid, accurate method won immediate recognition by the United States Environmental Protection Agency, state regulatory agencies throughout the United States and various international regulatory agencies around the world.

This field analysis method has been time tested and proven over the last 31 years and is well documented and published by the US EPA.

Costs

Very economical

\$1,295 per Test Kit (includes 15 tests – initial cost of \$86 per test)

\$375 per Refill Set (includes 15 tests – reduced cost of \$25 per test)

Hanby Environmental
1772 W. Sam Houston Parkway N
Houston, Texas 77043
713-468-3898
info@HanbyEnvironmental.com
www.HanbyEnvironmental.com

Applications and Benefits

- On site Immediate Analysis of Water and Soil Samples for Total Petroleum Hydrocarbons; BTEX, Gasoline, Diesel, PCBs, PAHs, Jet Fuels, Crude Oils, Transformer Oils, Vegetable Oil,
- 4 minutes for Soil and 6 minutes for Water
- Found by US EPA and Core of Engineers to be within 10% of a Laboratory Result
- Crude Oil Spills, Spill Response, Remediation, Monitoring
- US Patent Granted, Sole Source Provider

Time Tested.....

- Since 1987 for rapid, accurate petroleum contamination.
- EPA included the kit and the method as “dependable” data method (1990) and approved by state agencies
- Used in world’s major oil spills such as Exxon Valdez, the Ashland Oil tank spill, the Mega Borg, the Prestige, BP Deepwater Horizon and numerous other small spills.
- Rapid, field result is a major attraction –
 - Recent California department of transportation
 - Terracon, GHD, ECS
 - Mud pit remediation – sometimes “better” than sending to lab

Ashland Oil spill - 1988
(Ohio River System)

Only two water analytical device on the
EPA barge –

1. Fluorescence spectrometer
2. Hanby water kit

Generator fails on the barge!
Hanby Water TPH Field test kits are only
modality to analyze water samples!!



TPH Test Kits for Soil & Water

- Self contained kit contains everything to conduct 15 tests including color charts and instructional video.
- Refill sets with 15 tests can be purchased additionally



Water Kit

Soil Kit

Kit type		TPH Contamination level
Water		0.1 – 200 PPM
Soil	Low Range	0 – 1000 PPM
	High Range	500 – 50,000 PPM

Advantages of the method and kit

- **Accurate Results**

- results are scaled down in PPM; validated by EPA

- **Speed**

- takes 5-6 min for a result

- **Portability**

- Lightweight & rugged case can travel in back of truck & not be damaged

- **Easy to use**

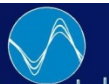
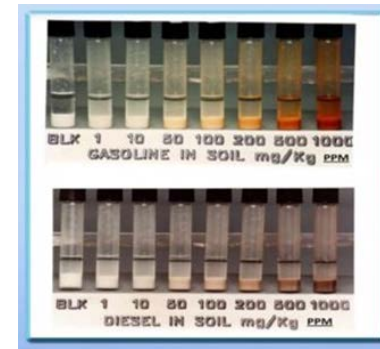
- color is developed in response to the presence of a contaminant and the resulting color is matched to a color chart supplied in the kit

- **Low cost per sample**

- 15 tests in one kit & 15 tests per refill order

- **Wide range**

- test for a broad range of petroleum related chemicals



The robustness of the method has been tested over 30 years

Six easy steps to Screening TPH's in Soil

Rapid, sensitive, positive detection of petroleum in solid samples



1. Weigh sample into tared beaker



2. Snap ampoule, add solvent



3. Stir. Mix well



4. Pour solvent into test tube.



5. Add catalyst, cap, shake.



6. Compare with standard photo.

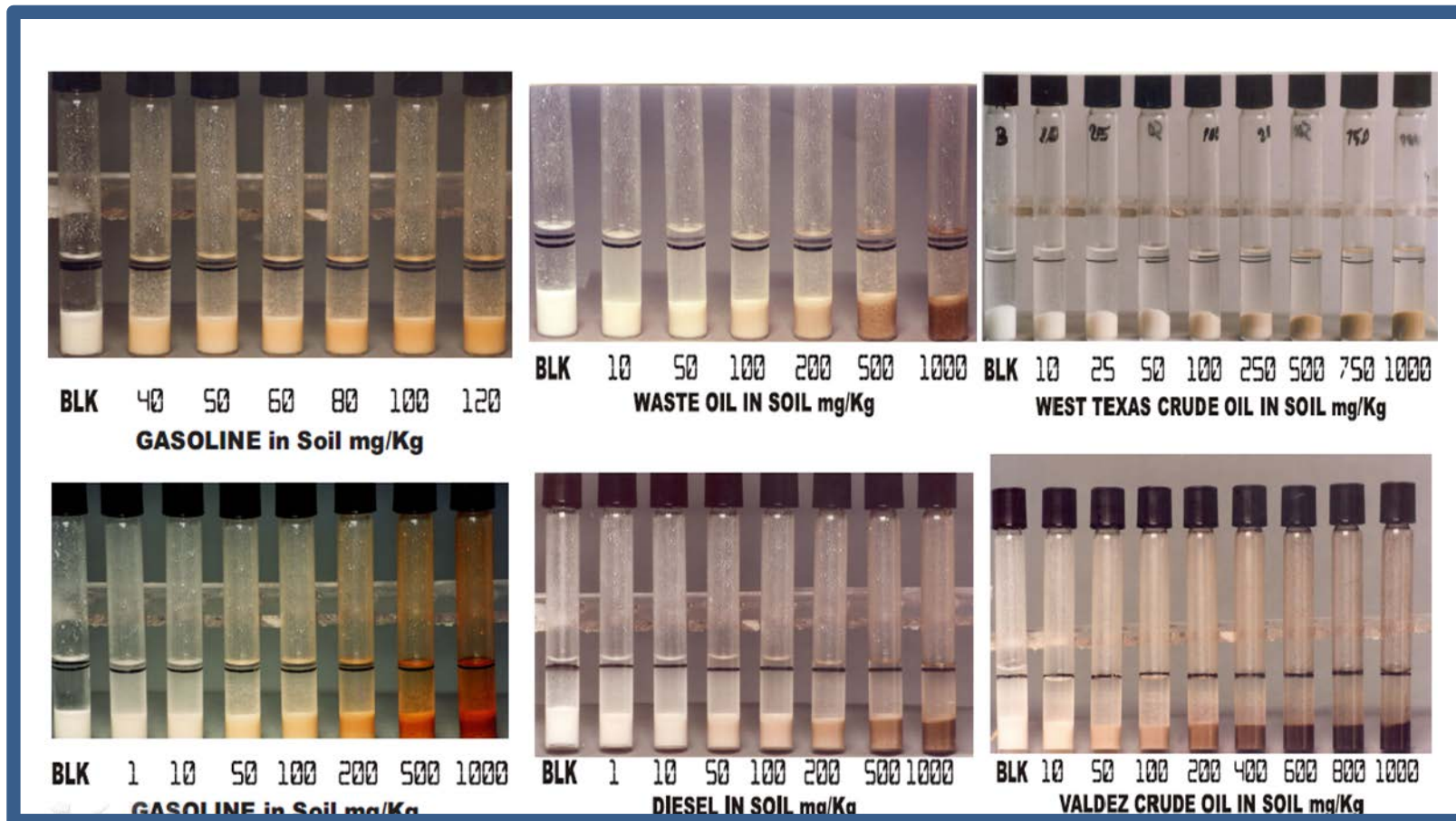
Soil Analysis in 4 Minutes!

Introduction to "The New Hydrocarbon Remediation Paradigm"

CUPA , Anaheim, CA 2/25-29/2019

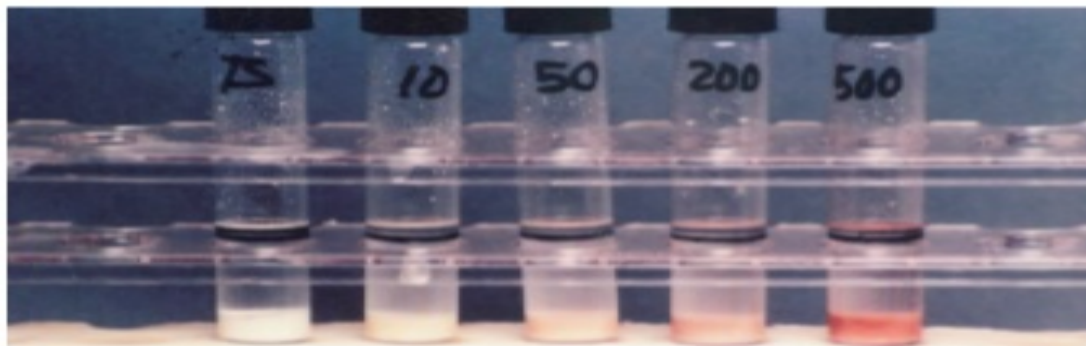
Sample Soil Calibration Photos:

We have created large number of calibration photos (library)

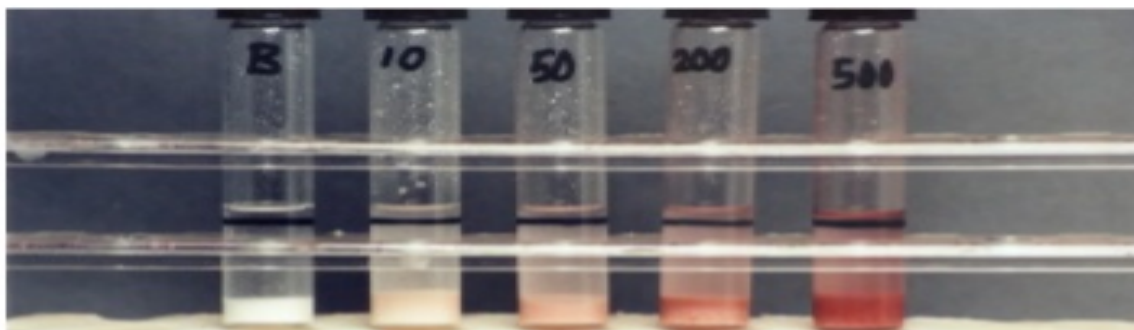


PCBs are Such A Big Concern

Note Very Distinct Peach Color



BLK 10 50 200 500
AROCHLOR 1248 IN SOIL mg/Kg



BLK 10 50 200 500
AROCHLOR 1016 IN SOIL mg/Kg

Copyright, Hanby Environmental, LLC 2012

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Step 1: Weigh 5 Grams of Soil Sample



1. Weigh sample into tared beaker

Step 2: *Add Extract Solvent to Sample*



2. Snap ampoule, add solvent

Step 3: *Stir Solvent in Soil Sample*



3. Stir. Mix well

Step 4: *Pour Solvent Into Test Tube*



4. Pour solvent into test tube.

Step 5: *Add Catalyst, Cap and Shake*



5. Add catalyst, cap, shake.

Step 6: *Compare to Standard Photo*



6. Compare with standard photo.

Similarly, Water Analysis in 5 – 6 minutes

5 Minute Testing for TPH's in Water

Efficiently and accurately screen dissolved organics, DNAPLS, etc



1. Pour water sample into separatory funnel.



2. Pour solvent in sample.



3. Swirl separatory funnel to extract



4. Let layers separate.



5. Drain solvent into test tube.

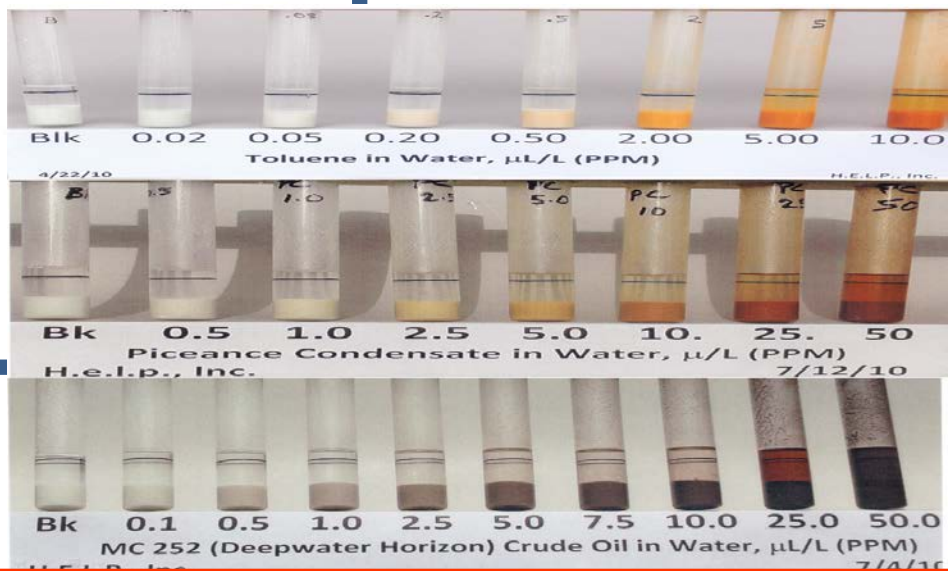
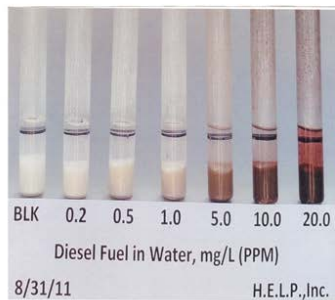
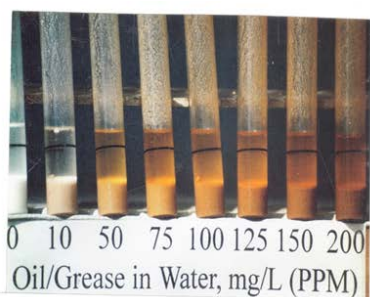
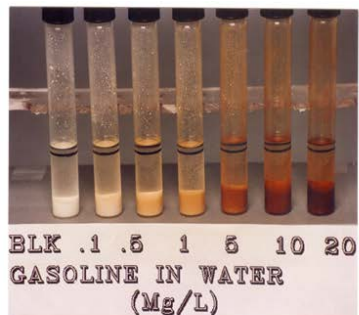


6. Add catalyst, shake, compare.



Similar Water Calibration Photos:

Large collection of calibration photos (library)



PCBs are Such A Big Concern

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Hanby Field Test Kit for Petroleum Contaminants in Water, mg/L (PPM)



Blank 0.2 1.0 10.0

Benzene



Blank 0.2 1.0 10.0

Toluene



Blank 0.2 1.0 10.0

m-Xylene



Blank 0.5 5.0 20.0

Regular Gasoline



Blank 0.5 5.0 20.0

Unleaded Gasoline



Blank 0.5 5.0 20.0

Super Unleaded Gasoline



Blank 0.5 5.0 20.0

Diesel



Blank 0.5 5.0 20.0

Kerosene



Blank 0.1 0.5 2.5

Napthalene



Blank 0.01 0.05 0.2

PCB's (note 1)



Blank 0.01 0.05 0.2

PCB's (note 2)

NOTE 1 - MIXTURE OF AROCLORS 1016, 1232, 1248, 1260.

This chart represents test results of 500 ml. samples of water containing the labeled amounts of contaminant.

NOTE 2 - MIXTURE OF AROCLORS 1221, 1242, 1254.

This chart represents test results of 500 ml. samples of water containing the labeled amounts of contaminant.



1772 West Sam Houston Parkway North
Houston, TX 77043

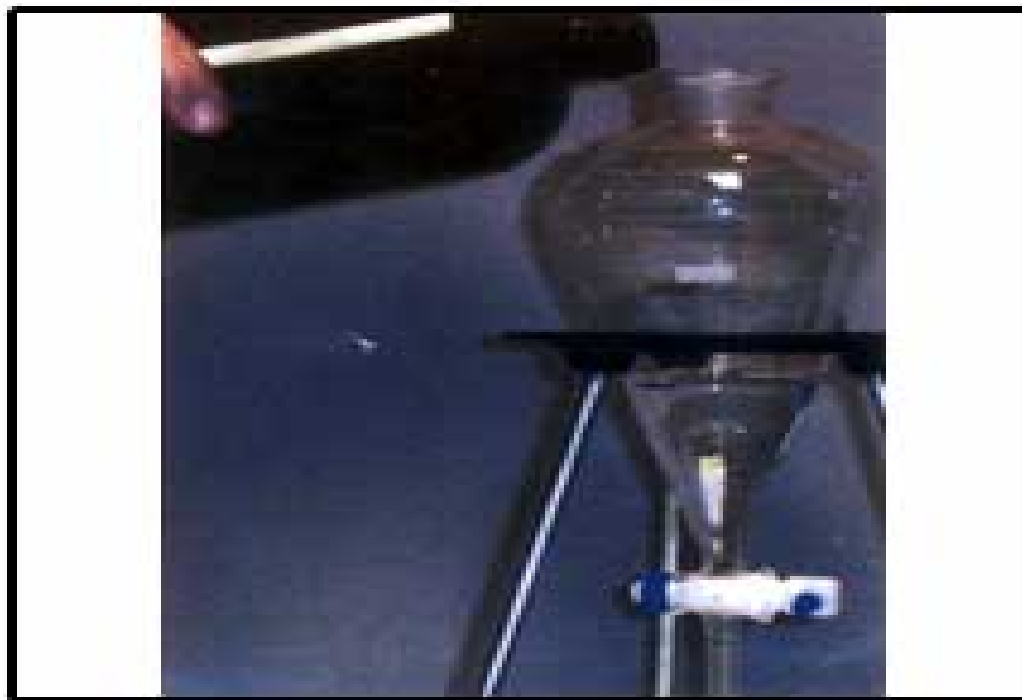
713.468.3898 www.HanbyEnvironmental.com

A Calibration Photograph of the Contaminant
of your concern can be prepared and inserted

HERE

Copyright, Hanby Environmental, LLC 2016

Step 1: *Pour Water Sample Into Sep Funnel*



- 1. Pour water sample into separatory funnel.**

Step 2: *Add Extract Solvent to Sample*



2. Pour solvent in sample.

Step 3: *Swirl/Shake Sep Funnel To Extract*



3. Swirl separatory funnel to extract

Step 4: *Let Extraction Layer Separate*



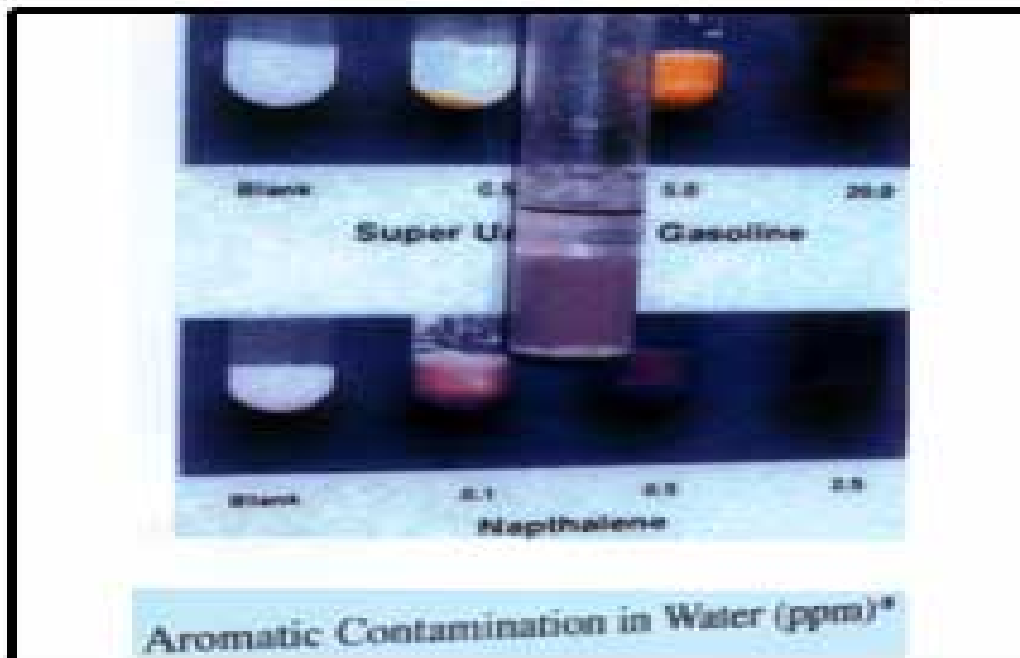
4. Let layers separate.

Step 5: *Drain Extract Solvent Into Test Tube*



5. Drain solvent into test tube.

Step 6: *Add Catalyst, Shake and Compare to Standard Photo*



6. Add catalyst, shake, compare.



Testimonial From California Department of Transportation

As the District 10 Hazmat Manager for the California Department of Transportation we respond to multiple hazmats in our district. We are located in California's Central valley covering eight full counties and part of one more county. We have two major routes that pass through our district and they are Interstate 5 and Highway 99 that carries a lot of truck traffic. We also have several mountain routes that cross the Sierra Nevada. We have six Hazardous Materials Specialist's that can respond to incidents throughout our district.

In the last few years with the Federal Government passing responsibilities to the local County

The problem we are experiencing is that we can't get the lab results back right away.

experiencing is that we can't get the lab results back right away. So we have an excavation site from a spill right next to the highway and cannot leave it without backfilling.

About two years ago we found the Hanby TPH Soil Kit and working with the local Environmental Health

I've used this kit now in four different counties on several incidents with lab samples also taken that have come back with the same results.

have come back with the same results. Both I and the County Environmental Health Inspectors that have been on these incidents have been happy with the results. I've even been asked to bring the kit to one of our Countywide Multi Agency Team meetings to show it to the team. What we really like is the ability to quickly test and be able to determine the site is clean and get it backfilled immediately so that we can

Testing only takes a few minutes and we can immediately know if the site is clean or if we need to excavate further.

