

# O&M CHALLENGES

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IN UNDERGROUND UTILITY VAULTS AND MANHOLES

Presented by Dan Parker,  
CEO & Founder, C.I.Agent Solutions



**EVERYBODY MUST WIN!**



The background of the slide is a photograph showing a concrete vault structure and a metal manhole cover. The vault is made of rough, grey concrete with visible cracks. The manhole cover is a dark, circular metal plate with a raised, rectangular grid pattern. A teal-colored circle is overlaid on the left side of the image, containing text.

most utilities  
have some  
*underground*  
vaults &  
manholes

... and they all have  
*different* challenges

# Why Are There Challenges?



Environmental Regulations



Company Hierarchy &  
Decision Making Process



True Costs (ALL Costs)

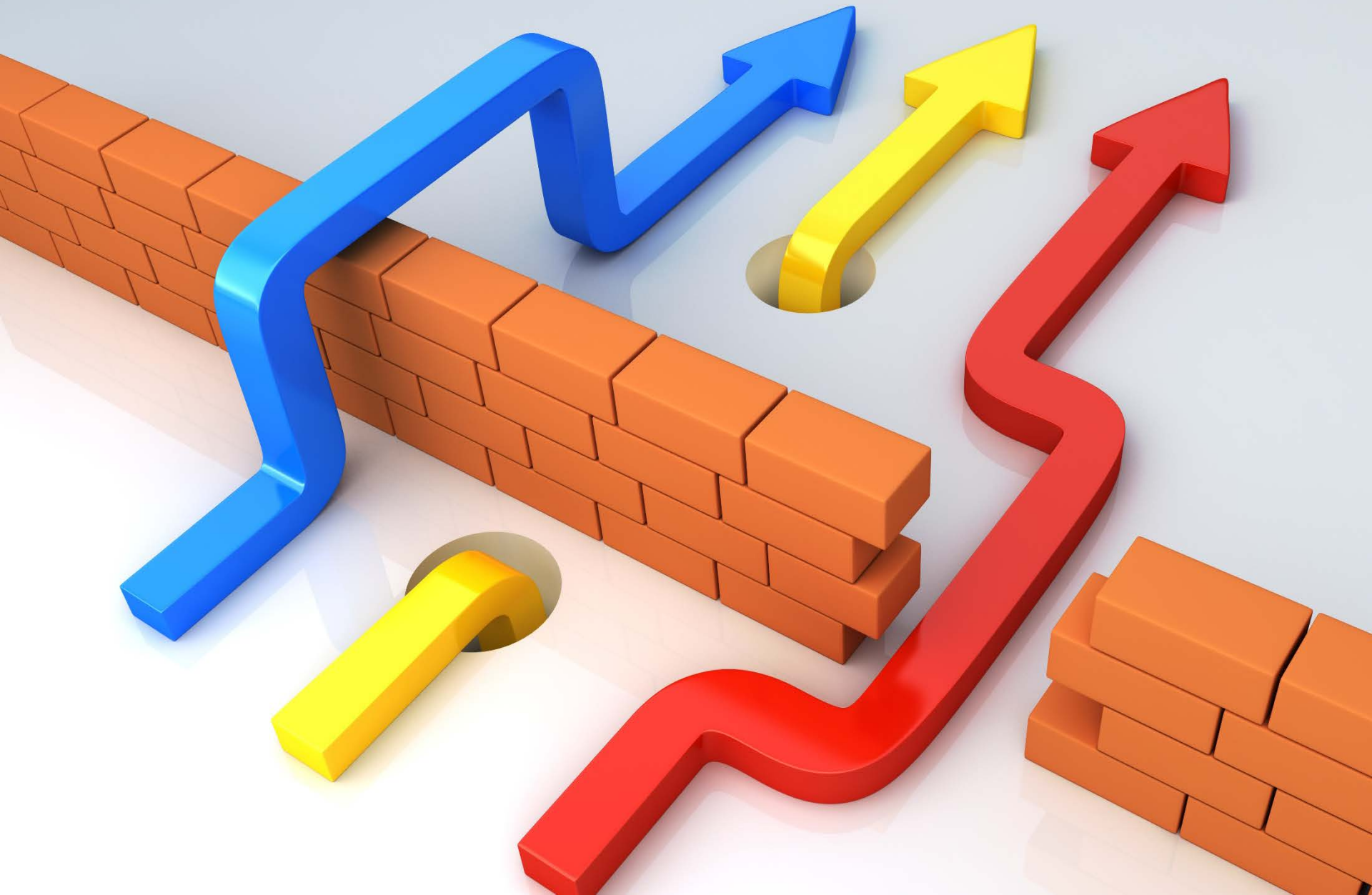




*why* don't  
utilities want to  
*talk* about their  
*challenges?*







Remember, there are no **one size fits all** solutions

We **WANT** to help.  
**TALK** to us.



