

# Industrial Fluid Management, Inc.

The Cinci Story  
Solving Their Grease Dilemma

# Elite Lift Station Crew

- 153 Lift Stations ranging in size
- 8 Employees assigned
- 2 Electricians, 6 Laborers
- Headed by Richard Smith, 30 Years
- All crew members on call 24/7
- Since conception have helped MSD reduce number of bypasses

# IFM Working With Cincinnati

- IFM working 5 years on grease reduction at lift stations
- Two year study
- Success was about 75%
- 1 year ago started using different bacteria at stations that were having problems
- Success is now 99%

# Benefits of Using Bacteria

- Eliminated grease in wet wells
- Float problems associated with grease are gone
- Physical removal of grease with vacuum trucks has been eliminated
- Pump draw down rates have improved
- Check valves working better

# Harold the Doubter

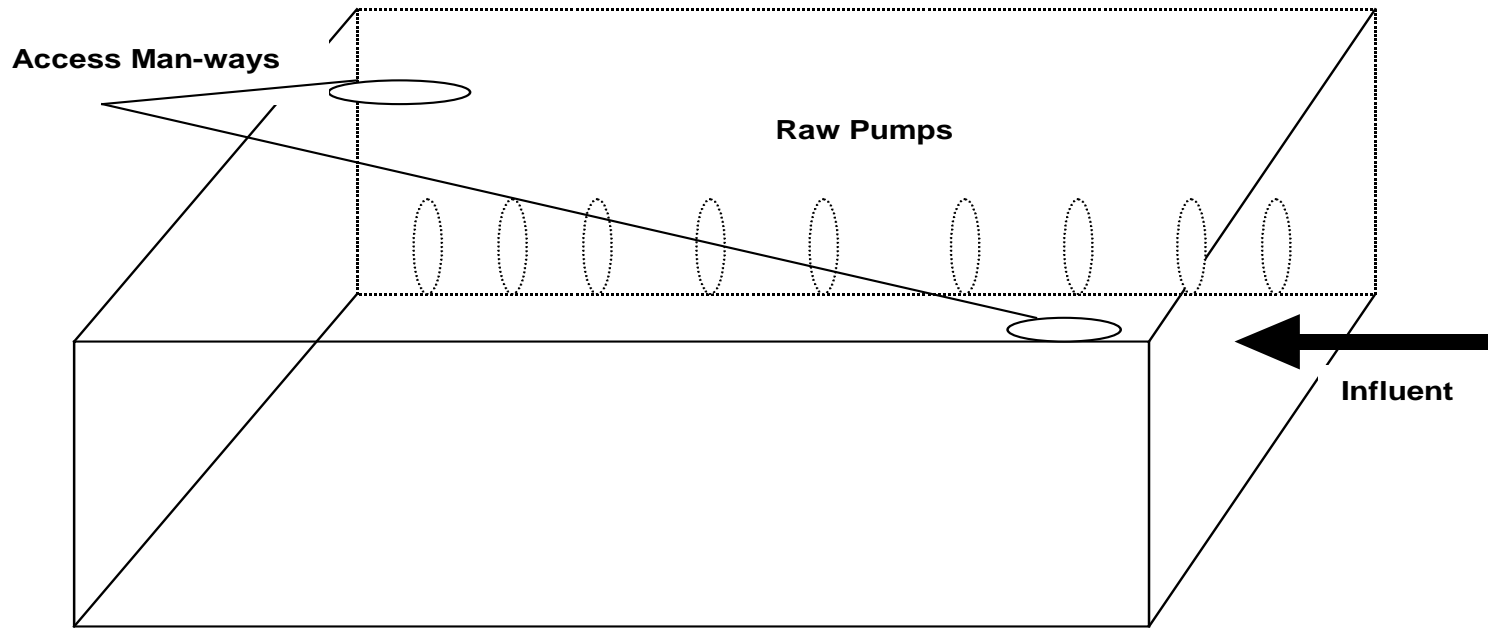
- Mariemount Lift Station
- 30 foot wet well depth
- Heavy grease accumulation
- Restaurant “Row” near by
- Float problems due to grease
- Dosed with battery powered weed sprayer
- Combination bacteria & Nitraid
- Maintenance dosage on daily basis

# Harold the Doubter (Cont.)

- Returned in 2 weeks
- 50% reduction in grease cap
- Reduced dosage to weekly
- Float problems are gone
- Harold the Believer