Testing only takes a few minutes and we can immediately know if the site is clean or if we need to excavate further.

Scott Waller
Caltrans
District 10 Hazmat Manager
Hazardous Materials Specialist
CSTI Outreach Instructor
Stockton, Ca



Testimonials from



City of Corpus Christi

On Jan 25, 2017, at 1:23 PM, Kori Ellien <KoriE@cctexas.com> wrote:

Good Afternoon Charles,

It has almost been one year since implementation of the [REDACTED] Hanby kits as an analytical method in the field! Throughout the past year, the water and soil Hanby kits have been an excellent resource. The portability, ease of use and quick colorimetric results have allowed my team to isolate petroleum hydrocarbon contamination in soil and water. We have utilized, and continue to utilize, the results as a quantitative pass/fail method for source tracking and to prove responsibility of remediation to responsible parties. At this time, I would like to extend my thanks to you and your team for the timely assistance with any questions regarding product usage or methods throughout this past year.

Sincerely,

Kori Ellien

Project Manager-Environmental Quality

City of Corpus Christi

Utilities Department-Treatment

13101 Leopard St.

P.O. Box 9277

Corpus Christi, TX 78410

Department Main: (361)826-1863

Office: (361) 826-1879

Cell: (361)945-3629

KoriE@cctexas.com



Recent Usage by **Terracon**

We are using the kit sites with TPH-impacted groundwater where we are delineating **the extent of groundwater contamination**. We're using the field tests to determine whether we need to step out with additional borings.

Results with the first site were very good. Everything that we thought would be <1 mg/L TPH based on the field testing was **confirmed as <1 mg/L TPH by the lab**, so it did a good job **helping us decide** where we needed to continue to step out and where we had found the edge of the plume.

Gretchen McDonnell, PMP
Environmental Department Manager, Senior Associate

Terracon Consultants

Environmental / Geotechnical / Construction Testing / Facilities

4701 N. Stiles Ave. | Oklahoma City, Oklahoma 73105

P (405) 835 6533 | F (405) 557 0549 | M (405) 623 8724

gretchen.mcdonnell@terracon.com | terracon.com

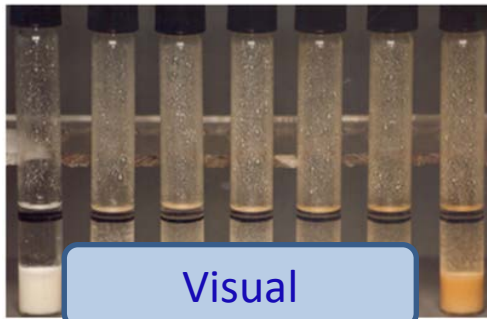
December 7, 2016



Technology Rollout



Water / Soil Kit

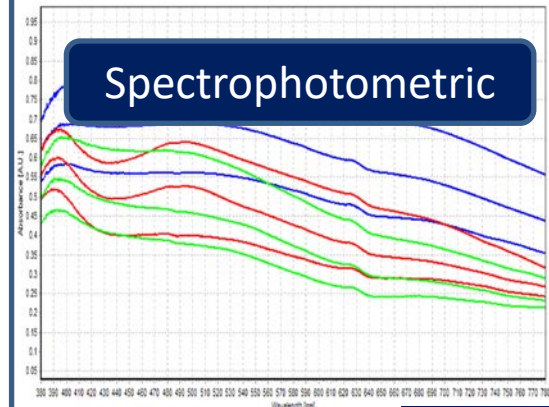


BLK 40 50 60 80 100 120
GASOLINE in Soil mg/Kg

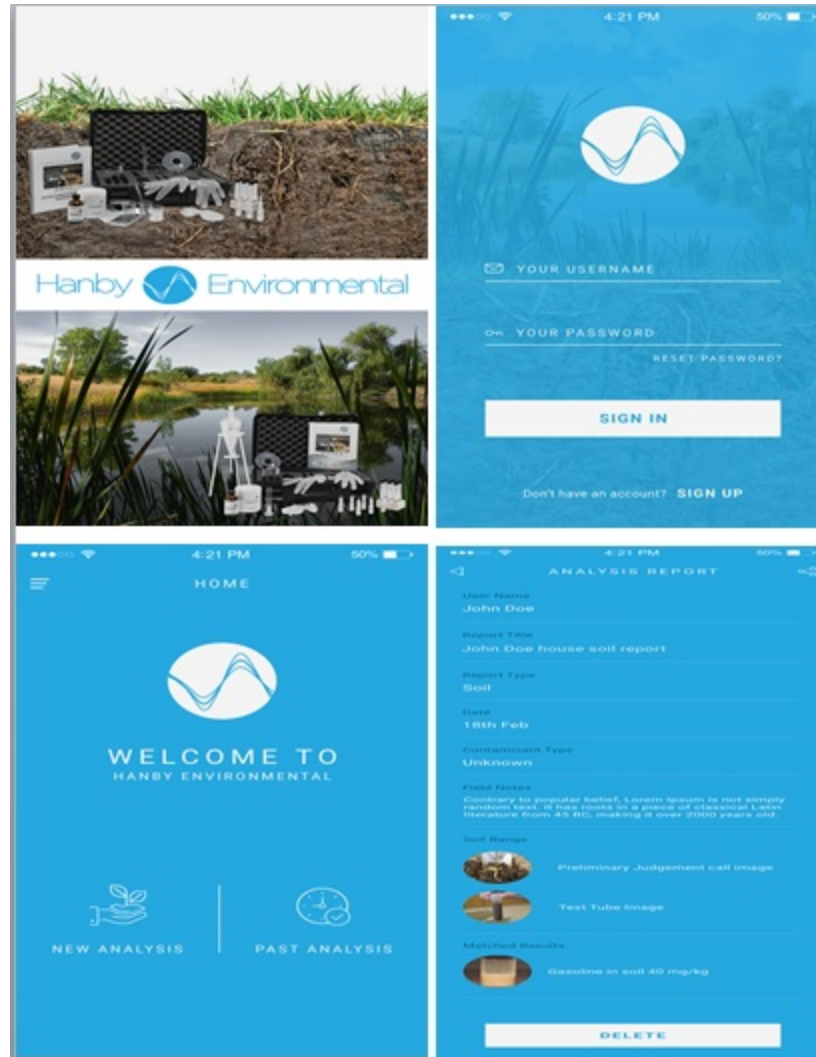
Mobile App



2015: New Device –
 "Hydrocarbon ID"



Hanby Mobile App Screen Examples



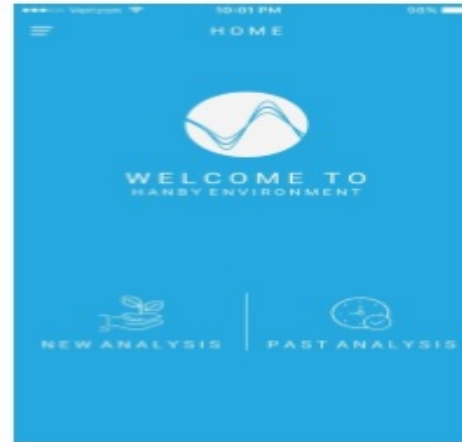
Hanby Mobile App Screen Examples



Preliminary Judgement



Sample Result



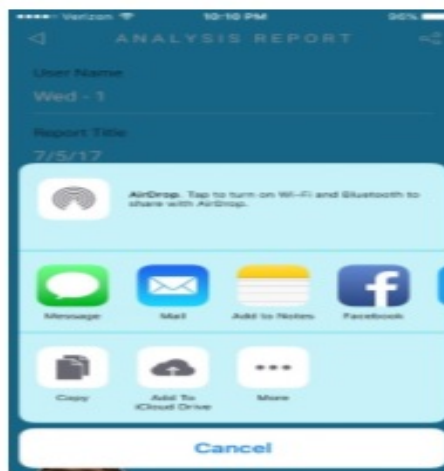
Login Choice



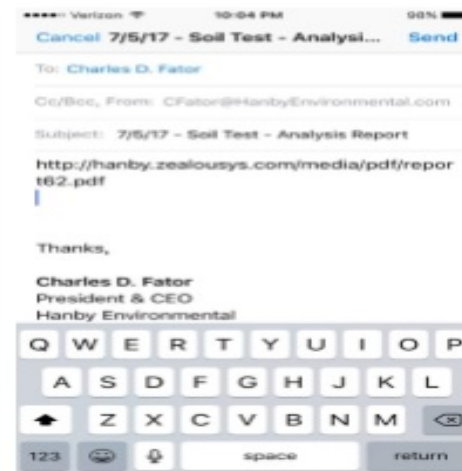
Analysis Details 1



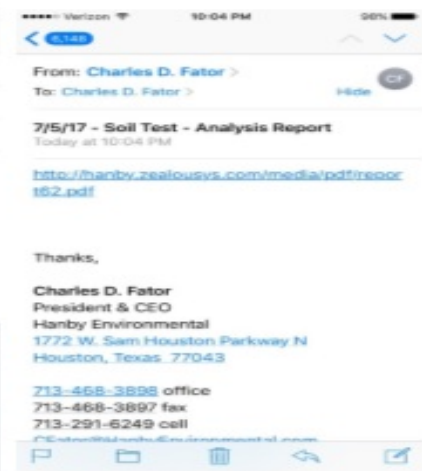
Analysis Details 2



Report Sharing Options



Email Share Report



Email Report Received

Hanby Mobile App Screen Examples



Hanby Environmental is excited to announce the release of our mobile application to complement our TPH Field Test Kits.

Our mobile application will standardize the optical for the sample result measurement utilizing the camera on the cell phones that everyone carries.

Our mobile application will eliminate the subjectivity of the human eyes and will provide a means for immediately obtaining an accurate concentration reading, while capturing all the analysis data and creating an immediately shareable report. Additionally, the reports will be chronicled for future reference.

Our mobile application continues to keep our method simple while increasing the accuracy and providing reportable and savable data from the samples analyzed in the field.

It's well known that analyzing a sample as soon as it is taken provides the most accurate concentration reading and now our mobile application assists in capturing that reading.

STEP 1: Set Up Your Admin Account at www.HanbyMobileApp.com

STEP 2: Obtain Subscription in Admin Account, STEP 3: Set Up Users/Staff in Admin Account

STEP 4: Users/Staff Download App and Login on Phone



Walk Thru Mobile App With Real Example Water with Gasoline Sheen

Verizon 10:29 AM 97%

HOME

WELCOME TO
HANBY ENVIRONMENTAL

NEW ANALYSIS

PAST ANALYSIS

Powered By
Zealous System
www.zealousys.com

PRELIMINARY ANALYSIS

Preliminary Judgement Call

Place the analyzed test tube against the best "Preliminary judgement" photo from photo calibration book.

Place the test tube in between the best estimated color / calibrated concentration matched test tubes.

Take a picture of preliminary judgement call

NEXT

PRELIMINARY ANALYSIS

Preliminary Judgement Call

Place the analyzed test tube against the best "Preliminary judgement" photo from photo calibration book.

Place the test tube in between the best estimated color / calibrated concentration matched test tubes.

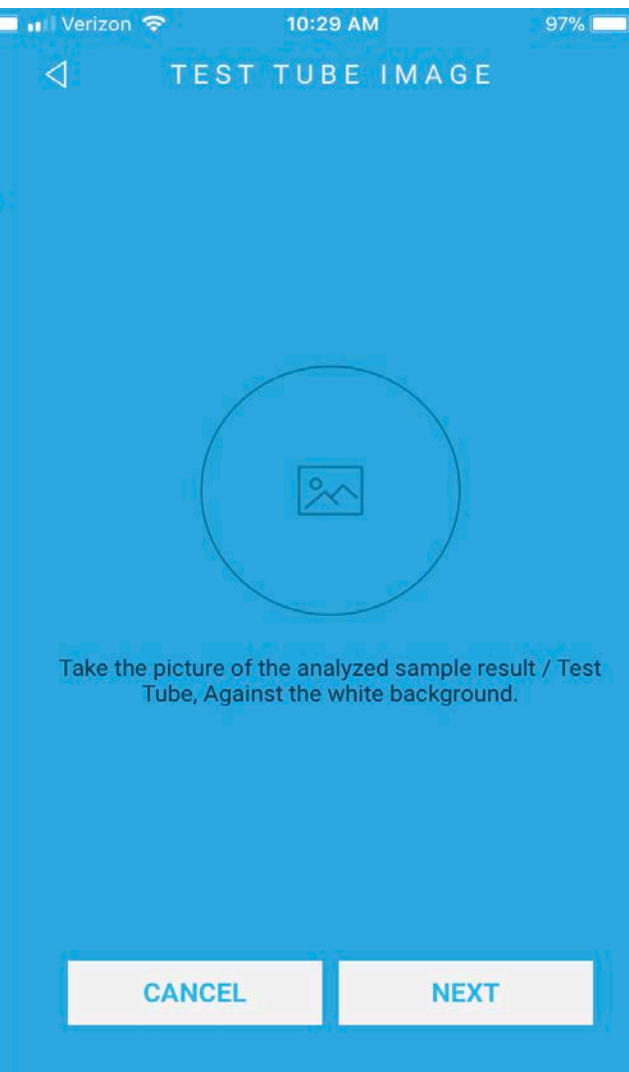
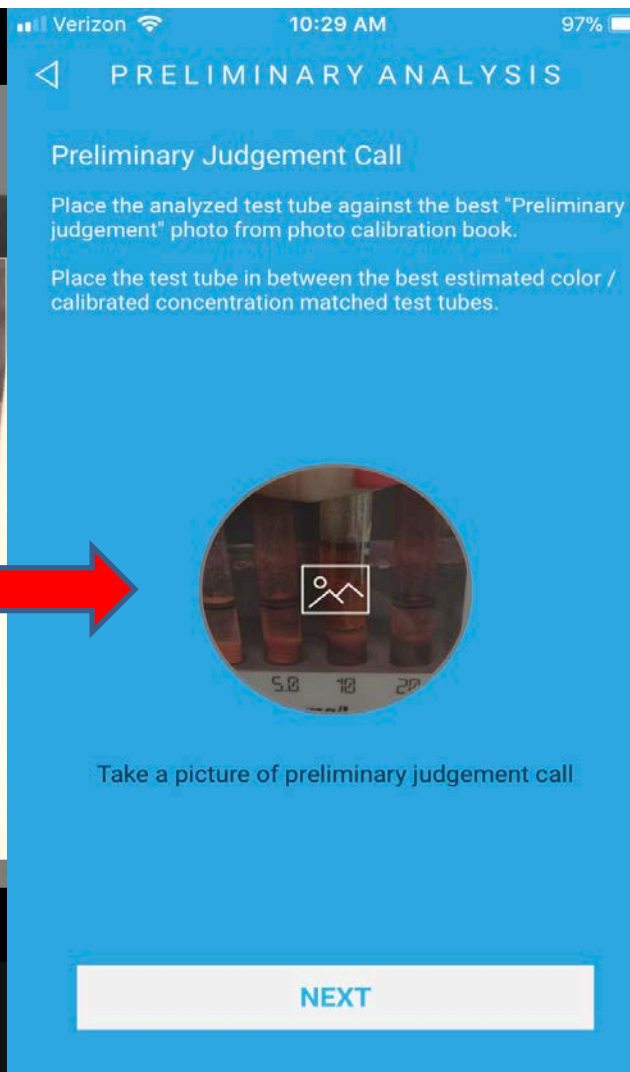
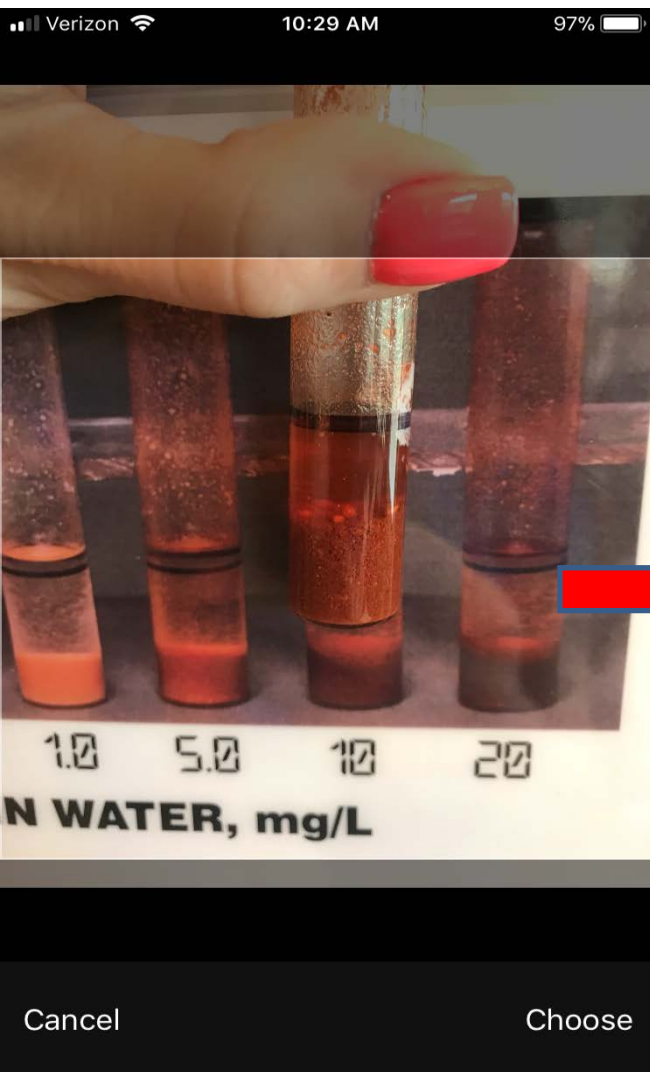
Take image

Camera

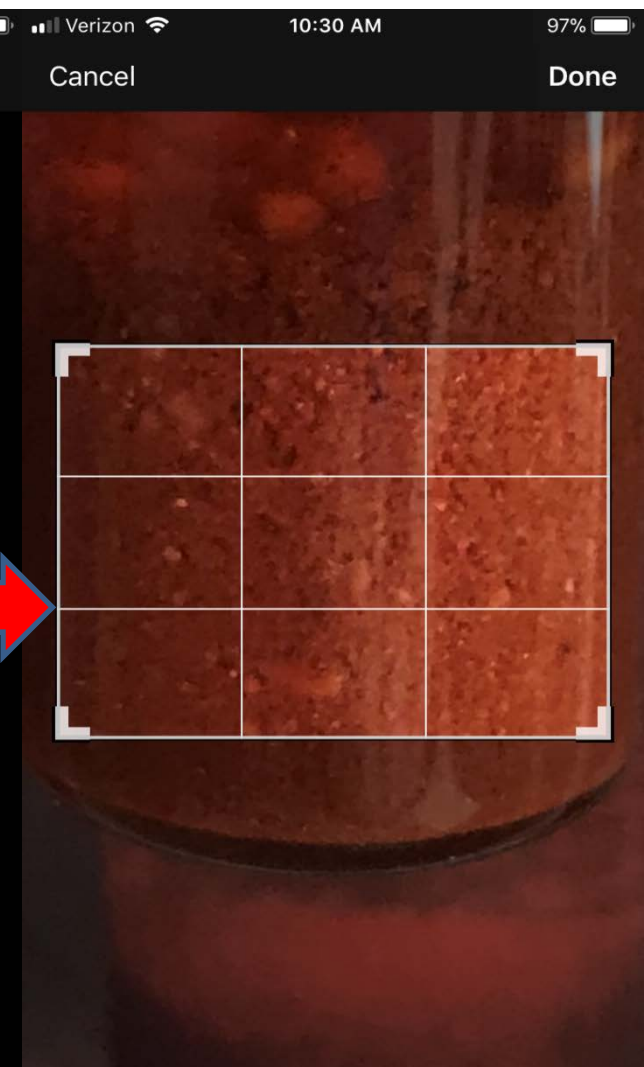
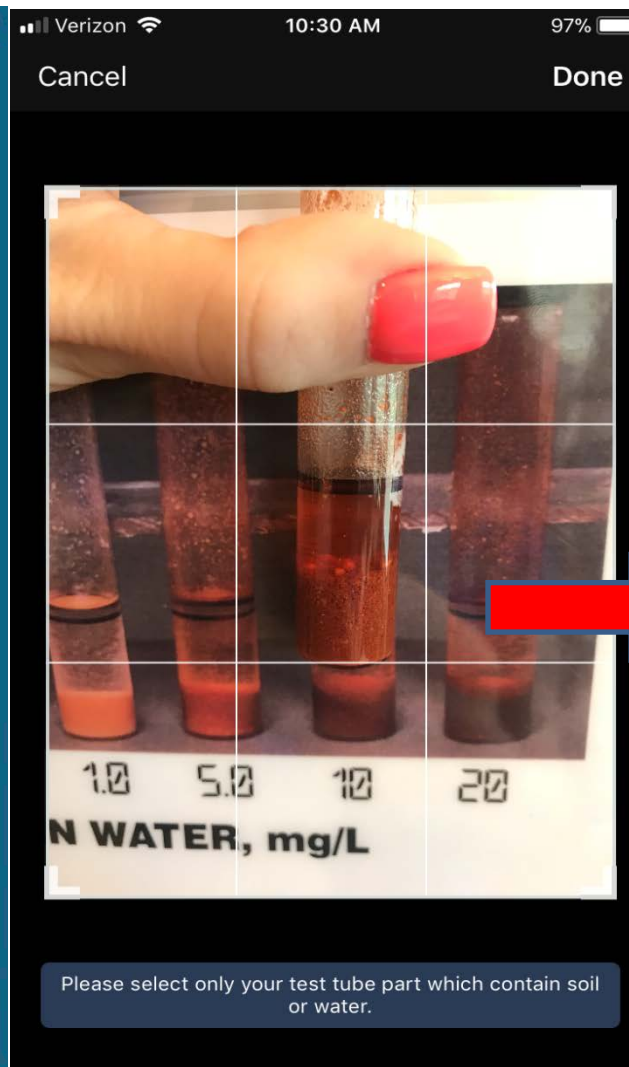
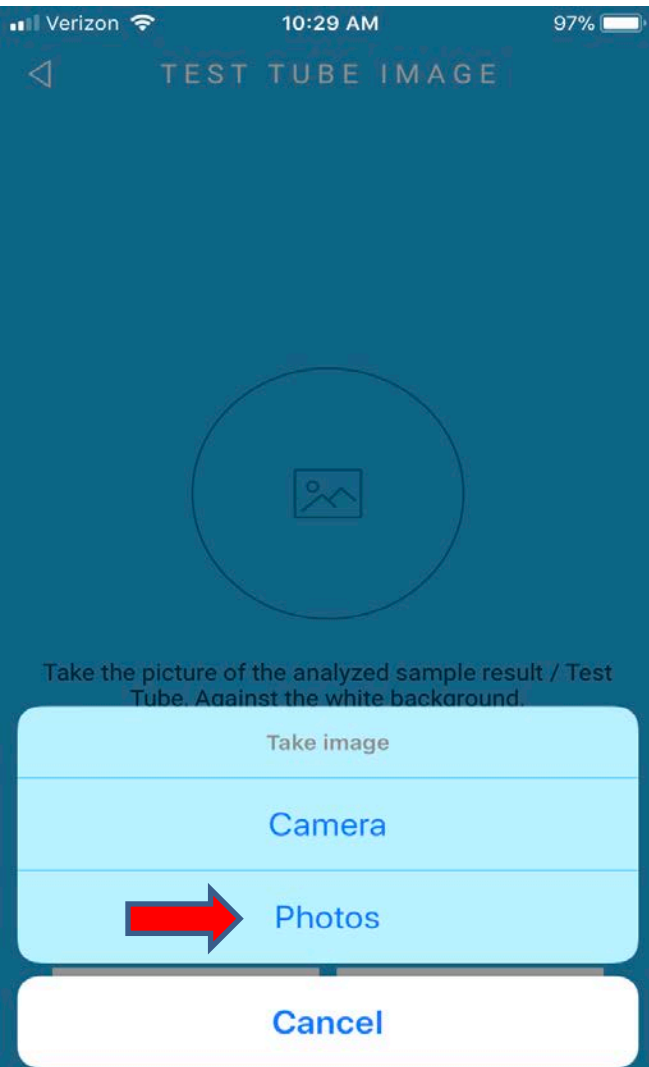
Photos