LET'S **LEARN** TOGETHER



# TRUE OR FALSE?

There are an estimated

4

*underground*  
**manholes**

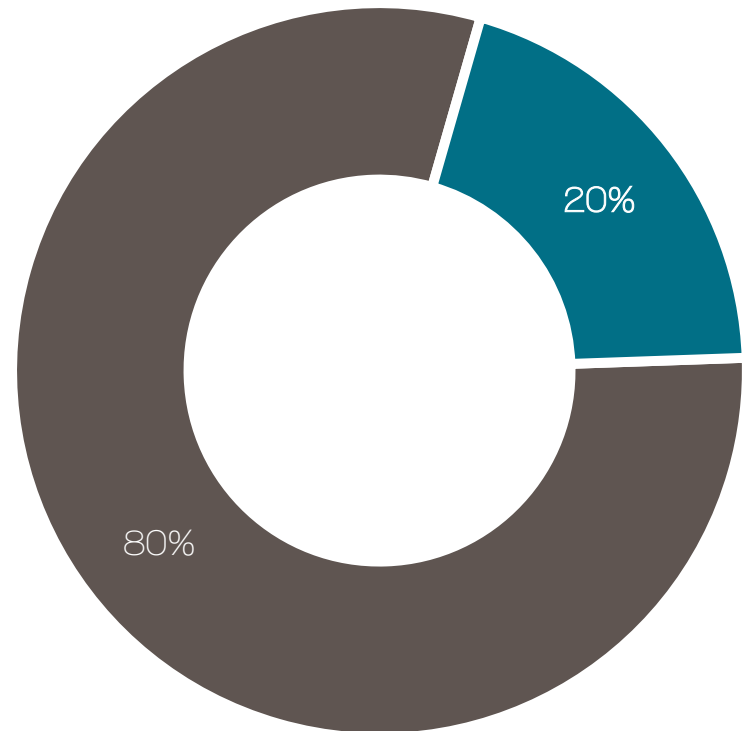
..... per every .....

1

*underground*  
*utility* **vault**

## Underground Networks

■ Manholes ■ Vaults



# Maintenance & Inspection Schedules

(WHAT WE THINK WE KNOW)

## Utility Vaults

*underground room providing access to energized equipment, such as transformers or switchgear*

inspected  
one time  
per year,  
every

1  
year

## Manholes

*the start and end point of a run of cables through ducts or troughs*

4  
years



# Maintenance & Inspection Schedules

(WHAT WE THINK WE KNOW)

25%

of *scheduled* inspections  
are delayed by an  
unforeseen *deterrent*

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# Most Common Maintenance Issues

(WHAT WE THINK WE KNOW)

## 1. Deterioration

- Age of infrastructure
- Outdated
- Out of sight, out of mind

Deterioration/Aging

## 2. Water

- Chronic water intrusion can overwhelm pump
- Water flow brings debris, oil & sheen, and other pollutants from the surface

Water

## 3. Debris

- Sediments adsorb/carry hydrophobic toxins

Debris/Sediment

## 4. Oil/Sheen






- From street runoff
- From leaking equipment in the vault

Oil



# Options for Dewatering Vaults & Manholes

## (RISKS & TRADEOFFS)


Do nothing	 <ul style="list-style-type: none"><li>• Bad for environment</li><li>• Negative public perception</li><li>• Risk heavy regulatory penalties and FINES</li></ul>
Illegally discharge	 <ul style="list-style-type: none"><li>• Negative public perception</li><li>• Risk heavy regulatory penalties and FINES</li></ul>
Vacuum truck	 <ul style="list-style-type: none"><li>• Expensive to pump and process wastewater</li><li>• Time consuming</li><li>• Wasted productivity</li></ul>
Automated pumping system	 <ul style="list-style-type: none"><li>• Correct components must be present to avoid pumping contaminants into storm drain</li><li>• Risk of pump failure</li><li>• Regular inspections/maintenance required</li></ul>
Filter Sock	 <ul style="list-style-type: none"><li>• Positive public perception</li><li>• Reduces non-productive time of routine maintenance</li><li>• Lower overhead &amp; operation costs</li></ul>



QUESTION:  
Where there is  
*energized*  
equipment, should  
there also be a  
*pump*  
for wastewater?