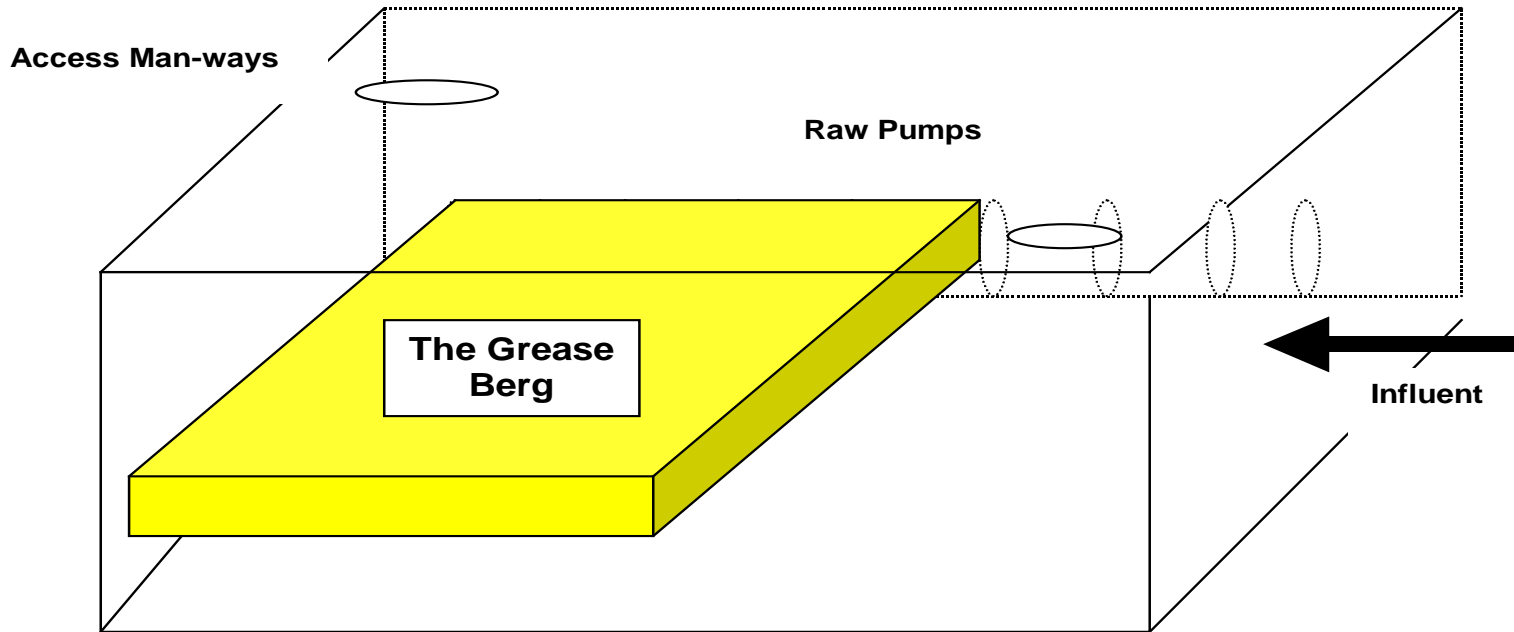
# Cincinnati MSD, Mill Creek WWTP

- 200 MGD Plant
- Grease Problem in Wet Well




200' x 25' x 45' Deep

**Cincinnati MSD  
Mill Creek Plant  
Raw Wet Well**



**Wet Well**  
200' x 25' x 45' Deep