Cancel

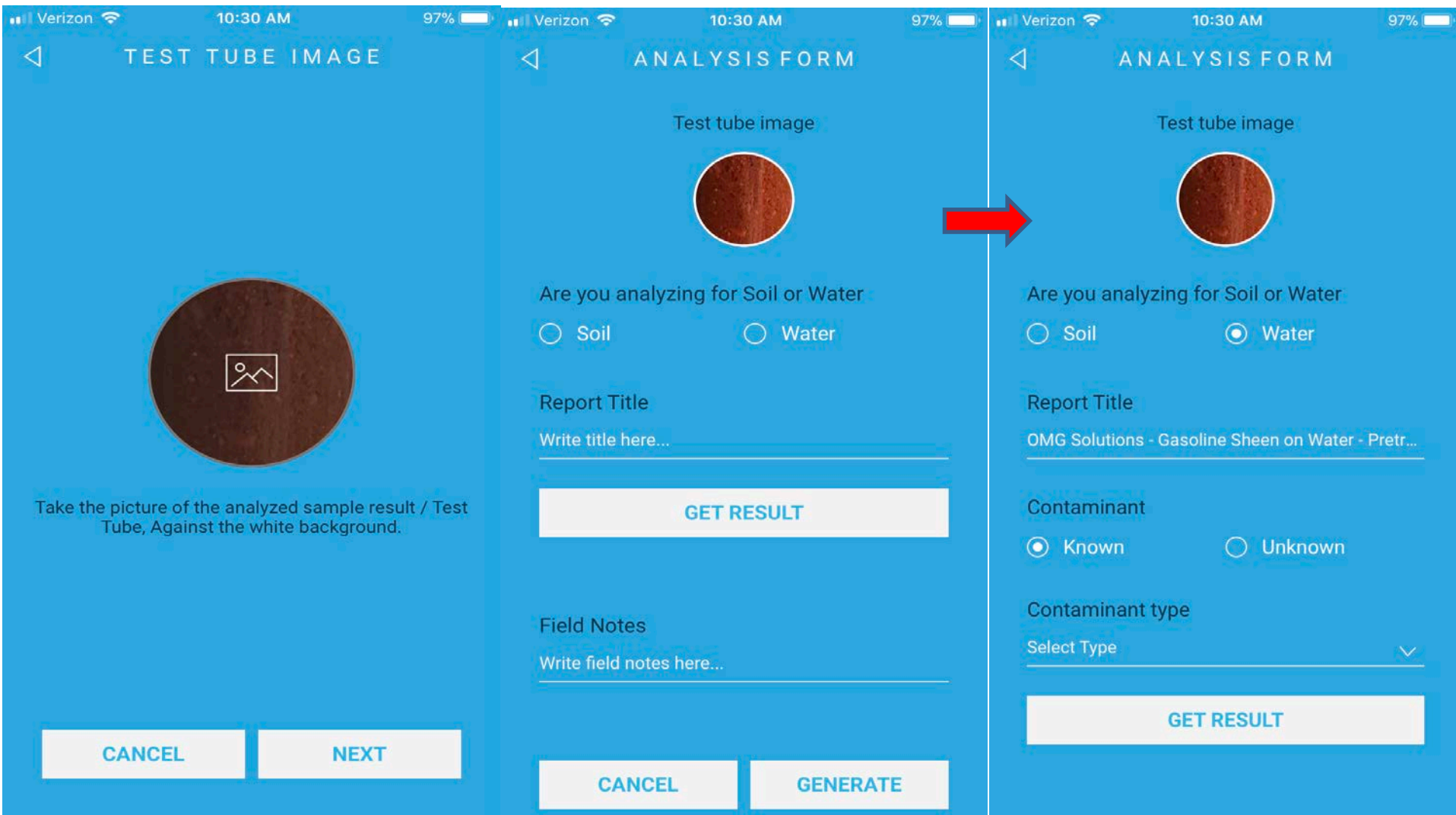
Walk Thru Mobile App With Real Example Water with Gasoline Sheen



Walk Thru Mobile App With Real Example Water with Gasoline Sheen



Walk Thru Mobile App With Real Example Water with Gasoline Sheen



Walk Thru Mobile App With Real Example Water with Gasoline Sheen

The image displays three sequential screenshots of a mobile application interface for data entry and result viewing. Each screenshot shows a status bar at the top with 'Verizon', signal strength, Wi-Fi, and battery icons, and a time of 10:31 AM.

Screenshot 1: ANALYSIS FORM
- Question: Are you analyzing for Soil or Water
- Selections: Soil, Water
- Report Title: OMG Solutions - Gasoline Sheen on Water - Pretr...
- Contaminant: Known, Unknown
- Contaminant type: Gasoline (dropdown menu)

Screenshot 2: ANALYSIS FORM
- Report Title: OMG Solutions - Gasoline Sheen on Water - Pretr...
- Contaminant: Known, Unknown
- Contaminant type: Gasoline (dropdown menu)
- Button: GET RESULT

Screenshot 3: ANALYSIS FORM
- Report Title: OMG Solutions - Gasoline Sheen on Water - Pretr...
- Contaminant: Known, Unknown
- Contaminant type: Gasoline (dropdown menu)
- Button: GET RESULT
- Matched Results:
 - Gasoline in Water 5 mg/Kg(PPM) - 90.91%
 - Gasoline in Water 1 mg/Kg(PPM) - 62.26%
 - Gasoline in Water 10 mg/Kg(PPM) - 62.12%
 - Gasoline in Water 0.5 mg/Kg(PPM) - 52.38%
 - Gasoline in Water 4.48 mg/Kg(PPM)

A red arrow in the first screenshot points to the 'Gasoline' option in the 'Contaminant type' dropdown. Another red arrow in the third screenshot points to the selected result 'Gasoline in Water 4.48 mg/Kg(PPM)'.

Walk Thru Mobile App With Real Example Water with Gasoline Sheen

The image displays three sequential screenshots of a mobile application interface, illustrating the process of viewing a water analysis report.

- Home Screen:** The top status bar shows Verizon service, 10:33 AM, and 97% battery. The header is "HOME". A large circular logo with a blue wave is centered. Below it, the text reads "WELCOME TO HANBY ENVIRONMENTAL". At the bottom, there are two main buttons: "NEW ANALYSIS" (with a leaf icon) and "PAST ANALYSIS" (with a clock icon). A red arrow points from the "PAST ANALYSIS" button to the next screenshot.
- Past Analysis Screen:** The header is "PAST ANALYSIS". It lists several reports, each with a blue wave icon. The first report is "OMG Solutions - Gasoline Sheen on Wa... Water Report | Today". A red arrow points from this report to the next screenshot.
- Analysis Report Screen:** The header is "ANALYSIS REPORT". It displays the details for the selected report:
 - User Name: Charles
 - Report Title: OMG Solutions - Gasoline Sheen on W...
 - Report Type: Water
 - Date: 08 April 2018
 - Contaminant Type: Known
 - Field Notes: This is the analysis of the pretreatment of water with the gasoline sheen floati...
 - Soil Range: (partially visible)

Walk Thru Mobile App With Real Example Water with Gasoline Sheen

Panel 1: ANALYSIS REPORT

Known

Field Notes

This is the analysis of the pretreatment of water with the gasoline sheen floati...

Soil Range

Preliminary Judgement call image

Testtube image

Matched Result

Gasoline in Water 4.48 mg/Kg(PPM)

Panel 2: ANALYSIS REPORT

User Name: Charles

Report Title: OMG Solutions - Gasoline Sheen on Water - Pretreatment by ELMN8+

Report Type: Water

Message, Mail, Add to Notes, Facebook, Copy, Save to Files, More

Cancel

Panel 3: New iMessage

To: Charles D. Fator, |

hanbymobileapp.com

hanbymobileapp.com

hanbymobileapp.com

Tuesday 10:52 AM

hanbymobileapp.com

hanbymobileapp.com

Delivered

<http://hanbymobileapp.com//media/pdf/report598.pdf>

Walk Thru Mobile App With Real Example Water with Gasoline Sheen

MESSAGES now

Charles D. Fator
Link: hanbymobileapp.com

Charles

Report Title
OMG Solutions - Gasoline Sheen on Water - Pretreatment by ELMN8+

Report Type
Water

Date
08 April 2018

Contaminant Type
Known

Field Notes
This is the analysis of the pretreatment of water with the gasoline sheen floati...


Soil Range


Messages 10:34 AM 96%

hanbymobileapp.com

Hanby Environmental Hanby Environmental

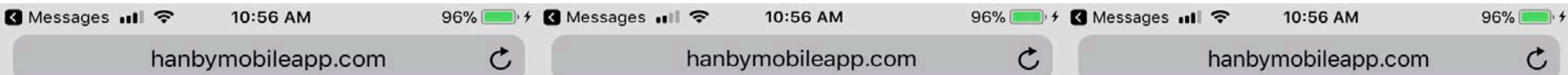
USER : Charles
TITLE : OMG Solutions - Gasoline Sheen on Water - Pretreatment by ELMN8+
TYPE : Soil report
CONTAMINANT : Known
DATE : April 8, 2018
FIELD NOTES : This is the analysis of the pretreatment of water with the gasoline sheen floating on water.

Preliminary Judgement call image : 

Test Tube Image : 

Matched Result : Gasoline in Water 4.48 mg/Kg(PPM)

Walk Thru Mobile App With Real Example Water with Gasoline Sheen



Hanby Environmental Hanby Environmental

USER : Charles
TITLE : OMG Solutions - Gasoline Sheen on Water - Pretreatment by ELMN8+
TYPE : Soil report
CONTAMINANT : Known
DATE : April 8, 2018
FIELD NOTES : This is the analysis of the pretreatment of water with the gasoline sheen floating on water.

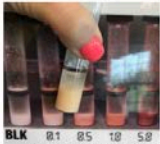
Preliminary Judgement call image : 

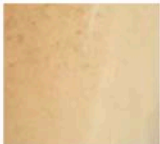
Test Tube Image : 

Matched Result : Gasoline in Water 4.48 mg/Kg(PPM)

Hanby Environmental Hanby Environmental

USER : Charles
TITLE : OMG Solutions - Gasoline Sheen on Water - Post Treatment by ELMN8+
TYPE : Soil report
CONTAMINANT : Known
DATE : April 8, 2018
FIELD NOTES : This is the analysis of the immediate post treatment of water with gasoline floating sheen.


Preliminary Judgement call image : 


Test Tube Image : 

Matched Result : Gasoline in Water 0.03 mg/Kg(PPM)

Hanby Environmental Hanby Environmental

USER : Charles
TITLE : OMG Solutions - Gasoline Sheen on Water - Post Treatment by ELMN8+ - 90 Minute Elapsed
TYPE : Soil report
CONTAMINANT : Known
DATE : April 8, 2018
FIELD NOTES : This is the analysis of the post treated water with the sheen after 90 minutes.

Preliminary Judgement call image : 

Test Tube Image : 

Matched Result : Gasoline in Water 0.0 mg/Kg(PPM)

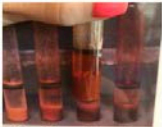



Walk Thru Mobile App With Real Example Water with Gasoline Sheen

hanbymobileapp.com

Hanby Environmental Hanby Environmental

USER : Charles
TITLE : OMG Solutions - Gasoline Sheen on Water - Pretreatment by ELMN8+
TYPE : Soil report
CONTAMINANT : Known
DATE : April 8, 2018
FIELD NOTES : This is the analysis of the pretreatment of water with the gasoline sheen floating on water.

Preliminary Judgement call image : 


Test Tube Image : 


Matched Result : Gasoline in Water 4.48 mg/Kg(PPM)

hanbymobileapp.com

Hanby Environmental Hanby Environmental

USER : Charles
TITLE : OMG Solutions - Gasoline Sheen on Water - Post Treatment by ELMN8+
TYPE : Soil report
CONTAMINANT : Known
DATE : April 8, 2018
FIELD NOTES : This is the analysis of the immediate post treatment of water with gasoline floating sheen.

Preliminary Judgement call image : 


Test Tube Image : 

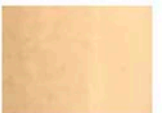
Matched Result : Gasoline in Water 0.03 mg/Kg(PPM)

hanbymobileapp.com

Hanby Environmental Hanby Environmental

USER : Charles
TITLE : OMG Solutions - Gasoline Sheen on Water - Post Treatment by ELMN8+ - 90 Minute Elapsed
TYPE : Soil report
CONTAMINANT : Known
DATE : April 8, 2018
FIELD NOTES : This is the analysis of the post treated water with the sheen after 90 minutes.

Preliminary Judgement call image : 

Test Tube Image : 

Matched Result : Gasoline in Water 0.0 mg/Kg(PPM)

4.48 ppm → 0.03 ppm → 0.0 ppm

<http://hanbymobileapp.com//media/pdf/report598.pdf>
<http://hanbymobileapp.com//media/pdf/report599.pdf>
<http://hanbymobileapp.com//media/pdf/report600.pdf>

Water With Gasoline Sheen Pre / Post Treatment by ELMN8+

This was an initial test, no concentration measurements

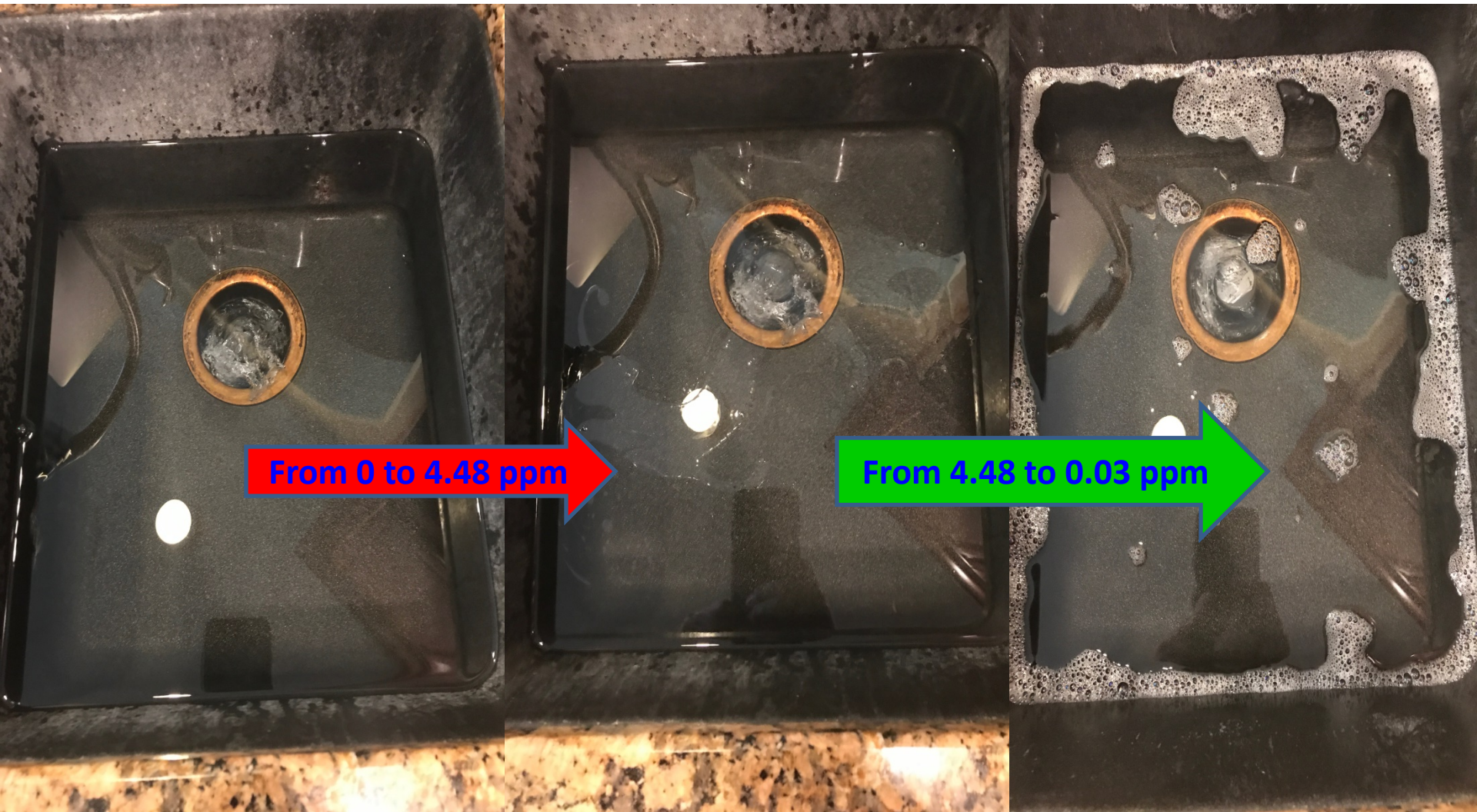


Water With Gasoline Sheen Pre / Post Treatment by ELMN8+

- **The Treatment Process:**
- https://youtu.be/sWvT_gt_FPs

- **Agitation / Aeration / Bubbling / Mixing Process:**
- <https://youtu.be/G428kg1Tt3M>