ANSWER:  
*Yes!*


QUESTION:  
And *WHY* is that?

A photograph of a massive fire at an underground transformer station. Bright orange and yellow flames and thick black smoke are billowing from a large opening in the ground. In the foreground, a utility pole with a 'NO STANDING' sign and two orange traffic cones are visible. A yellow caution tape is strung across the area. The scene is viewed from a street level, with the silhouettes of people in the foreground looking towards the fire.

ANSWER:  
because  
water & electricity  
*don't MIX*

**Source:** *New York Post* article "Underground transformer fire forces evacuations"; Jan. 6, 2014





There are **two** main reasons  
that sump pumps might fail:  
**debris** and  
incorrect **applications**

**Deron B. Oberkorn**

Product Development Manager  
Zoeller Pumps

# DEBRIS & SEDIMENT

- Typical sump pumps can process spherical solids sized  $\frac{1}{2}$ " to  $\frac{3}{4}$ " or smaller
  - About the size of a **marble**
  - Anything larger or elongated will clog the pump
- Items that typically clog/burn up pumps
  - **Sand**
  - Gravel
  - **Cleaning wipes**
  - Trash



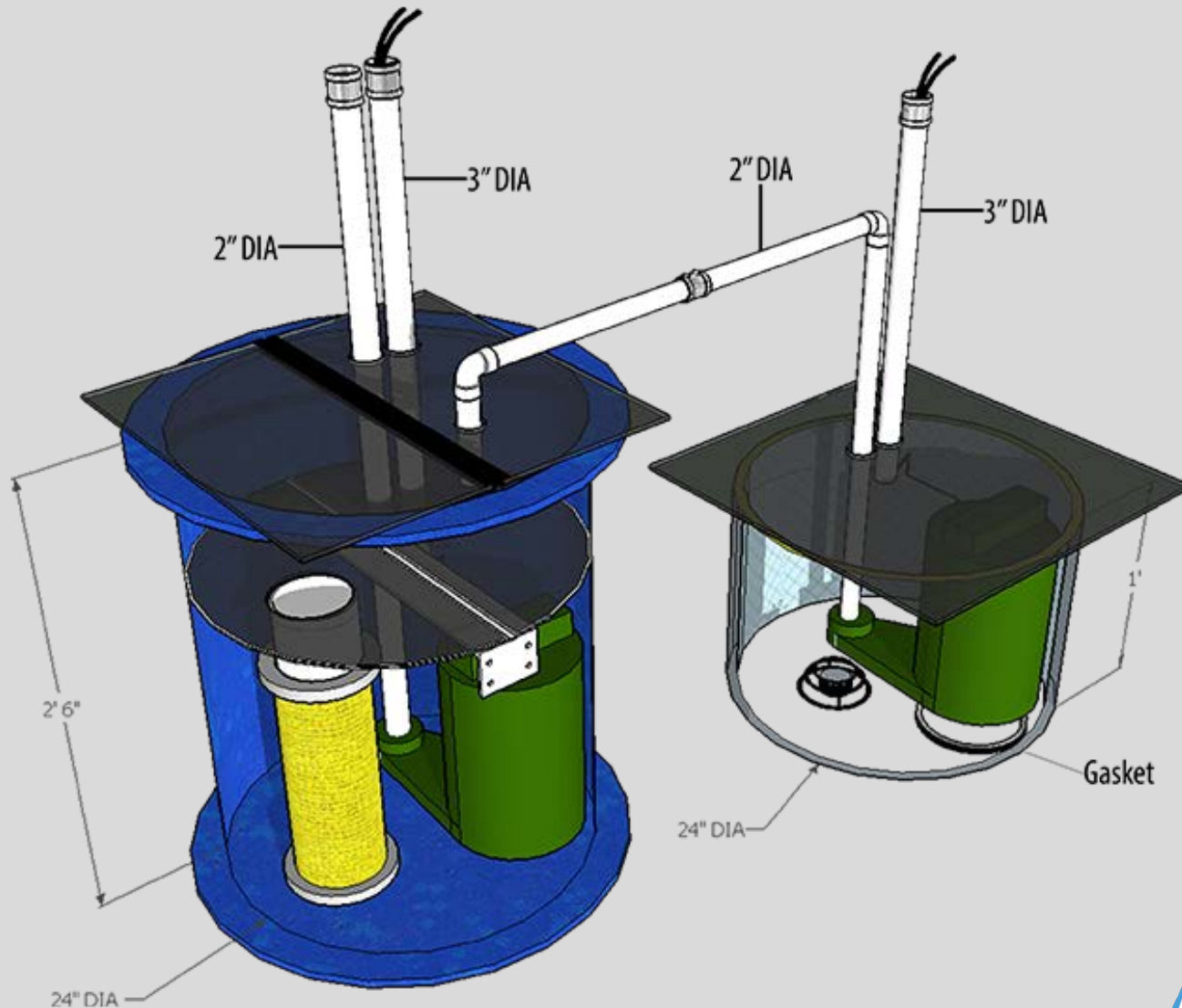
So ... HOW do you  
*overcome* these *challenges?*