 Approx. 100' x 25' x 6' Deep

# Cincinnati MSD Mill Creek Plant Raw Wet Well

# Grease Berg

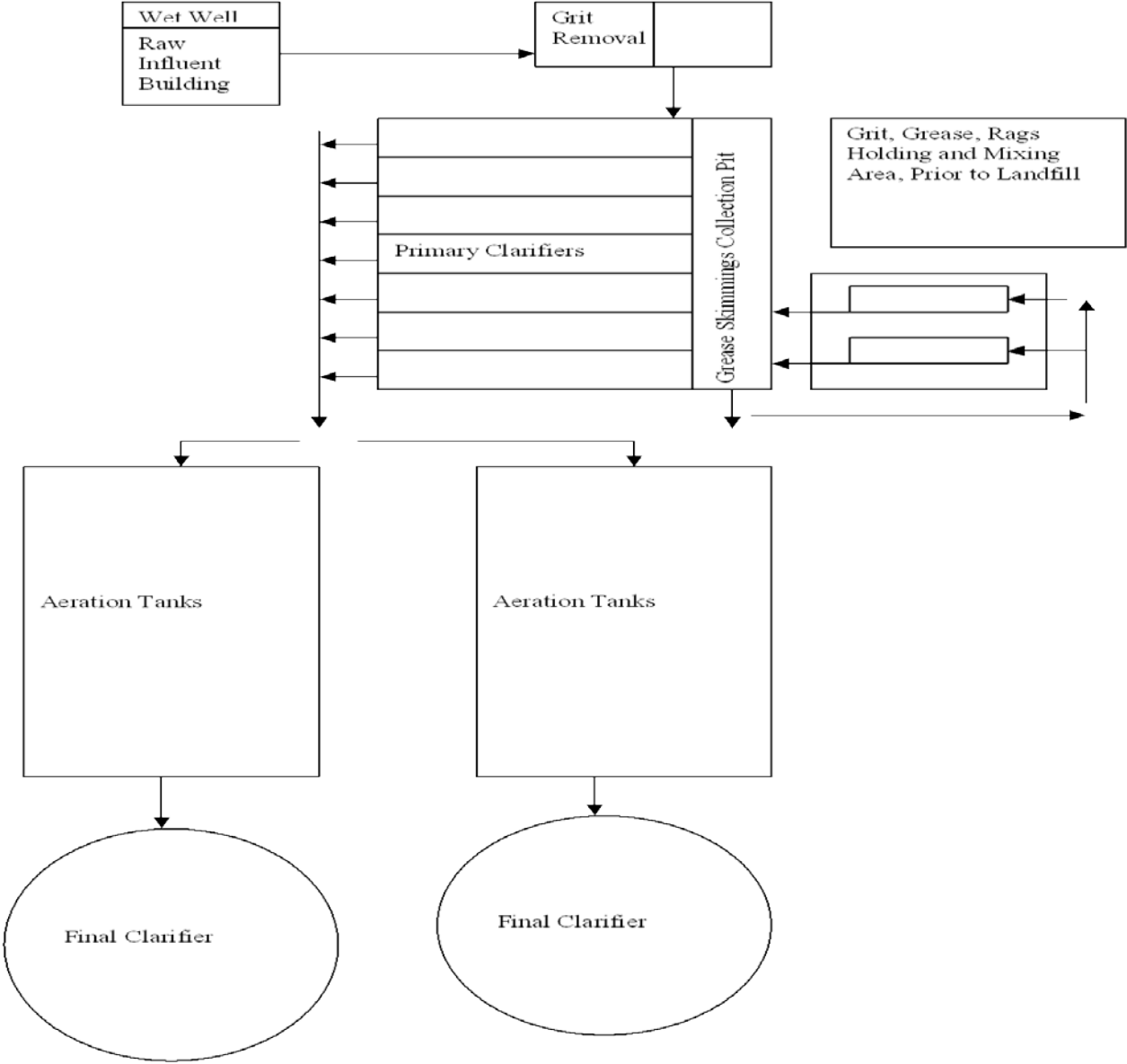
- How to get rid of?
- Confined Space
- Limited Access
- Diversion of Flow
- Lowest Quote;