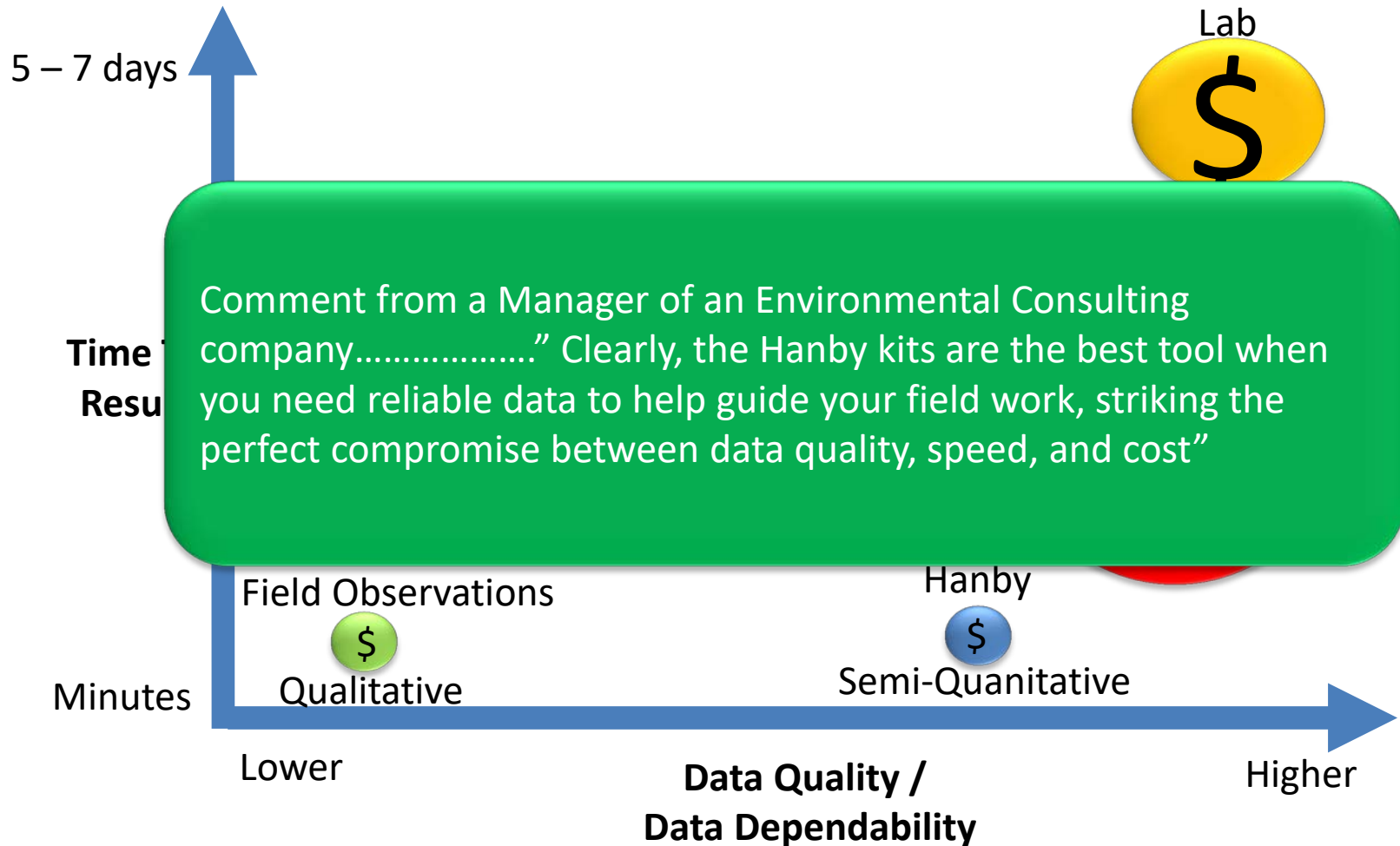
Water With Gasoline Sheen Pre / Post Treatment by ELMN8+



Water With Gasoline Sheen Pre / Post Treatment by ELMN8+ (90 Minutes Elapsed)



Cost-Value Matrix.....Final Words



Similar to Measurement Options, There Are Remediation Options

- Each Option Has Challenges Associated With Its Selection
- Dig and/or Haul – Time Consuming and Expensive
 - Still Have Waste, Relocating The Problem
- Enzymes and/or Microbos – Take A Long Time to Work and Can Be Weather Sensitive

OMG's New In-Situ (in place) Remediation Option

- OMG Solutions Has A New Option – ELMN8(+)
- Non-Hazardous and Non-Toxic
- Chemical Oxidation Process
- Immediate Results
- Saves On Average 60% Over Dig and Haul
- No Enzymes or Microbes, Thus No Shelf Life
- Not Weather Sensitive
- By-Products: Water, Carbon Dioxide and Dust





ELMN8

OMG Solutions, LLC – ELMN8 & ELMN8+ (water)
Patent Pending Formula: ELMN8 is a new state of the art technology that breaks down the hydrocarbon chain into a bio-degradable dust. There are no microbes or enzymes present in ELMN8. This product uses a non-toxic chemical reaction to break down the hydrocarbon chains turning Diesel, Gasoline, Motor Oil, TPH, etc. into basic elements; Carbon and Hydrogen. In their basic state they are harmless elements which attach to the element Oxygen, eventually turning into Carbon Dioxide and H₂O. Surprisingly enough, this ecofriendly solution is triggered and activated by water. Once activated, the naturally found microbes go to work breaking down the hydrocarbon bonds, reducing them to the individual elements.

“THE NEW REMEDIATION PARADIGM”



ELMN8
Your Solution For
Oil Contamination

**Immediately
Eliminates
Hydrocarbons:
Diesel, Gasoline,
Motor Oil, Crude
Oil, Most
Petroleum Based
Spills**

**Natural Flashpoint
Fire Extinguisher**

**ELMN8
\$25.00 a Gallon
ELMN8+
\$48.00 a Gallon**

**275 Gal Totes and
55 Gal Drums**

OMG SOLUTIONS, LLC
PO BOX 4345
Victoria, TX 77903
361-564-4541
www.omgso.com





A PETROLEUM REMEDIATION COMPANY

MANUFACTURER OF

ELMIN8

**Your Solution for
Oil Contamination**

ELIMINATES

**TPH • BENZENE • TOLUENE
ETHYLBENZENE • XYLENE • DIESEL
GASOLINE • PESTICIDES AND MORE!**

361-564-4541 • OMGSol.com

randy_cook@omgsol.com • PO Box 4345 Victoria, TX 77903

The Soil Treatment Process

- **The Solution** is Water Activated So Saturate The Contaminated Soil With Water via Sprayer
- Then Treat by Spraying on **The Solution**
- Till The Soil To Turn Over to Increase Contact with Contamination
- Re-Saturate Soil via Sprayer
- Re-Treat With **The Solution** via Sprayer



TREAT



TILL



REPEAT



When Soil Has Infrastructure Treatment Process

- Normal Soil Treatment Process on Surface
- Drill Holes and Inject Water if needed due to a dry environment or
- Followed by Injection of **The Solution**
- **The Solution Migrates Thru The Same Path The Contamination Took**



OMG's Soil Treatment Process

Step 1: Saturate Contaminated Soil with Water and Follow by Treatment by ELMN8:

https://youtu.be/gd_7oKS22UY

Step 2: Till the Contaminated Soil Turning Over The Soil Bringing Untreated to Surface:

<https://youtu.be/H1ffDvIxtq0>

Step 3: Repeat Step 1:

https://youtu.be/IDiO2BEqR_M



OMG's Soil Treatment Process

- Above Ground Infrastructure, Similar to Surface Soil and Underground Infrastructure, Treated Directly:
- https://youtu.be/Rt_3jD26_CE

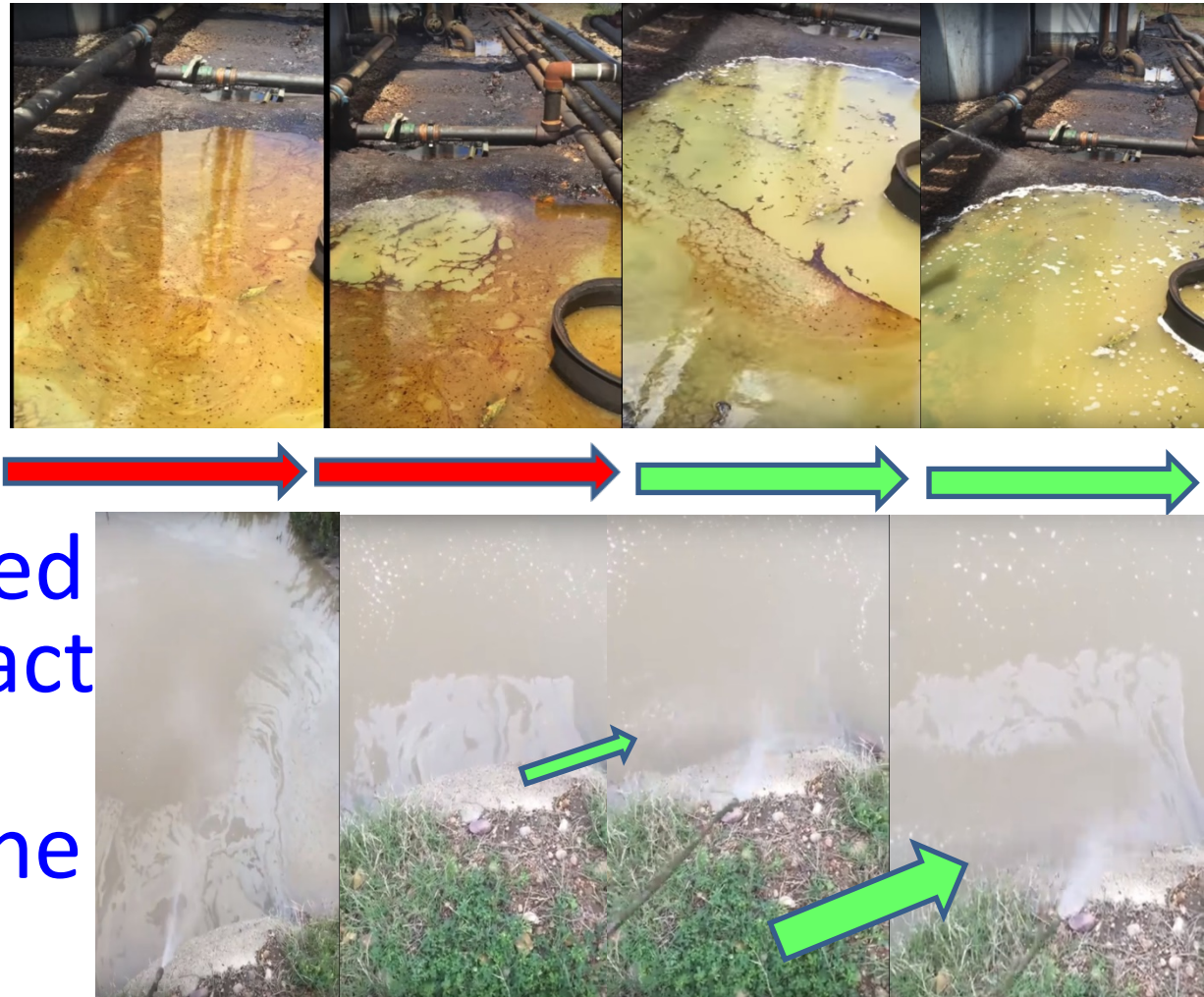
OMG's Water Treatment Process

- Contaminated Water Boomed Off
- **ELMN8+** is added
- Water is Agitated to Create Contact Between The **ELMN8+** Solution and The Contamination



The Water Treatment Process

- Contaminated Water Boomed Off
- **The Solution** is added
- Water is Agitated to Create Contact Between **The Solution** and The Contamination



OMG's Water Treatment Process

- **Examples of Water Treatments:**
- <https://youtu.be/1DBKm2kzW5c>
- <https://youtu.be/JG4xTHRyYik>

Fire Extinguisher and Flashpoint Killer

- **ELMN8 Used As a Fire Extinguisher and Killer of Flashpoint to Remove Ignition Danger:**
- <https://youtu.be/KGQH0kNTtOQ>
- <https://youtu.be/6w8x8dVdlhA>
- <https://youtu.be/ySukoeBRLYE>
- <https://youtu.be/qGz0cB31RDU>
- <https://youtu.be/mPHpNPu8kM>
- <https://youtu.be/JYgHIqtCTqU>



The New Remediation Paradigm

- The Combined Use of Hanby Environmental's TPH Field Test Kits and OMG Solutions ELMN8(+)
- Hanby Provides The Immediate Feedback of Beginning Concentration and Monitors The Remediation Progress
- OMG's ELMN8(+) Immediately ELMN8's The Hydrocarbon Contamination

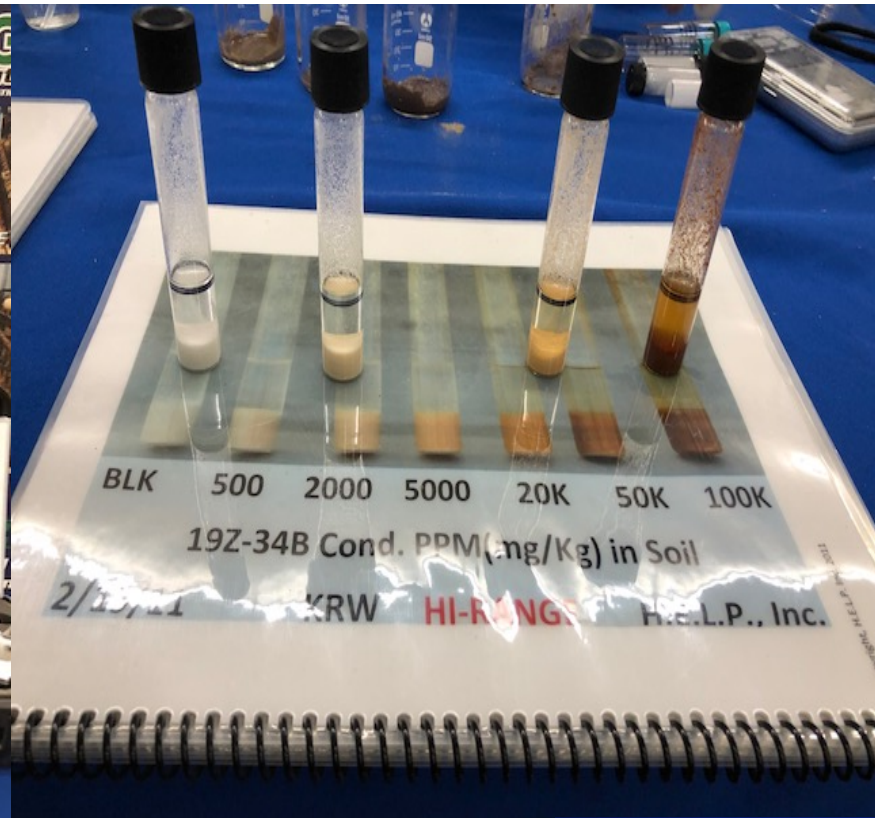
Hanby Environmental
For Accurate Field Analysis

OMG
Solutions
A PETROLEUM REMEDIATION COMPANY

TEST **TREAT · TILL** **RETEST**

Typical Soil Test Results:

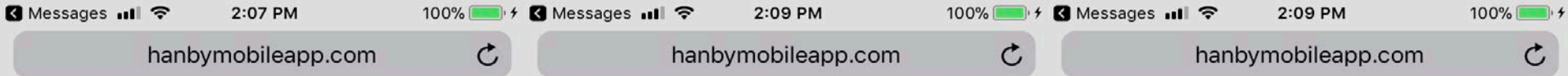
Clean Soil, Contaminated Soil to 125.5k ppm,
Reduced to 24.4k ppm, Reduced to 1.1k ppm by Two
Treatments of ELMN8



Soil Treatment Validation Results Per

Hanby Mobile App:

125.5k, 24.4k and 1.1k ppm



Hanby Environmental Hanby Environmental

USER : Charles
TITLE : EUEC Soil Demo Pretreatment
TYPE : Soil report
CONTAMINANT : Known
DATE : March 5, 2018
FIELD NOTES :

Preliminary Judgement call Image :

Test Tube Image :

Matched Result : 19Z_34B cond in Soil 125510.2 mg/Kg(PPM)

Hanby Environmental Hanby Environmental

USER : Charles
TITLE : EUEC Soil Demo Post First Treatment
TYPE : Soil report
CONTAMINANT : Known
DATE : March 5, 2018
FIELD NOTES :

Preliminary Judgement call Image :

Test Tube Image :

Matched Result : 19Z_34B cond in Soil 24375.0 mg/Kg(PPM)

Hanby Environmental Hanby Environmental

USER : Charles
TITLE : EUEC Soil Demo Post Second Treatment
TYPE : Soil report
CONTAMINANT : Known
DATE : March 5, 2018
FIELD NOTES :

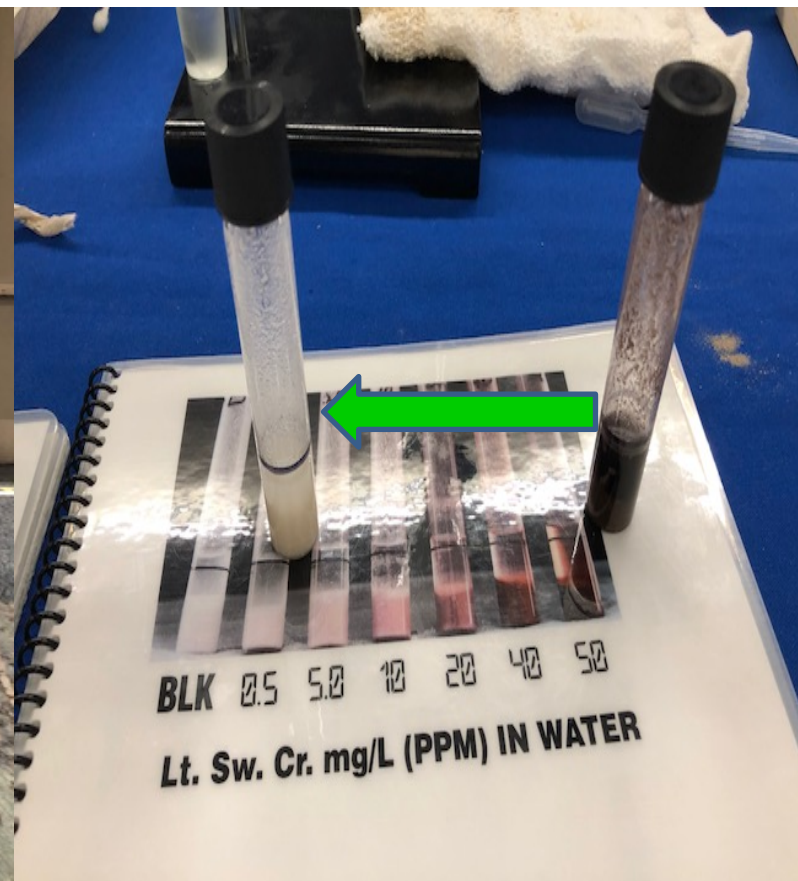
Preliminary Judgement call Image :

Test Tube Image :

Matched Result : 19Z_34B cond in Soil 1100.0 mg/Kg(PPM)

Typical Water Test Results:

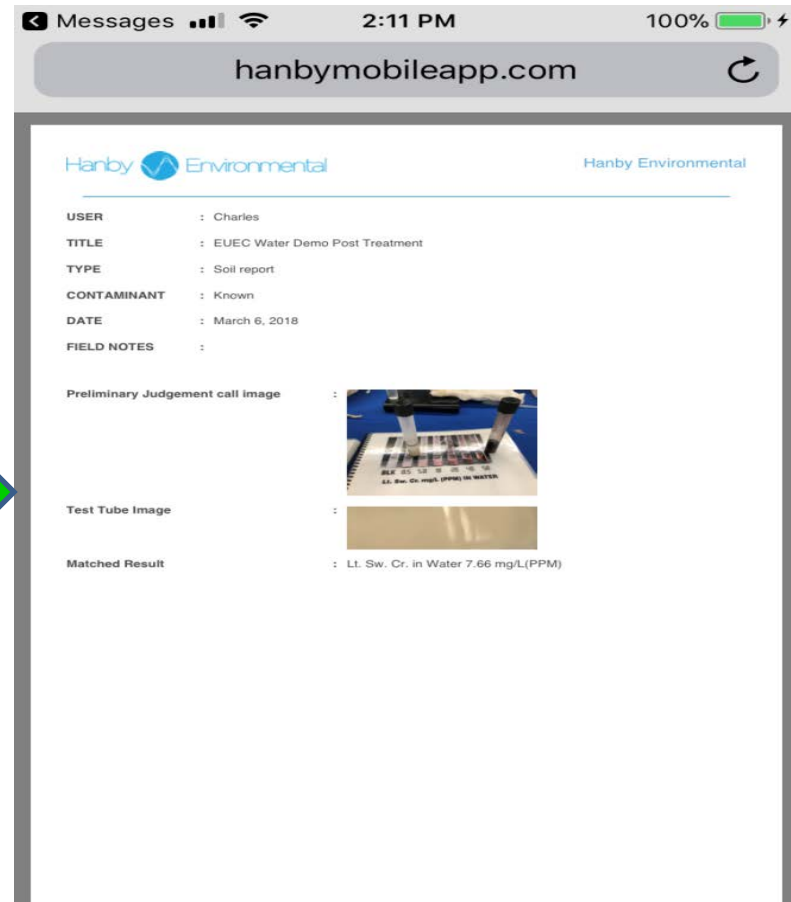
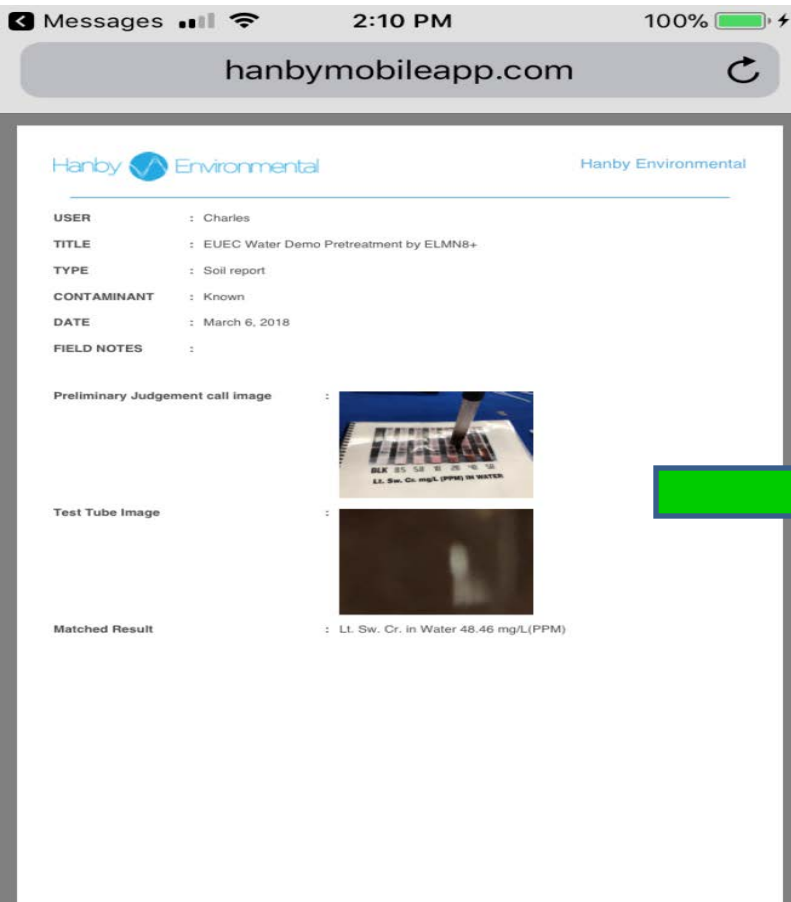
Clean Water, Contaminated Water to 48.5 ppm,
Reduced to 7.7 ppm by One Treatment of ELMN8+