LET'S WORK TOGETHER



# Introducing C.I.Agent® VIPOR Solutions



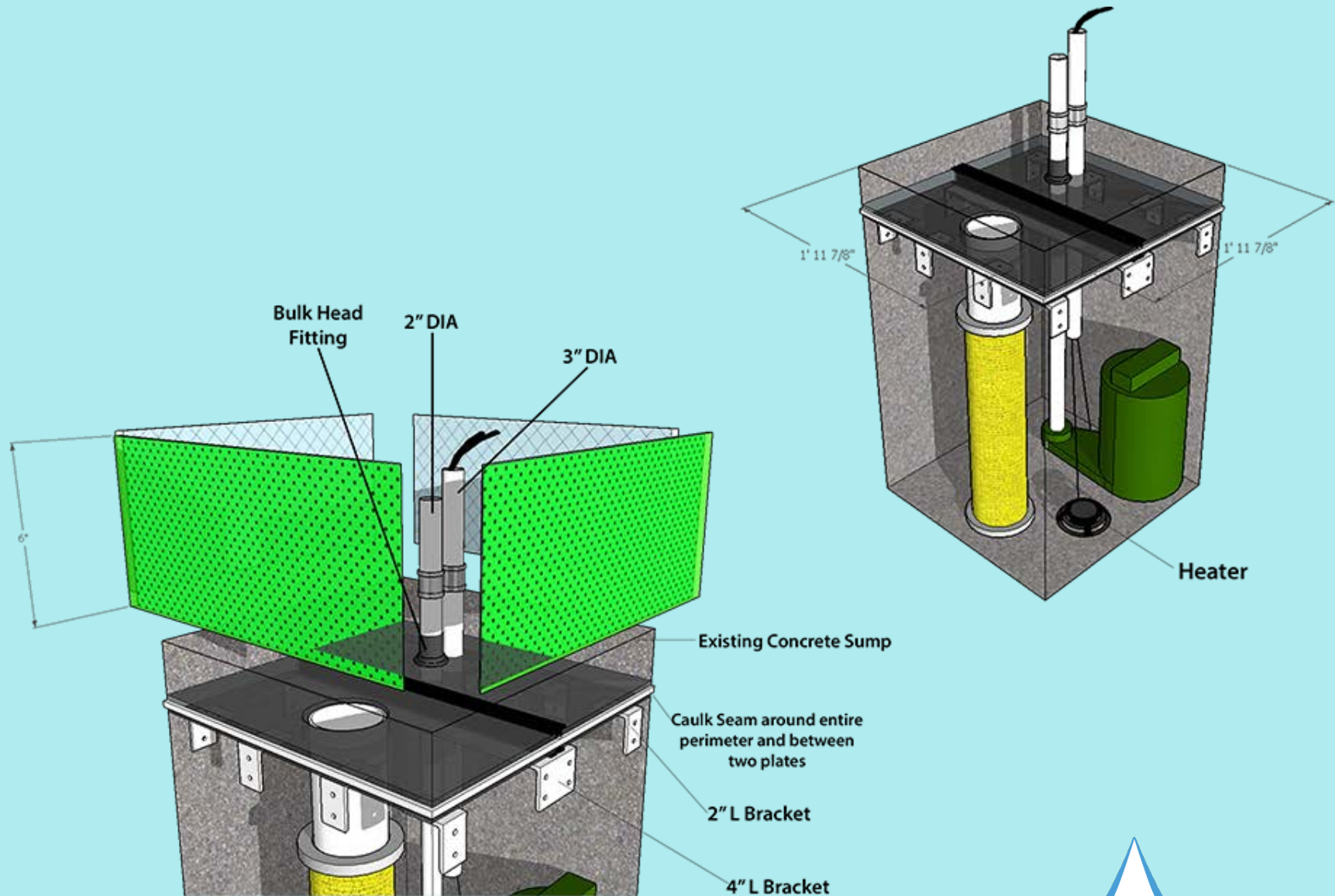


# C.I.Agent® VIPOR Solutions





# C.I.Agent® VIPOR Solutions



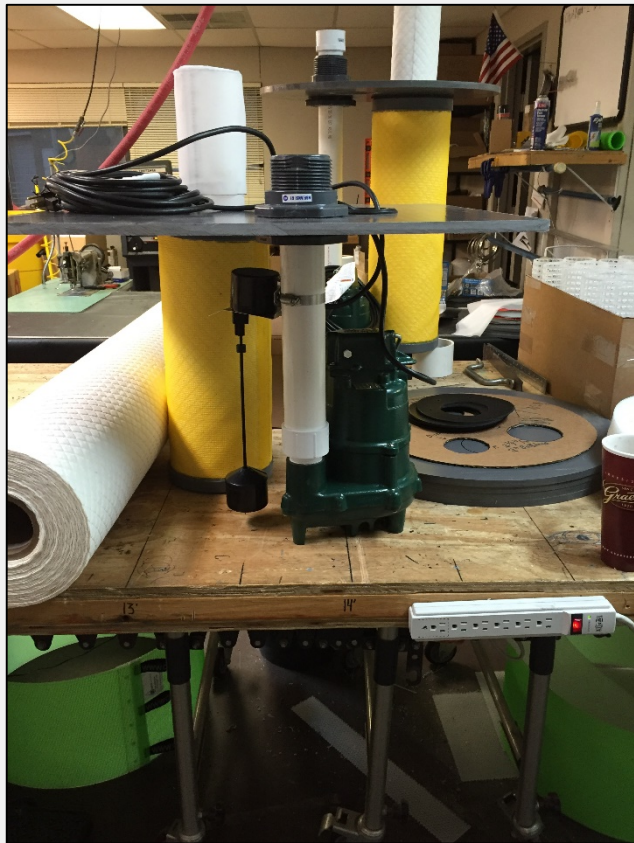


# C.I.Agent® VIPOR Solutions





# C.I.Agent® VIPOR Solutions





# C.I.Agent® EVAC Filtration System



Solidifies hydrocarbons  
Removes large & fine sediment  
Polishes the water



# Aging Infrastructure Solutions:

## Deteriorating concrete vaults



# Aging Infrastructure Solutions:

## In Place Replacement (IPR) from newbasis

- *Advanced Composites Solution* for concrete vaults at end-of-design life
  - Advanced materials applied to the inside of a failing vault
  - Renews and extends life – longer than original design life
  - Sustainable
  - Does not impair the use of the vault –  $\frac{3}{8}$ " thick
  - Less than 50% the cost of alternatives





# Aging Infrastructure Solutions:

## In Place Replacement (IPR) from newbasis





C.I.Agent Solutions® is a global leader in solutions for SPCC secondary containment compliance, vault and manhole maintenance, and hydrocarbon filtering needs. We're constantly creating new and innovative solutions to tackle whatever challenges arise within the markets we serve. Have a unique or unusual hydrocarbon management challenge? We will create a solution.

**CUSTOM is our STANDARD.**

[www.ciagent.com](http://www.ciagent.com)



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For more information about IPR or newbasis,  
contact:

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