Water Treatment Validation Results Per

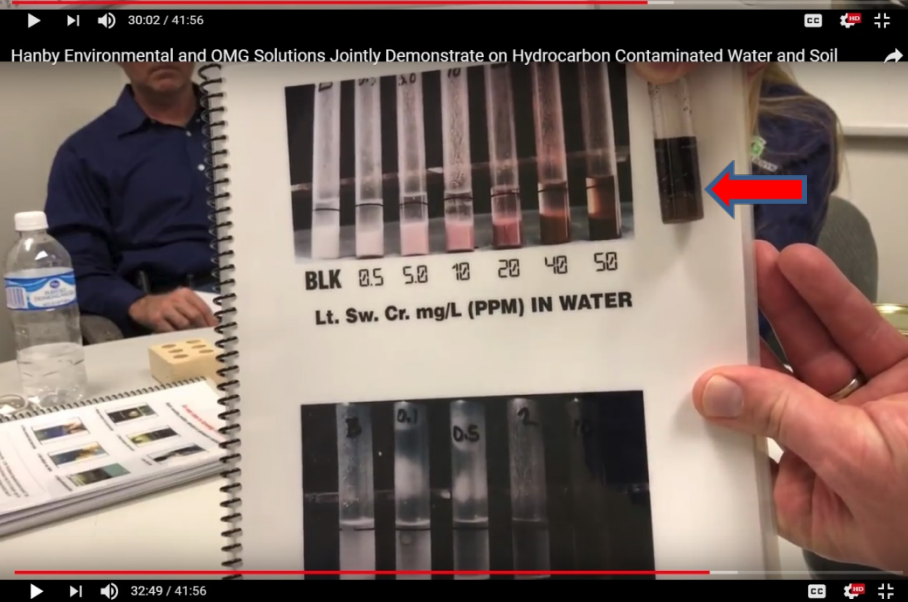
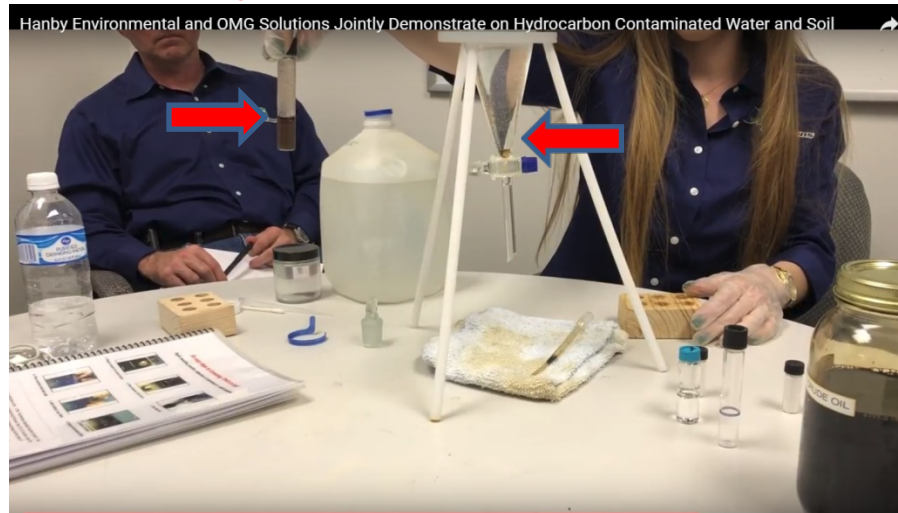
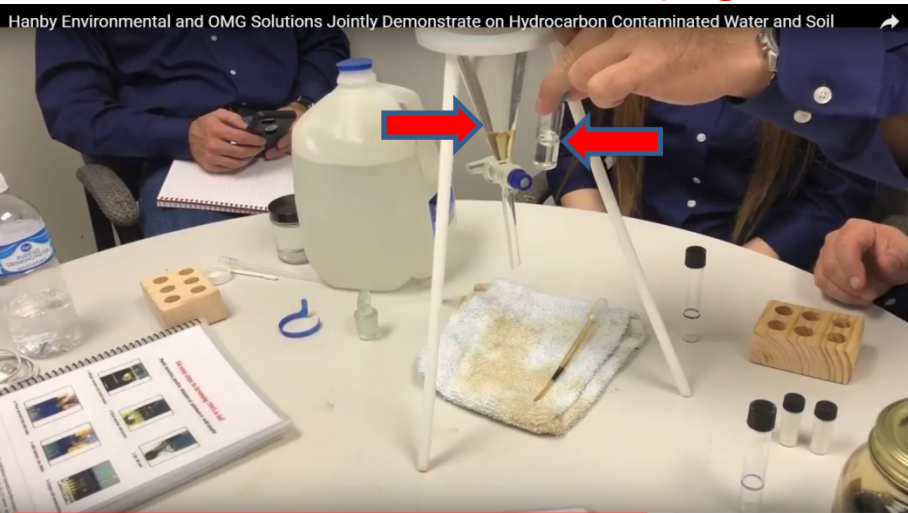
Hanby Mobile App:

48.5 and 7.7 ppm



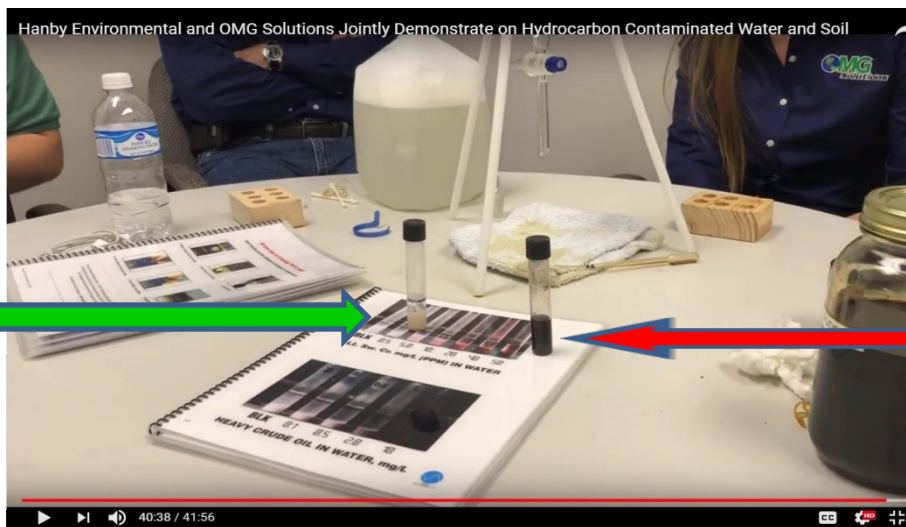
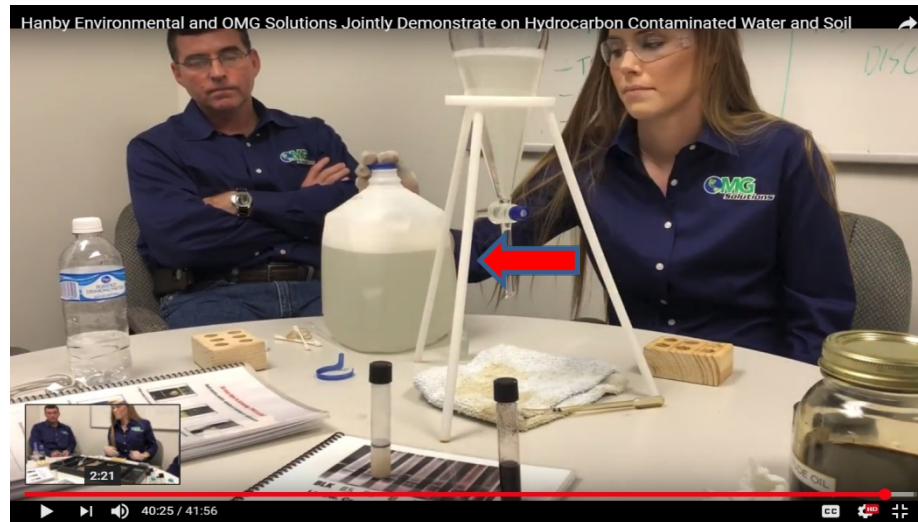
OMG's Water Treatment Demo

(Eagle Ford Crude Oil in Water)



OMG's Water Treatment Demo

(Eagle Ford Crude Oil in Water)

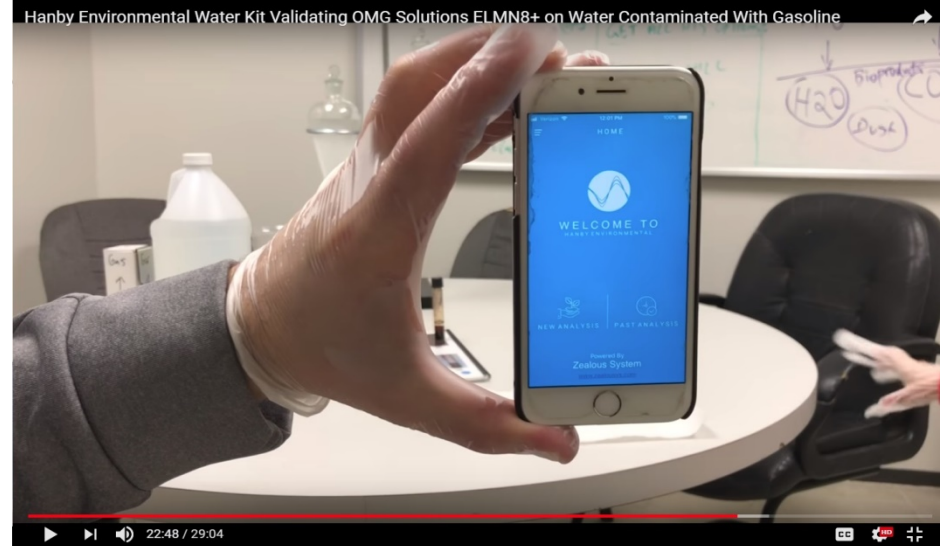
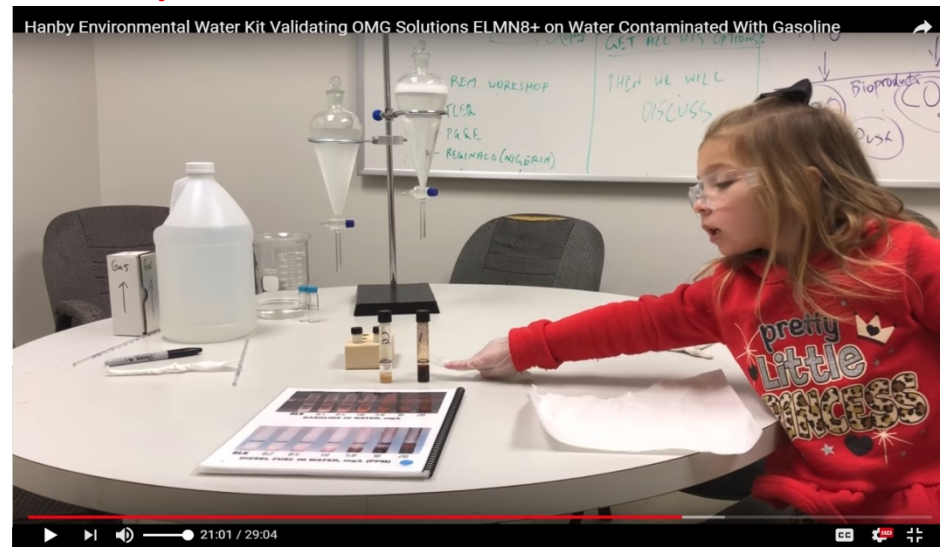
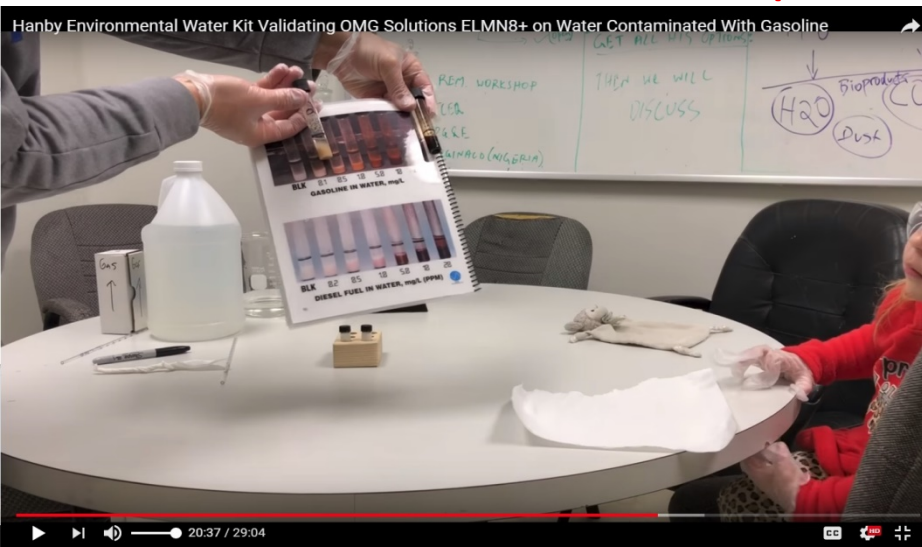


Reduced to 2 ppm

Well Over 50 ppm

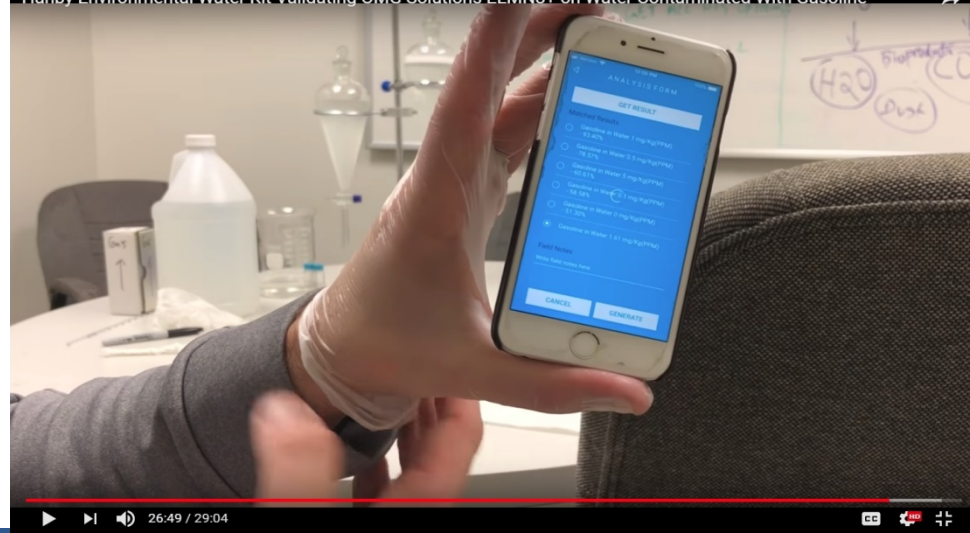
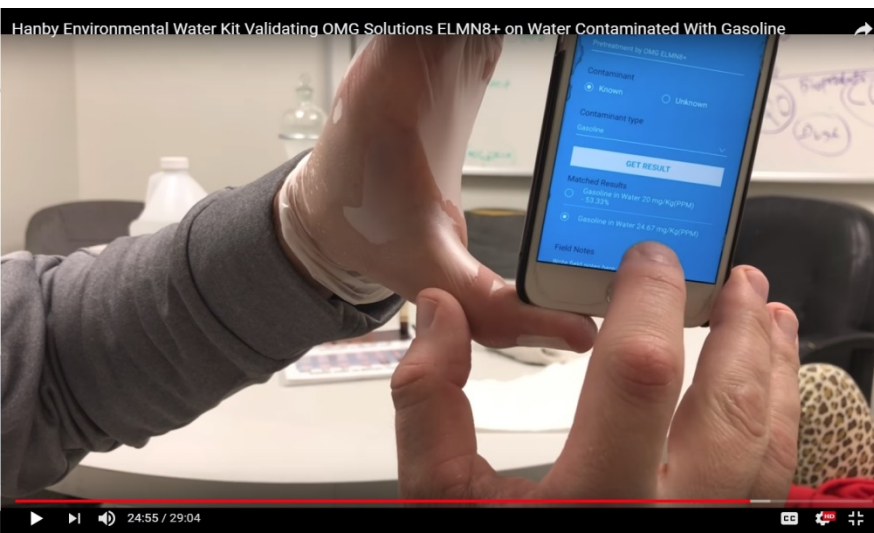
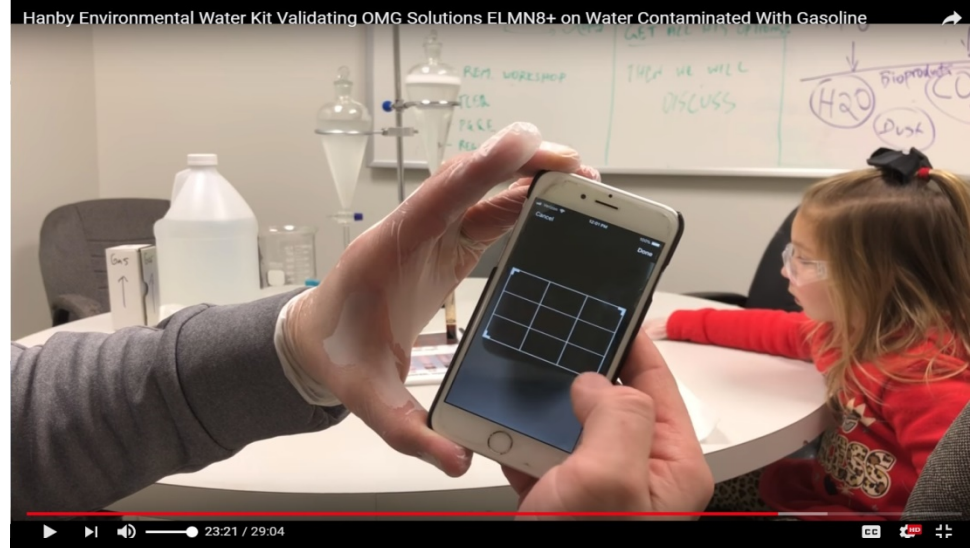
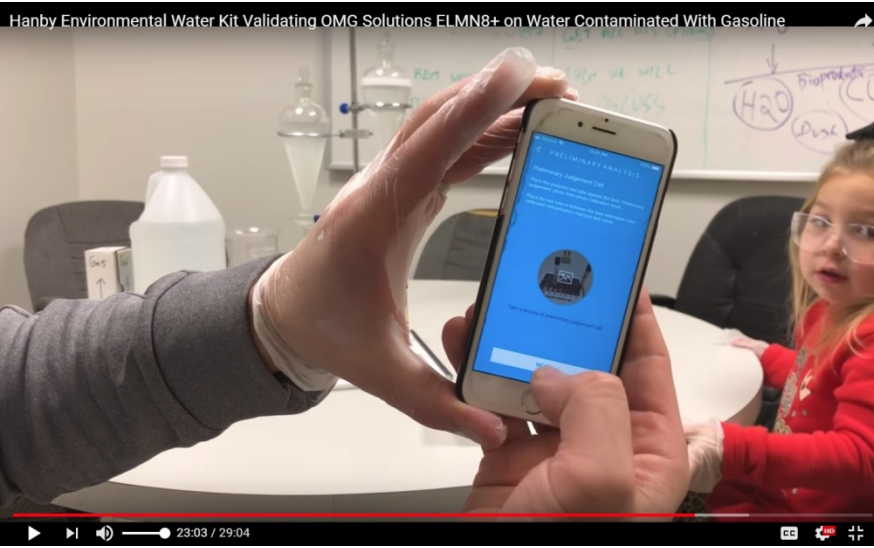
Hanby's Validation Test of ELMN8

(Gasoline in Water)



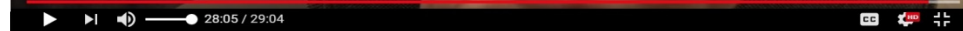
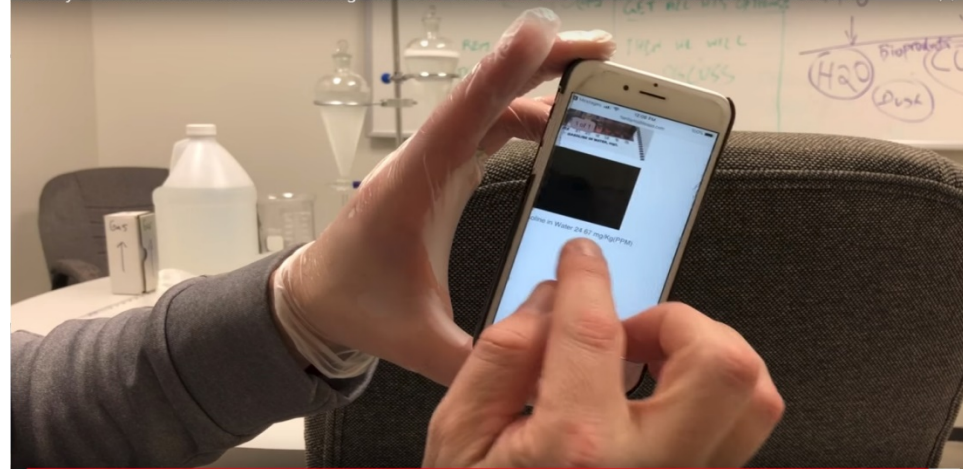
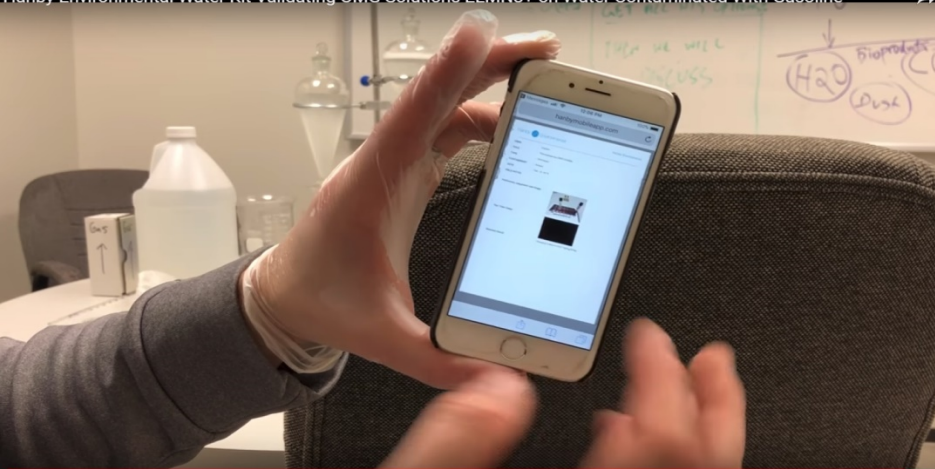
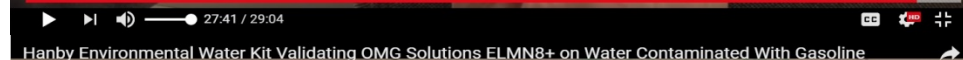
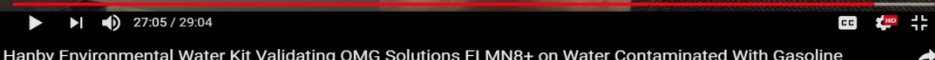
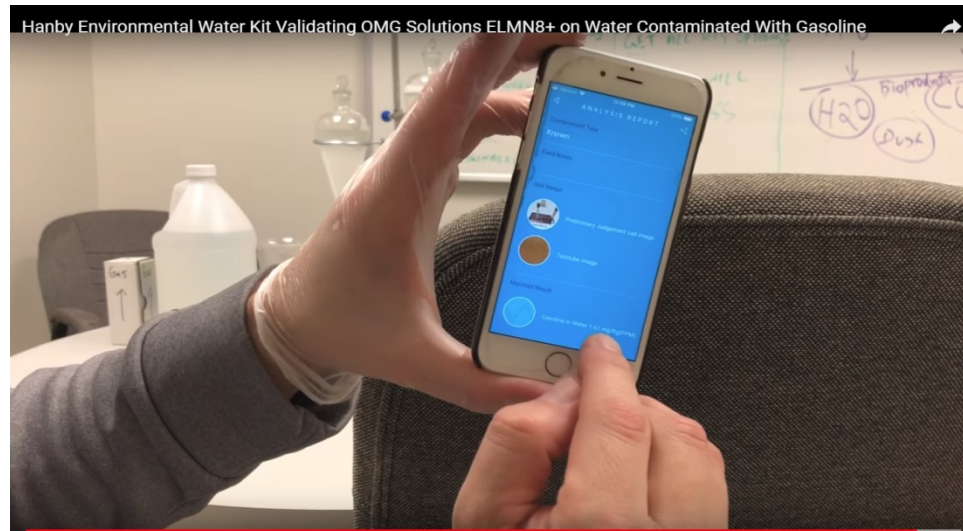
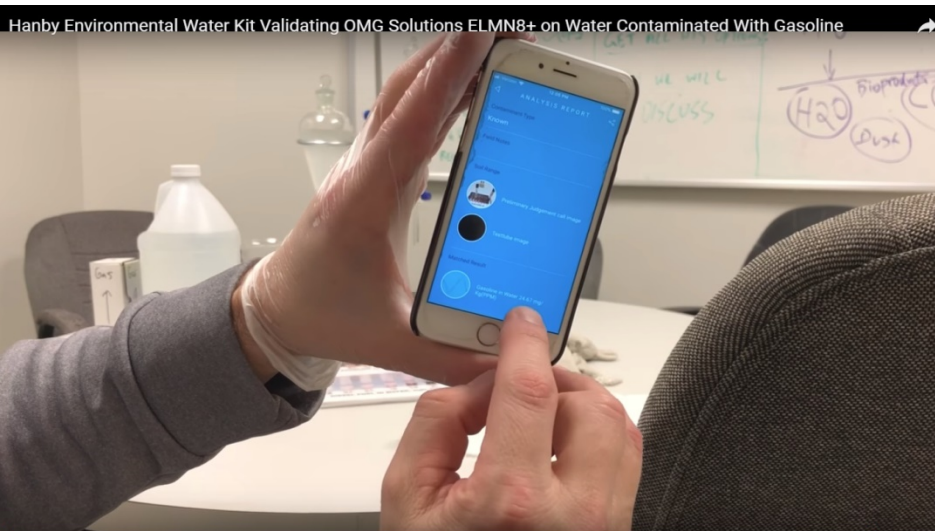
Hanby's Validation Test of ELMN8

(Gasoline in Water)



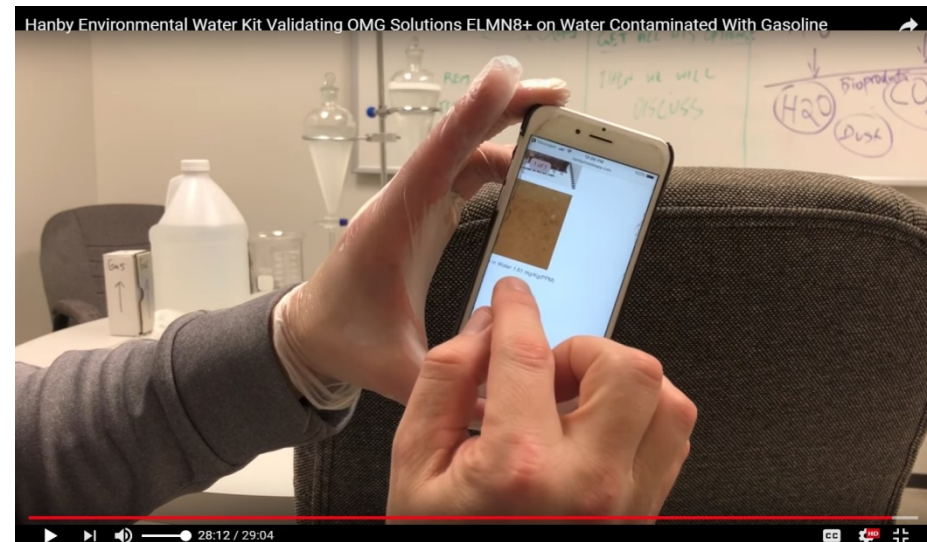
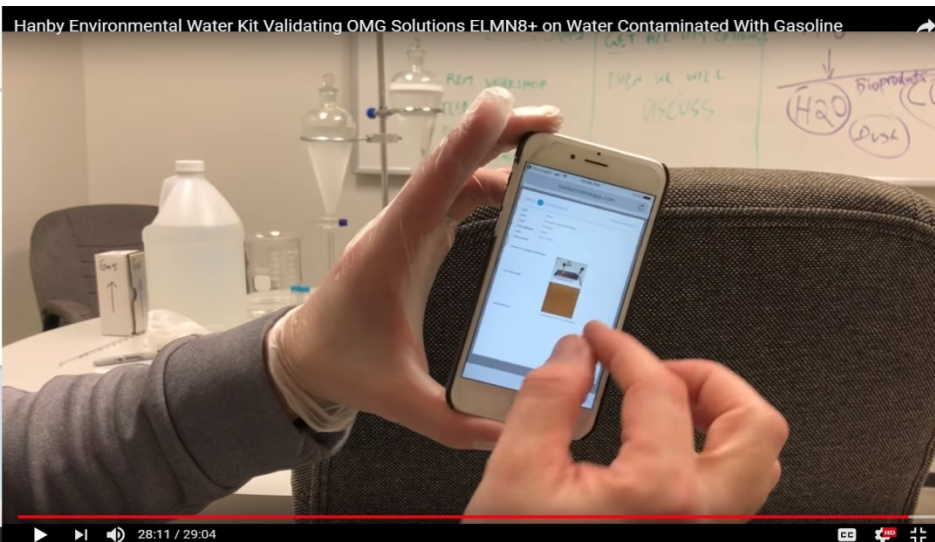
Hanby's Validation Test of ELMN8

(Gasoline in Water)

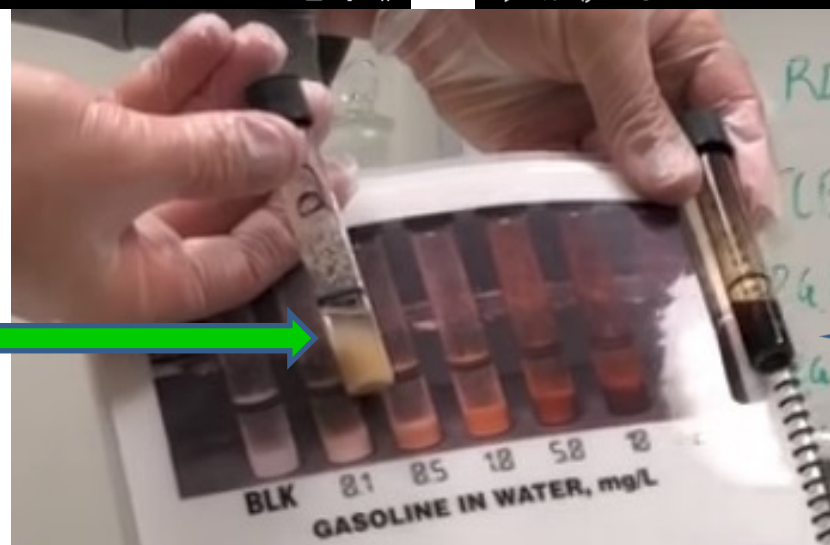
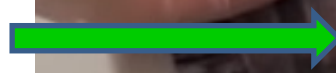


Hanby's Validation Test of ELMN8

(Gasoline in Water)



Reduced to 1.61 ppm

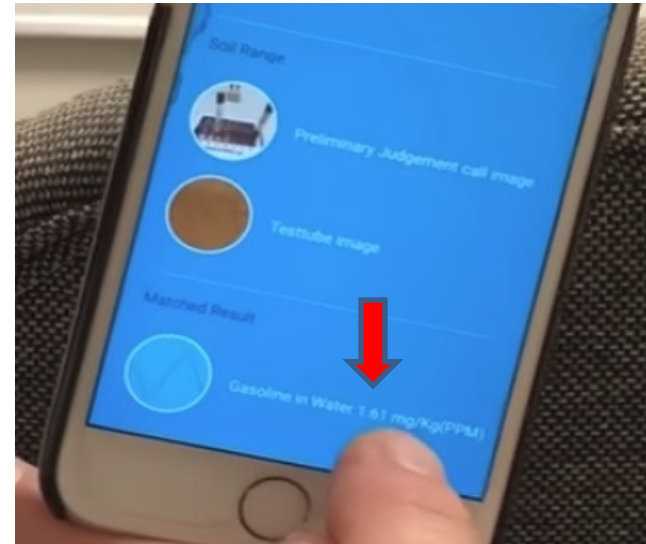
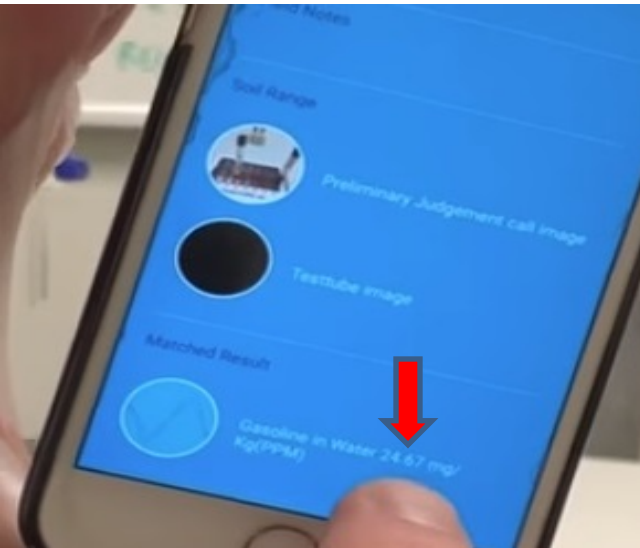


24.67 ppm



Hanby's Validation Test of ELMN8

(Gasoline in Water)

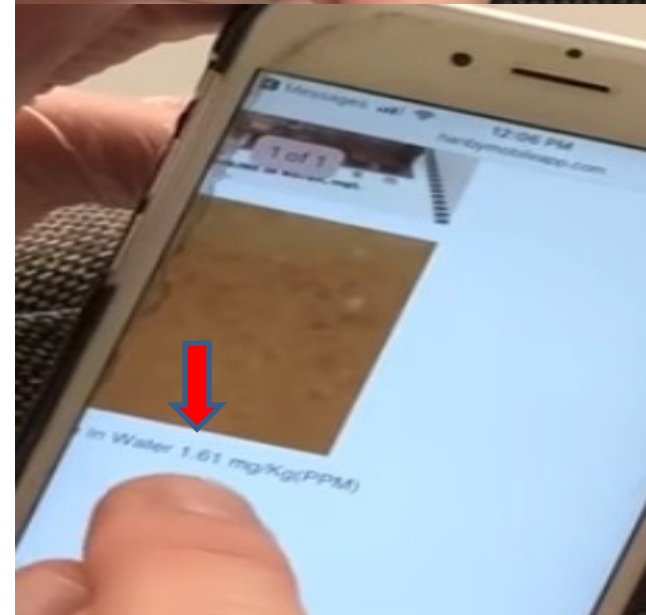
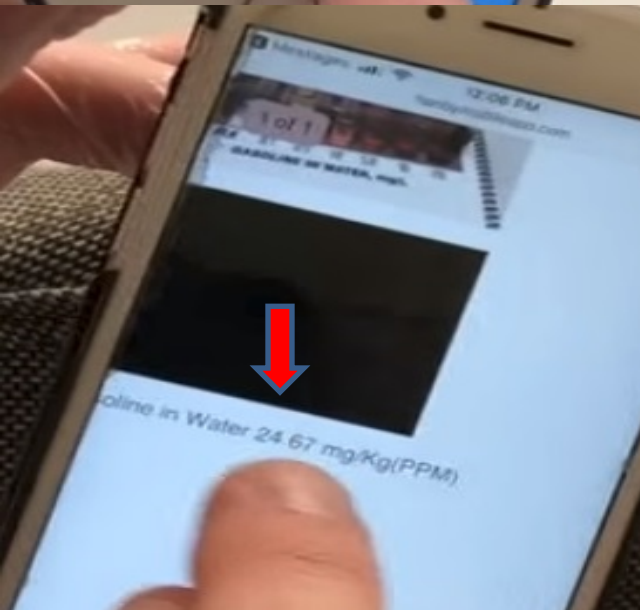


Results Reflected:

From 24.67 ppm

Reduced to 1.61 ppm

By One Treatment of ELMN8+



ConEdison Blind Samples Demo

Performed by Hanby Environmental and OMG Solutions on ConEdison provided blind samples.

ConEdison is the largest Power Provider in New Jersey and New York.

To summarize the results reflected in the pictures below are supported by the links to the reports generated by the recently released Hanby Mobile Application is as follows:

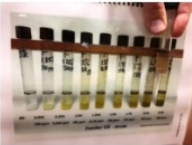
Soil Sample 1 - South had a beginning contamination level of 2.3% or 23k ppm reduced to 0.15% or 1.5k ppm after a single application of OMG's product ELMN8.


Pretreatment: <http://hanbymobileapp.com//media/pdf/report211.pdf>

Post treatment: <http://hanbymobileapp.com//media/pdf/report212.pdf>

Hanby Environmental

USER : Charles
TITLE : ConEdison - Sample 1 - South
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 25, 2018
FIELD NOTES :

Preliminary Judgement call image : 

Test Tube Image : 

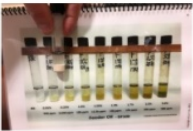
Matched Result : Feeder Oil in Soil 2.31 mg/Kg(%)

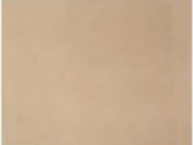
From 2.31% or 23.1k ppm
To
0.15% or 1.5k ppm



Hanby Environmental

USER : Charles
TITLE : ConEdison - Sample 1 - Posttreatment by ELMN8
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 25, 2018
FIELD NOTES :

Preliminary Judgement call image : 

Test Tube Image : 

Matched Result : Feeder Oil in Soil 0.15 mg/Kg(%)

ConEdison Blind Samples Demo

Performed by Hanby Environmental and OMG Solutions on ConEdison provided blind samples.

ConEdison is the largest Power Provider in New Jersey and New York.

To summarize the results reflected in the pictures below are supported by the links to the reports generated by the recently released Hanby Mobile Application is as follows:

Soil Sample 2 - North had a beginning contamination level of 1.86% or 18.6k ppm reduced to 0.1% or 1k ppm after a single application of OMG's product ELMN8.

Pretreatment: <http://hanbymobileapp.com//media/pdf/report213.pdf>

Post treatment: <http://hanbymobileapp.com//media/pdf/report214.pdf>



Hanby Environmental

USER : Charles
TITLE : ConEdison - Sample 2 - North
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 25, 2018
FIELD NOTES :

Preliminary Judgement call image :



Test Tube Image :



Matched Result : Feeder Oil in Soil 1.86 mg/Kg(%)

From 1.86% or 18.6k ppm
To
0.1% or 1k ppm



Hanby Environmental

USER : Charles
TITLE : ConEdison - Sample 2 - Posttreatment
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 25, 2018
FIELD NOTES :

Preliminary Judgement call image :



Test Tube Image :



Matched Result : Feeder Oil in Soil 0.1 mg/Kg(%)



ConEdison Blind Samples Demo

Performed by Hanby Environmental and OMG Solutions on ConEdison provided blind samples.

ConEdison is the largest Power Provider in New Jersey and New York.

To summarize the results reflected in the pictures below are supported by the links to the reports generated by the recently released Hanby Mobile Application is as follows:

Water Sample - had a beginning contamination level of 52 ppm reduced to 6.7 ppm after a single application of OMG's product ELMN8+

Pretreatment: <http://hanbymobileapp.com//media/pdf/report215.pdf>

Post treatment: <http://hanbymobileapp.com//media/pdf/report216.pdf>



Hanby Environmental

USER : Charles
TITLE : ConEdison - Water Demo - Pretreatment
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 25, 2018
FIELD NOTES :

Preliminary Judgement call image :



Test Tube Image :



Matched Result : Lt. Sw. Cr. in Water 52.33 mg/L(PPM)

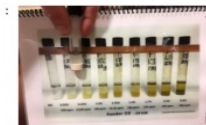
From 52 ppm
To
6.7 ppm



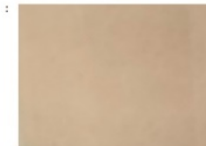
Hanby Environmental

USER : Charles
TITLE : ConEdison - Sample 1 - Posttreatment by ELMN8
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 25, 2018
FIELD NOTES :

Preliminary Judgement call image :



Test Tube Image :

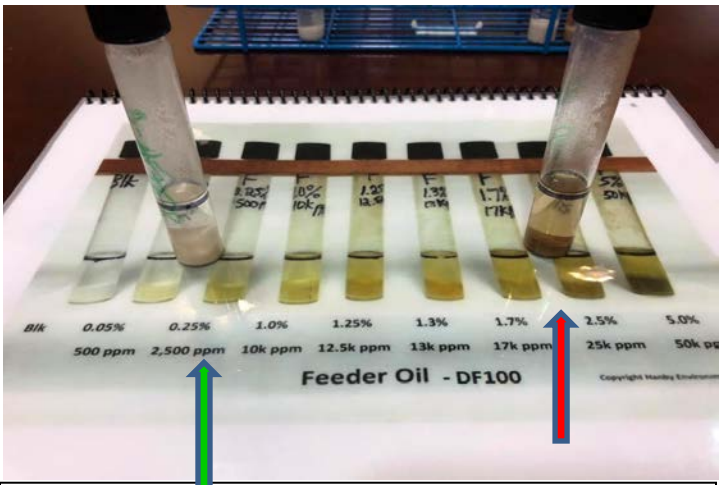


Matched Result : Feeder Oil in Soil 0.15 mg/Kg(%)



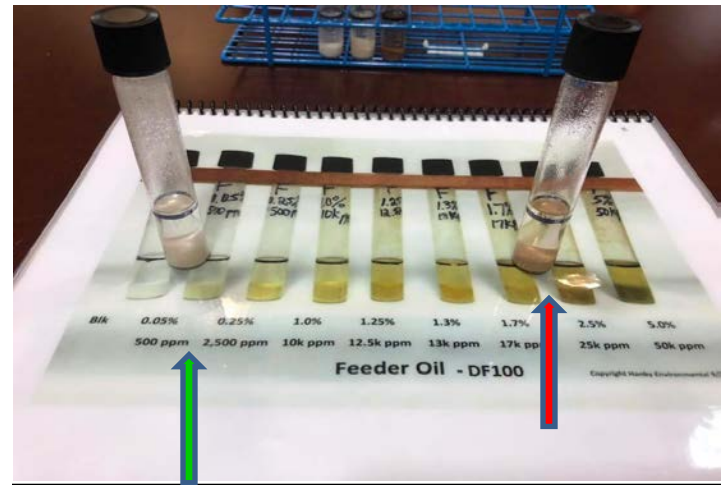
ConEdison Blind Samples Demo

*** Feeder Oil aka DF100 aka Dielectric Fluid ***



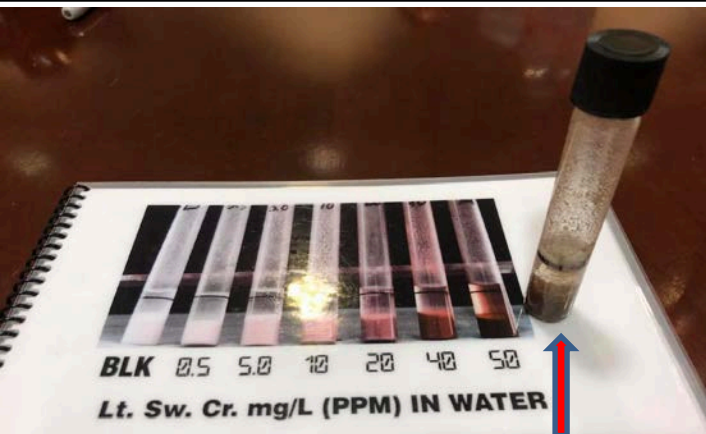
Soil Sample 1 – South

Pre (23k ppm) and Post (1.5k ppm) Treatment by ELMN8

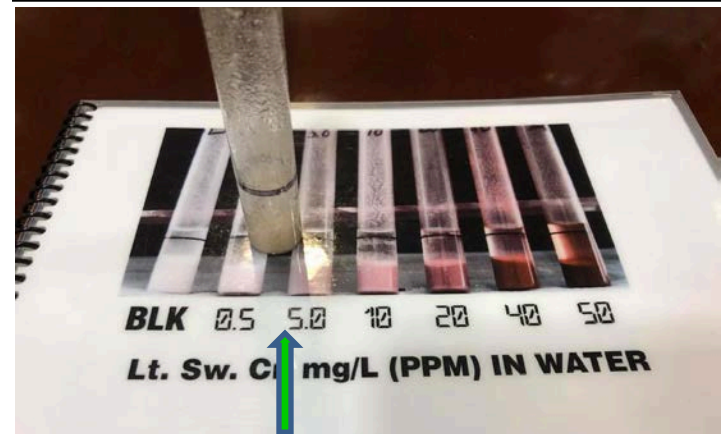


Soil Sample 2 –North

Pre (18.6k ppm) and Post (1k ppm) Treatment by ELMN8

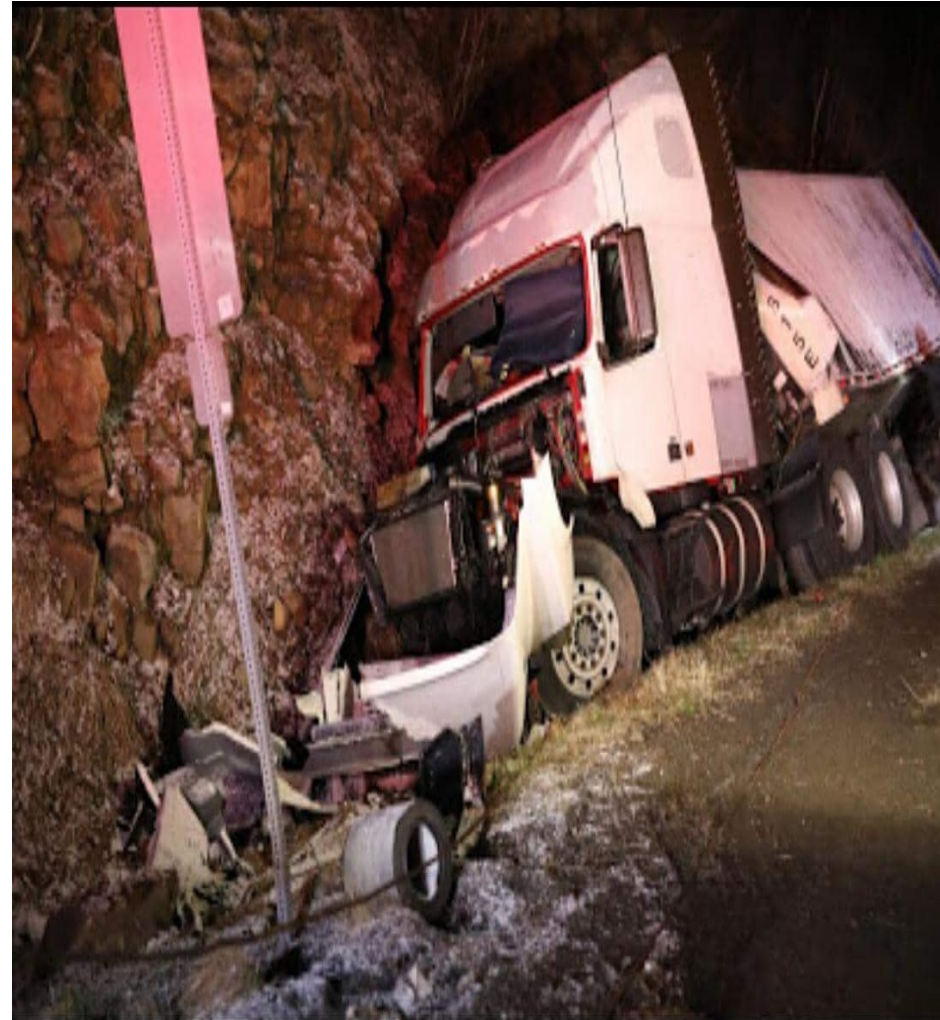


Water Sample - Pre (52 ppm) and Post (6.7 ppm) Treatment by ELMN8+



Emergency Response Use of The New Remediation Paradigm in Pennsylvania in Tough Conditions

- JRL Emergency's Michael Litwak of Pennsylvania Responded to A Diesel Spill in Tough Conditions.
- The 18 Wheeler was in the Ditch Between The Road and a Mountainside.
- The PA DEQ told Him to Find A Solution Without Digging Which Would Probably Cause A Landslide.
- He Implemented The New Remediation Paradigm Utilizing A Combination of Surface Spraying Without Tilling and Injection and Migration.



Emergency Response Use of The New Remediation Paradigm in Pennsylvania in Tough Conditions

- Using Both His Field Test Kit and Mobile App, He Was Able To Document The Beginning Contamination Level of 68k ppm.
- After Two Treatments He Was Able To Document That The Diesel Contamination Had Been Reduced to 332 ppm.
- They Used A High Pressure Jet To Agitate and Break Up Soil and Sprayed for Migration Afterwards.
- At 332 ppm, He Sent Samples Off for Lab Analysis, All The While The Samples Were Still Oxidizing.



Emergency Response Use of The New Remediation Paradigm in Pennsylvania in Tough Conditions

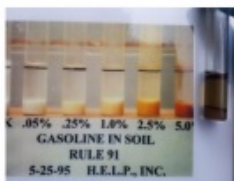
- **PreTreatment of 68k ppm:**
- <http://hanbymobileapp.com//media/pdf/report830.pdf>
- **Post treatment of 332 ppm:**
- <http://hanbymobileapp.com/media/pdf/report829.pdf>



Hanby Environmental

USER : Charles
TITLE : JRL Emergency - Diesel Spill
TYPE : Soil report
CONTAMINANT : Known
DATE : June 3, 2018
FIELD NOTES :

Preliminary Judgement call image :



Test Tube Image :



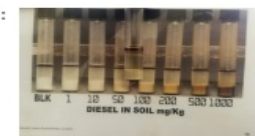
Matched Result : Diesel Fuel in Soil 6.78 mg/Kg(%) aka 67800.0 ppm



National Certified Spill Response

USER : Michael
TITLE : Morelli Brothers Aftertreatment 2
TYPE : Soil report
CONTAMINANT : Known
DATE : June 3, 2018
FIELD NOTES : After treatment #2 At MM 136 South I 81

Preliminary Judgement call image :



Test Tube Image :



Matched Result : Diesel in Soil 331.71 mg/Kg aka 331.71 ppm

Emergency Response Use of The New Remediation Paradigm in Pennsylvania in Tough Conditions

Pottsville Environmental Testing Laboratory, Inc.

164 East Bacon Street
Palo Alto, Pennsylvania 17901

Telephone 570-622-7315
Fax 570-622-7365

JRL EMERGENCY SERVICES
51 ATLANTIC ST.
POTTSVILLE, PA 17901

06/21/18

Sample Location: SOIL SAMPLE @ MILE MARKER 136 SOUTH ROUTE 81
MORELLI BROTHERS - DIESEL FUEL SPILL
Sample Date @ Time: 06/18/18 @ 1100
Rec'd Date @ Time: 06/18/18 @ 1130

Sampled By: MIKE
Rec'd By: MCF

GENERAL

PARAMETER	RESULT	MDL	UNITS	TEST DATE	METHOD
1. Total Solids	98.5	1.0	%	06/19/18	SM2540G ¹

SEMI-VOLATILES

PARAMETER	RESULT	MDL	UNITS	TEST DATE	METHOD
1. Fluorene	ND	12.5	ug/kg-dry	06/20/18	E8270C ¹
2. Phenanthrene	ND	12.5	ug/kg-dry	06/20/18	E8270C ¹

VOLATILES

PARAMETER	RESULT	MDL	UNITS	TEST DATE	METHOD
1. Benzene	ND	25.0	ug/kg-dry	06/20/18	E8260B ¹
2. Toluene	ND	25.0	ug/kg-dry	06/20/18	E8260B ¹
3. Ethyl benzene	ND	25.0	ug/kg-dry	06/20/18	E8260B ¹
4. Isopropylbenzene	ND	25.0	ug/kg-dry	06/20/18	E8260B ¹
5. Naphthalene	ND	25.0	ug/kg-dry	06/20/18	E8260B ¹

If there are any questions regarding this data, feel free to contact me.




Michael C. Fabian
Laboratory Director

(*PA DEP Lab Name: M.J. Reider, Inc.; ID Number: 06-003)

1. A result of "ND" indicates the concentration of the analyte tested was either not detected or below the MDL.
2. MDL = minimum detectable level.

- The Lab Results Came Back Non-Detect for TPH and BTEX.
- Michael said, ““We were able to test, apply, and get out of harms way faster with Hanby’s quick results and OMG’s quick application.”

Lab Results Correlation Comparison

Performed by Arcadis for Murphy Oil & Gas
Post Treatment by OMG's ELMN8

Table 1. Soil Sample Analytical Results (mg/kg), Scared Dog Central Lateral Pipeline, Atascosa County, Texas

Sample ID	Sample Date	Sample Depth (feet bgs)	Latitude	Longitude	Organic Vapor Concentration (ppm)	↓					
						TPH	Benzene	Toluene	Ethylbenzene	Xylenes	Chlorides
Stockpile West	1/8/18	0-1'	28.82285°	-98.23717°	---	254	0.429	3.25	2.08	8.41	2,180
Stockpile East	1/8/18	0-1'	28.82321°	-98.23684°	---	380	0.28	4.3	3.45	13.35	2,640
Stockpile 3 Test	1/11/18	0-1'	28.82277°	-98.23718°	---	212	0.0929	1.45	1.12	5.12	4,100
Stockpile 3	1/11/18	0-1'	28.82277°	-98.23718°	---	194	1.52	9.02	4.69	19.24	2,340
Stockpile 4	1/11/18	0-1'	28.82295°	-98.23740°	---	1,630	0.589	4.73	2.64	11.59	3,230
Stockpile 4R	1/15/18	0-1'	28.82295°	-98.23740°	---	---	<0.02	0.0469	0.127	0.492	2,440
Stockpile 5	1/15/18	0-1'	28° 49' 23.39"	-98° 14' 13.50"	---	1,410	0.739	7.79	5.7	24.42	1,880
Stockpile 6	1/15/18	0-1'	28° 49' 22.13"	-98° 14' 14.37"	---	862	0.114	2.27	2.5	11.14	981
Stockpile 7	1/15/18	0-1'	28° 49' 22.91"	-98° 14' 13.32"	---	1,820	0.0469	1.09	1.22	5.84	650
Soil Pile #8	1/22/18	0-1'	28.82328°	-98.23617°	---	153	<0.02	0.0274	0.0493	0.232	3,720
Soil Pile #8R	1/23/18	0-1'	28.82328°	-98.23617°	---	---	---	---	---	---	1,380
Soil Pile #9	1/22/18	0-1'	28.8231322°	-98.2359698°	---	938	0.142	3.8	2.67	11.69	1,280
Soil Pile #10	1/22/18	0-1'	28.82299°	-98.236123°	---	<63.1	<0.03	0.0896	0.0909	0.351	2,100
Soil Pile #11	1/23/18	0-1'	28.823125°	-98.23637°	---	288	<0.02	0.114	0.15	0.533	1,920
Soil Pile #12	1/23/18	0-1'	28.82257°	-98.23716°	---	1,530	0.668	12	7.55	32.7	1,330
Soil Pile #13	1/24/18	0-1'	28.82279°	-98.23724°	---	266	0.0631	1.13	0.71	3.31	319
Soil Pile #14	1/24/18	0-1'	28.82296°	-98.237348°	---	558	0.337	4.41	2.63	10.89	583
Soil Pile #15	1/24/18	0-1'	28.82313°	-98.23704°	---	492	0.0625	1.48	1.25	5.34	615
Soil Pile #16	1/26/18	0-1'	28.822901°	-98.236115°	---	688	<0.02	0.305	0.364	1.666	<243
Soil Pile #17	1/26/18	0-1'	28.8229°	-98.236002°	---	416	0.0309	0.658	0.683	2.94	278
Soil Pile #18	1/29/18	0-1'	28.823040°	-98.236302°	---	739	0.0433	0.791	0.817	2.89	265
Soil Pile #19	1/29/18	0-1'	28.823107°	-98.236406°	---	949	<0.02	0.198	0.359	1.145	309
Soil Pile #20	1/29/18	0-1'	28.823196°	-98.236134°	---	755	<0.02	0.0609	0.264	0.5836	318

ARCADIS

Page 1 of 3

Lab Results Correlation Comparison

Performed by Arcadis for Murphy Oil & Gas
Post Treatment by OMG's ELMN8

Table 1. Soil Sample Analytical Results (mg/kg), Scared Dog Central Lateral Pipeline, Atascosa County, Texas

Sample ID	Sample Date	Sample Depth (feet bgs)	Latitude	Longitude	Organic Vapor Concentration (ppm)	↓	↓	Toluene	Ethylbenzene	Xylenes	Chlorides
						TPH	Benzene				
Soil Pile #21	1/29/18	0-1'	28.823250°	-98.236256°	---	2,330	0.106	2.17	1.69	6.13	451
Soil Pile #22	1/30/18	0-1'	28.822791°	-98.237407°	---	915	0.087	1.76	1.45	5.84	291
Soil Pile #23	1/30/18	0-1'	28.822877°	-98.237242°	---	487	0.132	2.24	1.79	8.06	237
Soil Pile #24	1/30/18	0-1'	28.822956°	-98.237084°	---	397	0.181	4.11	2.63	10.95	320
Soil Pile #25	1/30/18	0-1'	28.823041°	-98.236952°	---	2,060	0.226	3.25	2	9.05	316
Soil Pile #26	1/31/18	0-1'	28.822302°	-98.236941°	---	2,390	0.0399	1.55	1.22	5.79	186
Soil Pile #27	1/31/18	0-1'	28.822395°	-98.236998°	---	2,460	0.0407	2.39	1.73	8.31	176
Soil Pile #28	1/31/18	0-1'	28.822492°	-98.237048°	---	566	0.0799	1.82	1.36	6.39	252
Soil Pile #29	1/31/18	0-1'	28.822616°	-98.237088°	---	2,040	0.151	2.93	2.15	10.16	204
Soil Pile #30	2/1/18	0-1'	28.823260°	-98.236596°	---	166	<0.02	0.493	0.405	1.87	268
Soil Pile #31	2/1/18	0-1'	28.823403°	-98.236752°	---	199	<0.02	0.291	0.377	1.72	213
Soil Pile #32	2/5/18	0-1'	28.822901°	-98.236115°	---	93.7	<0.02	<0.02	<0.02	0.0505	121
Soil Pile #33	2/5/18	0-1'	28.823112°	-98.235771°	---	916	<0.02	<0.02	0.0501	0.2079	<116
Test 1	1/29/18	0-1'	---	---	---	---	<0.02	0.36	0.67	3.85	---
Test 2	1/29/18	0-1'	---	---	VOA Vials:	---	<0.119	2.39	1.43	6.48	---
					Bulk Jar:	2,530	0.0428	1.47	1.34	5.93	---
Test 3	1/29/18	0-1'	---	---	---	---	0.0926	1.18	0.579	2.109	---
Test 4 (4')	2/1/18	4'	---	---	---	<57.5	0.0441	0.11	<0.02	<0.07	179
Test 5 (2')	2/1/18	2'	---	---	---	1,280	2.29	21.1	3.88	13.53	<119
Test 6 (18")	2/1/18	1.5'	---	---	---	1,950	0.275	3.4	1.68	7.65	<113
Field QA/QC Samples											
Trip Blank	1/8/18	---	---	---	---	---	<0.001	<0.001	<0.001	<0.003	---

RRC Tier 1 Cleanup Level:

RRC Tier 1 Cleanup Level for Class 3 Groundwater:^f

10,000^a 0.026^a 8.2^a 7.6^a 120^a 3,000^c
 10,000^a 2.6^a 820^a 760^a 12,000^a 3,000^c

ARCADIS

Page 2 of 3

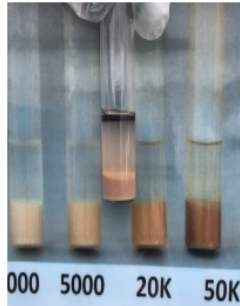
Hanby Mobile App Report Results



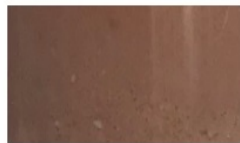
Hanby Environmental

USER : Charles
TITLE : OMG Solutions - Murphy Oil - 791 - Pretreatment
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 5, 2018
FIELD NOTES :

Preliminary Judgement call image :



Test Tube Image :



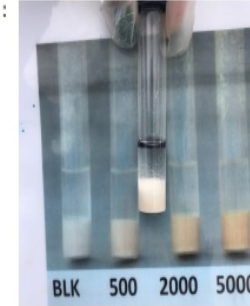
Matched Result : 19Z_34B cond in Soil 30625.0 mg/Kg(PPM)



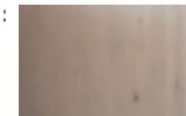
Hanby Environmental

USER : Charles
TITLE : OMG Solutions - Murphy Oil - 791 - Post 1Treatment
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 5, 2018
FIELD NOTES :

Preliminary Judgement call image :



Test Tube Image :



Matched Result : 19Z_34B cond in Soil 8586.96 mg/Kg(PPM)

From 30.6k ppm To 8.6k ppm



Hanby Mobile App Report Results

From 14.1k, 13.8k and 23.8k to 0 ppm



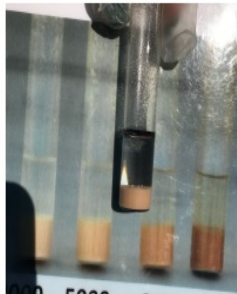
Hanby Environmental	Hanby Environmental	Hanby Environmental	Hanby Environmental	Hanby Environmental	Hanby Environmental
<p>USER : Charles</p> <p>TITLE : OMG Solutions - Murphy Oil - 791 - Pretreatment</p> <p>TYPE : Soil report</p> <p>CONTAMINANT : Known</p> <p>DATE : Jan. 5, 2018</p> <p>FIELD NOTES :</p>	<p>USER : Charles</p> <p>TITLE : OMG Solutions - Murphy Oil - 791 - Pretreatment 2 Foot</p> <p>TYPE : Soil report</p> <p>CONTAMINANT : Known</p> <p>DATE : Jan. 5, 2018</p> <p>FIELD NOTES :</p>	<p>USER : Charles</p> <p>TITLE : OMG Solutions - Murphy Oil - 791 - Pretreatment - 1 Foot</p> <p>TYPE : Soil report</p> <p>CONTAMINANT : Known</p> <p>DATE : Jan. 5, 2018</p> <p>FIELD NOTES :</p>	<p>USER : Charles</p> <p>TITLE : OMG Solutions - Murphy Oil - 791 - Post 1 Treatment</p> <p>TYPE : Soil report</p> <p>CONTAMINANT : Known</p> <p>DATE : Jan. 5, 2018</p> <p>FIELD NOTES :</p>	<p>USER : Charles</p> <p>TITLE : OMG Solutions - Murphy Oil - 791 - Post 1 Treatment</p> <p>TYPE : Soil report</p> <p>CONTAMINANT : Known</p> <p>DATE : Jan. 5, 2018</p> <p>FIELD NOTES :</p>	<p>USER : Charles</p> <p>TITLE : OMG Solutions - Murphy Oil - 791 - Post 1 Treatment</p> <p>TYPE : Soil report</p> <p>CONTAMINANT : Known</p> <p>DATE : Jan. 5, 2018</p> <p>FIELD NOTES :</p>
<p>Preliminary Judgement call image : </p> <p>Test Tube Image : </p> <p>Matched Result : 19Z_34B cond in Soil 14130.43 mg/Kg(PPM)</p>	<p>Preliminary Judgement call image : </p> <p>Test Tube Image : </p> <p>Matched Result : 19Z_34B cond in Soil 13804.35 mg/Kg(PPM)</p>	<p>Preliminary Judgement call image : </p> <p>Test Tube Image : </p> <p>Matched Result : 19Z_34B cond in Soil 23750.0 mg/Kg(PPM)</p>	<p>Preliminary Judgement call image : </p> <p>Test Tube Image : </p> <p>Matched Result : 19Z_34B cond in Soil 0.0 mg/Kg(PPM)</p>	<p>Preliminary Judgement call image : </p> <p>Test Tube Image : </p> <p>Matched Result : 19Z_34B cond in Soil 0.0 mg/Kg(PPM)</p>	<p>Preliminary Judgement call image : </p> <p>Test Tube Image : </p> <p>Matched Result : 19Z_34B cond in Soil 0.0 mg/Kg(PPM)</p>

Hanby Mobile App Report Results

USER : Charles
TITLE : OMG - Murphy Turnbow Unit Pretreatment
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 8, 2018
FIELD NOTES :

USER : Charles
TITLE : OMG - Murphy Turnbow Unit Treatment 1
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 8, 2018
FIELD NOTES :

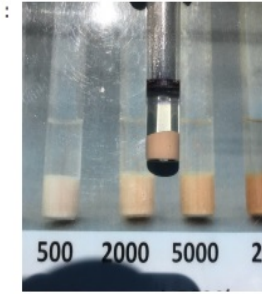
Preliminary Judgement call image :



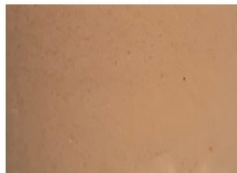
From 11.2k ppm To 9.2k ppm



Preliminary Judgement call image :



Test Tube Image :



Test Tube Image :



Matched Result : 19Z_34B cond in Soil 11195.65 mg/Kg(PPM)

Matched Result : 19Z_34B cond in Soil 9239.13 mg/Kg(PPM)

Hanby Mobile App Report Results

From 15.1k to 3.6k and 4.7k ppm



Hanby Environmental



Hanby Environmental



Hanby Environmental

USER : Charles
 TITLE : OMG - Murphy Turnbow Unit Pretreatment
 TYPE : Soil report
 CONTAMINANT : Known
 DATE : Jan. 8, 2018
 FIELD NOTES :

Preliminary Judgement call image :



Test Tube Image :



Matched Result : 19Z_34B cond in Soil 15108.7 mg/Kg(PPM)

USER : Charles
 TITLE : OMG - Murphy Turnbow Unit Treatment 1
 TYPE : Soil report
 CONTAMINANT : Known
 DATE : Jan. 8, 2018
 FIELD NOTES :

Preliminary Judgement call image :



Test Tube Image :



Matched Result : 19Z_34B cond in Soil 3956.52 mg/Kg(PPM)

USER : Charles
 TITLE : OMG - Murphy Turnbow Unit Treatment 1
 TYPE : Soil report
 CONTAMINANT : Known
 DATE : Jan. 8, 2018
 FIELD NOTES :

Preliminary Judgement call image :



Test Tube Image :



Matched Result : 19Z_34B cond in Soil 3956.52 mg/Kg(PPM)

Hanby Mobile App Report Results



Hanby Environmental

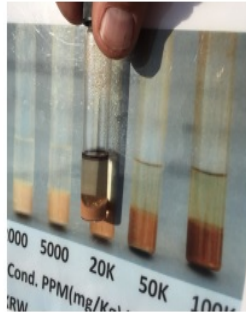


Hanby Environmental

USER : Charles
TITLE : OMG - Murphy - Scaredog - Pretreatment
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 11, 2018
FIELD NOTES :

USER : Charles
TITLE : OMG - Murphy - Scaredog - Post Treatment
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 11, 2018
FIELD NOTES :

Preliminary Judgement call image :



From 33.8k ppm To 6.6k ppm



Test Tube Image :



Matched Result : 19Z_34B cond in Soil 33750.0 mg/Kg(PPM)

Preliminary Judgement call image :



Test Tube Image :



Matched Result : 19Z_34B cond in Soil 6630.43 mg/Kg(PPM)

Hanby Mobile App Report Results



Hanby Environmental

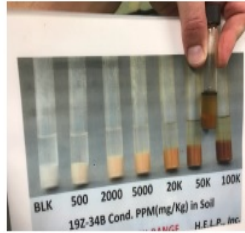


Hanby Environmental

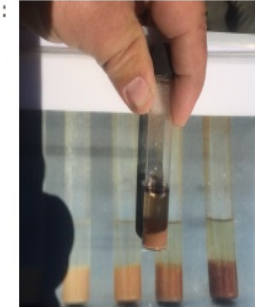
USER : Charles
TITLE : OMG - Murphy - Scaredog - Pretreatment - Site 2
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 12, 2018
FIELD NOTES :

USER : Charles
TITLE : OMG - Murphy - Scaredog - Plot 3 - Posttreatment
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 12, 2018
FIELD NOTES :

Preliminary Judgement call image :



Preliminary Judgement call image :



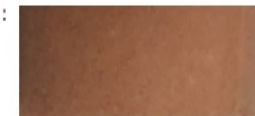
From 71.4k ppm To 24.4k ppm



Test Tube Image :



Test Tube Image :



Matched Result : 19Z_34B cond in Soil 71428.57 mg/Kg(PPM)

Matched Result : 19Z_34B cond in Soil 24375.0 mg/Kg(PPM)

Hanby Mobile App Report Results



Hanby Environmental



Hanby Environmental

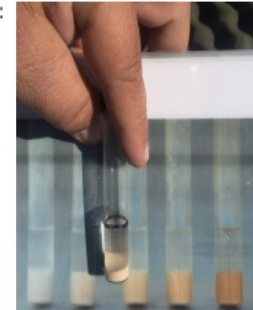
USER : Charles
TITLE : OMG - Murphy - Scaredog - Plot 2 - Post Treatment
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 12, 2018
FIELD NOTES :

USER : Charles
TITLE : OMG - Murphy - Scaredog - Plot 2 - Posttreatment
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 12, 2018
FIELD NOTES :

Preliminary Judgement call image :



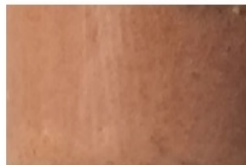
Preliminary Judgement call image :



From 14.8k ppm To 1.2k ppm



Test Tube Image :



Test Tube Image :



Matched Result : 19Z_34B cond in Soil 14782.61 mg/Kg(PPM)

Matched Result : 19Z_34B cond in Soil 1175.0 mg/Kg(PPM)

Hanby Mobile App Report Results

From 47.5k, 46.9k and 36.3k to 4.2



Hanby Environmental



Hanby Environmental



Hanby Environmental



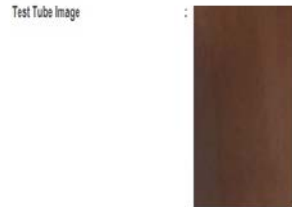
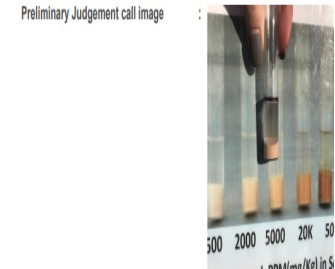
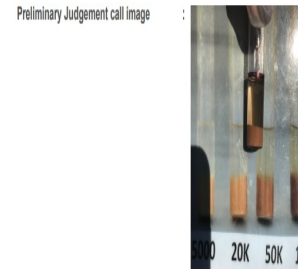
Hanby Environmental

USER : Charles
 TITLE : OMG - Plot 1 - 1-23-18 - Pretreatment
 TYPE : Soil report
 CONTAMINANT : Known
 DATE : Jan. 23, 2018
 FIELD NOTES :

USER : Charles
 TITLE : OMG - Post 4 - 1-25-18 - Pretreatment
 TYPE : Soil report
 CONTAMINANT : Known
 DATE : Jan. 25, 2018
 FIELD NOTES :

USER : Charles
 TITLE : OMG - Scared Dog - Plot 14 - Pretreatment
 TYPE : Soil report
 CONTAMINANT : Known
 DATE : Jan. 30, 2018
 FIELD NOTES :

USER : Charles
 TITLE : OMG - Scared Dog - Plot 14 - Post Treatment
 TYPE : Soil report
 CONTAMINANT : Known
 DATE : Jan. 30, 2018
 FIELD NOTES :



Matched Result : 19Z_348 cond in Soil 47500.0 mg/Kg(PPM)

Matched Result : 19Z_348 cond in Soil 46875.0 mg/Kg(PPM)

Matched Result : 19Z_348 cond in Soil 36250.0 mg/Kg(PPM)

Matched Result : 19Z_348 cond in Soil 4217.39 mg/Kg(PPM)

Hanby Mobile App Report Results



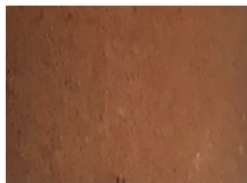
Hanby Environmental

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TITLE : OMG - Scared Dog - Plot 14 - Post Treatment
TYPE : Soil report
CONTAMINANT : Known
DATE : Jan. 30, 2018
FIELD NOTES :

Preliminary Judgement call image :



Test Tube Image :



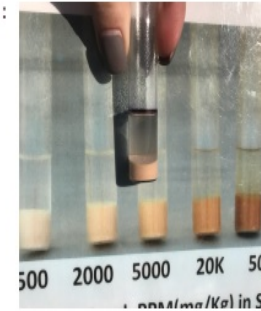
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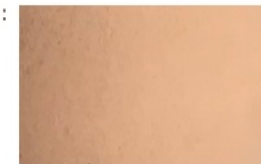
Hanby Environmental

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TYPE : Soil report
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DATE : Jan. 30, 2018
FIELD NOTES :

Preliminary Judgement call image :



Test Tube Image :




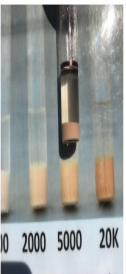



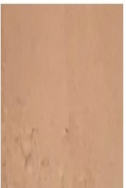

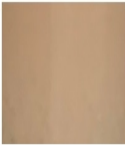
Matched Result : 19Z_34B cond in Soil 3173.91 mg/Kg(PPM)

From 32.5k ppm To 3.2k ppm



Hanby Mobile App Report Results

Some Final Test Result 1.6k, 4.6k, 4.0k and 6.6k ppm

Report 1	Report 2	Report 3	Report 4
<p>Hanby Environmental</p> <p>USER : Charles</p> <p>TITLE : OMG - Scared Dog - Plot 15 - Post treatment</p> <p>TYPE : Soil report</p> <p>CONTAMINANT : Known</p> <p>DATE : Jan. 30, 2018</p> <p>FIELD NOTES :</p>	<p>Hanby Environmental</p> <p>USER : Charles</p> <p>TITLE : OMG - Scarey Dog - Plot 15</p> <p>TYPE : Soil report</p> <p>CONTAMINANT : Known</p> <p>DATE : Jan. 30, 2018</p> <p>FIELD NOTES :</p>	<p>Hanby Environmental</p> <p>USER : Charles</p> <p>TITLE : OMG - Scarey Dog - Plot 15-1</p> <p>TYPE : Soil report</p> <p>CONTAMINANT : Known</p> <p>DATE : Jan. 30, 2018</p> <p>FIELD NOTES :</p>	<p>Hanby Environmental</p> <p>USER : Charles</p> <p>TITLE : OMG - Scared Dog - Plot 17 - Post treatment</p> <p>TYPE : Soil report</p> <p>CONTAMINANT : Known</p> <p>DATE : Jan. 31, 2018</p> <p>FIELD NOTES :</p>
<p>Preliminary Judgement call image : </p>	<p>Preliminary Judgement call image : </p>	<p>Preliminary Judgement call image : </p>	<p>Preliminary Judgement call image : </p>
<p>Test Tube Image : </p>	<p>Test Tube Image : </p>	<p>Test Tube Image : </p>	<p>Test Tube Image : </p>
<p>Matched Result : 19Z_34B cond in Soil 1550.0 mg/Kg(PPM)</p>	<p>Matched Result : 19Z_34B cond in Soil 4608.7 mg/Kg(PPM)</p>	<p>Matched Result : 19Z_34B cond in Soil 3956.52 mg/Kg(PPM)</p>	<p>Matched Result : 19Z_34B cond in Soil 6630.43 mg/Kg(PPM)</p>

Murphy Oil Nominates OMG Solutions for Environmental Stewardship Award Nomination

Eagle Ford Excellence Awards

EAGLE FORD EXCELLENCE AWARDS

Presented by STEER

EAGLE FORD EXCELLENCE AWARDS

2017 Nomination Form

OMG Solutions, LLC was established in August 2016 with the intent that one day every major Oil company would utilize their product on every lease pad to remediate spills on the spot. Until then, OMG has developed their own means of Bio-Remediation. As a member of Murphy's ISNetworld approved contractors, OMG Solutions was pleased when asked to assist with the remediation following the release of hydrocarbons from a pipeline rupture.

Before any steps were taken to remediate the area, OMG sent a certified Lab Technician with a Total Petroleum Hydrocarbons (TPH) Field Test Kit to sample and assess TPH soil concentrations. The preliminary concentration determined the amount of bio-remediation product required to treat the soil. A unique part of the OMG Solutions process is that they continuously monitor the project progress with Field Sampling Kits. No other known remediation companies implement real-time testing TPH while also conducting remediation in the field. Typically, a company conducting remediation will need to wait days to weeks to obtain soil sampling results from a laboratory.

OMG Solutions preforms in-situ remediation compared to the traditional "dig-in-haul" method. Using dig & haul, this project would have needed an estimated 600 belly dump trucks to travel to and from disposal facilities; creating significant savings of time and money, thru eliminated transport and waste disposal costs, while reducing project timeline. Instead of generating waste, the bio-remediation process eliminates a waste stream that would be transported to a disposal facility. The on-site remediation of this project eliminated the need to transport 12,600 tons of soil. Some benefits of being environmentally friendly are a significant cost savings (up to 60%) and reduction in air pollution from dump trucks and incineration emissions.

Step 1: is fresh water; with a scheduled Water Truck, the driver turns into a firefighter, spraying water until the 8" plots are completely saturated. OMG's product



10/17/17

2017 Nomination Form

Murphy Exploration and Production Company - USA
Andrew Esposito
Sr. Environmental Field Analyst
9805 Katy Frwy, Suite G.200, Office 13.077 Houston, TX 77024
281-675-9546

Andrew_esposito@murphyoilcorp.com

OMG Solutions, LLC
Randy Cook
President/Owner
PO Box 4345, Victoria, TX 77903
361-564-4541

Randy_cook@omgsol.com

Nomination Category - Environmental Stewardship



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Murphy Oil Nominates OMG Solutions for Environmental Stewardship Award Nomination

Eagle Ford Excellence Awards



"Your Solution for Oil Contamination"
-OMG Solutions, LLC

"ELMNS" uses a non-toxic chemical reaction to break down the hydrocarbon chains turning TPH into basic elements: Carbon and Hydrogen. In their basic state they are harmless elements which attach to the element Oxygen, eventually turning into Carbon Dioxide and H₂O. Surprisingly enough, this ecofriendly solution is triggered and activated by water. Once activated by the addition of H₂O and the OMG Solution, the naturally found microbes go to work breaking down the hydrocarbon bonds, reducing them to the individual elements.

Step 2: Using the OMG Solution Spray Rig, in a smooth broom sweeping motion, "ELMNS" is applied to the dampened dirt ensuring all areas of contamination are eliminated, including BTEX. "ELMNS" has an immediate effect breaking down the hydrocarbon chains into a biodegradable dust. As long as water is applied naturally or introduced manually, the product will continue to stay activated until there is no more trace of contamination.

Step 3: is pure agitation. A Kubota tractor with a 7" tiller attached runs through the saturated plots guaranteeing fresh water and "ELMNS" were mix evenly. Tilling aerates the soil which typically brings any contamination left behind to the top. This Bio-remediation project was the largest in Murphy EPS history. This location's highest recorded TPH level started at 47,000 PPW and ended well below 10,000 PPW. OMG remediated an average of 2,500 CY in a day versus Dig-In-Haul. The project consisted of 20 plots of soil with a total of 9,000 cubic yards of soil impacted by TPH and BTEX that exceeded RRC standards.

Not only is OMG's procedure environmental friendly, but Murphy Oil Corp realized significant project cost savings. Murphy saved over \$200,000 in waste disposal costs, a side from the reduced project timeline and location downtime to have remediation completed. We at Murphy Exploration and Production would like to nominate OMG Solutions, LLC for the 2017 Eagle Ford Excellences - Environmental Stewardship Award for their dedication to preserve the environment in a respectable manner. Please accept this description of the nominee's activities and performance related to such award and thank you for the opportunity to express our gratitude.

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Murphy Oil Nominates OMG Solutions for Environmental Stewardship Award Nomination

EAGLE FORD EXCELLENCE AWARDS

Presented by STEER

08/02/18

2018 Nomination Form

Andrew Esposito
Environmental Specialist
United States Onshore Operations
Murphy Exploration and Production Company – USA
9808 Katy Frwy, Suite G.200, Office 18.077 Houston, TX 77024
281-675-9546

Andrew_esposito@murphyoilcorp.com

Randy Cook
President/Owner
OMG Solutions, LLC
PO Box 4545, Victoria, TX 77903
361-864-4541

Randy_cook@omgsol.com

Nomination Category – Environmental Stewardship



EAGLE FORD EXCELLENCE AWARDS

Eagle Ford Excellence Awards

2018 Nomination Form

On January 8th, OMG Solutions was called out to a Murphy location where a transfer pipeline had been leaking of hydrocarbons (Eagle Ford Shale Crude Oil). A little over 3,600 cubic yards of contaminated soil needed to be dug out from around the lease road, placed into plots and treated.

OMG's Certified Lab Technician uses Hanby Environmental Field Test kits for fast, accurate and economical results which allow the remediation process to continue without delays from waiting on laboratory results. The low per test cost, allow for the ability to perform more testing to obtain a better understanding for the extent and boundaries of the contamination without the limitation of data points due to cost.

Rather than the expensive common practice of digging and hauling contaminated soil, OMG Solutions treated and documented the immediate reduction in contamination on-site at about a 60% savings.

OMG Solutions' use of real time feedback, coupled with the immediate elimination of the hydrocarbon contamination via their product ELMNS, is "The New Remediation Paradigm." OMG Solutions use of this powerful remediation option is creating a "Remediation Paradigm Shift" in both water and soil.



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Murphy Oil Nominates OMG Solutions for Environmental Stewardship Award Nomination

Eagle Ford Excellence Awards

OMG Solutions patent pending non-hazardous and non-toxic solution ELMNS treats hydrocarbon contamination through immediate chemical oxidation which produces byproducts of water and carbon dioxide. The treatment process was simply placing the contaminated soil in plots, fan spraying the ELMNS on the soil, after which testing is performed to document the immediate reduction.

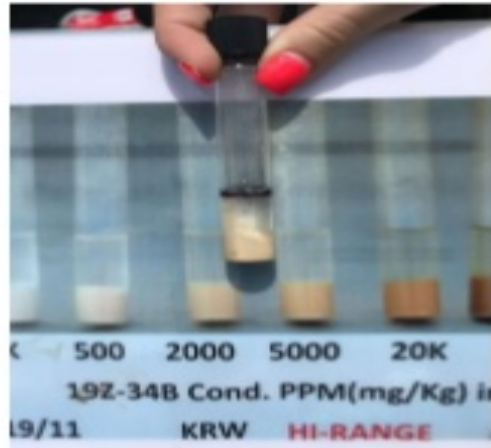
ELMNS has no microbes or enzymes, that are weather sensitive and have a shelf life and its effects are immediate, not weeks or months like other in-situ methods.

An added benefit of the ELMNS treatment, is that it kills the flashpoint of the hydrocarbon contamination, thereby eliminating the ignition danger.

Similar success has been experienced by Murphy by the injection of ELMNS and allowing migration through the contaminated soil. The solution followed the path of the contamination and eliminated it.

Likewise, OMG Solutions reported other success utilizing their ELMNS product to remediate other petroleum related issues; Drilling Mud, Drill Cuttings and Mud Pits which has obvious value in The Eagle Ford.

By implementing "The New Remediation Paradigm," we have been able to save both time and money, while reducing the environmental impact of hydrocarbon spills. We are pleased to have been able to tested, validated and implement this new technology on multiple projects and now have OMG Solutions on our first call list. Recognizing the value impact that OMG Solutions has on our bottom-line and the strong reduction of environmental impact, we submit OMG Solutions for inclusion in The Eagle Ford Excellence Awards under the Environmental Stewardship category.



Conclusion of The Introduction

- We will now perform live demonstrations on both hydrocarbon contaminated water and soil.
- For More Details Visit Our Websites at:
- www.HanbyEnvironmental.com
- www.OMGSol.com

“Thank You” ALL

for Your Interest in Our Products!