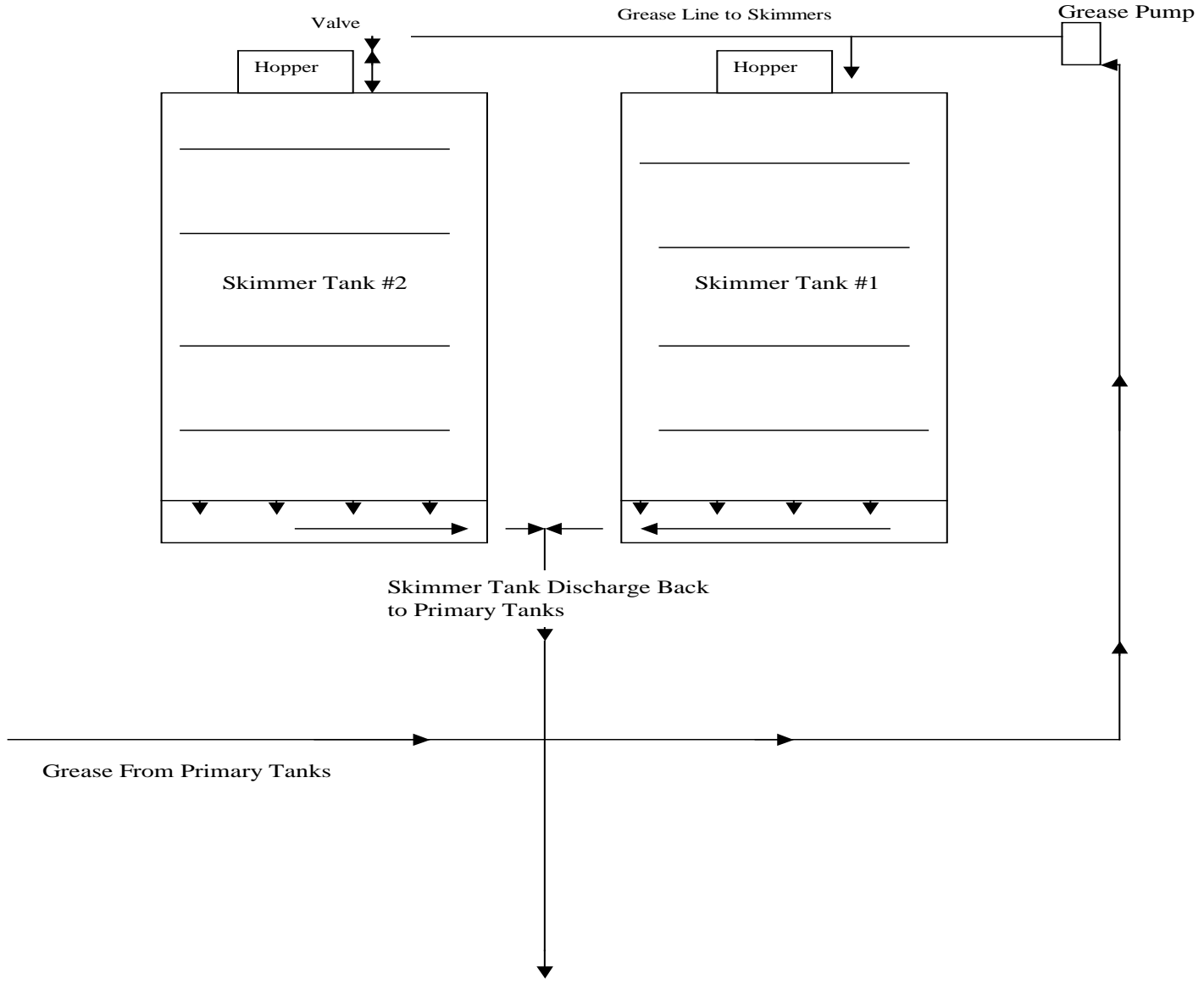
**\$250,000.00**

# Grease Berg

- How about Bio?
- Grease Accumulation of This Magnitude Had Never Been BioAugmented
- IFM Proposed Pilot Project

Cincinnati MSD, Mill Creek WWTP





# Pilot Program

- 2 Skimmers
- 1 for Pilot Project, 1 Kept in Service
- Grease Removal Operation
- Grease Mixed with Wood Chips & Grit
- Pilot to Simulate Wet Well
- Filled Tank 30' x 11' (1' West to 2' East)
- Primary Skimming Water into Tank

# Pilot Program

- Used Plant Water for Carrier
- Pumped Bio-product Into Plant Water
- 4 Spray Heads to Cover Grease
- Primary Skimmer Water at Minimum to Keep the Tank “Fresh”.
- Samples Collected on Both Tanks
- Effluent Back to Primary

# GREASE REDUCTION PROJECT CINCINNATI MSD

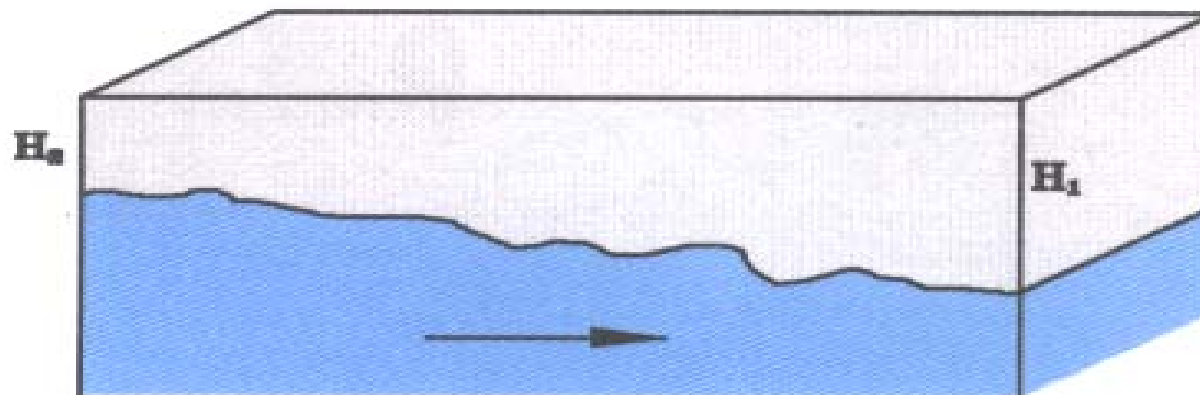
SKIMMER BLD. / SKIMMER #1  
9/18/03 - 10/23/03



REPRESENTS GREASE BUILDUP



REPRESENTS PROCESS WASTE FLOW



**SEPTEMBER 18, 2003**

**INITIAL LOAD**

**30'x11.5'x(H<sub>w</sub>=2.0' H<sub>g</sub>=1.0')**

**APPROXIMATE VOLUME: 570 CU. FT.**



# Pilot Program

- Initial Dosing 55 Gals in 7 Days
- Maintenance Dose 2.2 GPD
- Used Calibrated Stick to Measure Grease
- Noticed Primary Skimmer Flow Was Down to 20 gpm – Huge Variable!

# GREASE REDUCTION PROJECT

CINCINNATI MSD

SKIMMER BLD. / SKIMMER #1

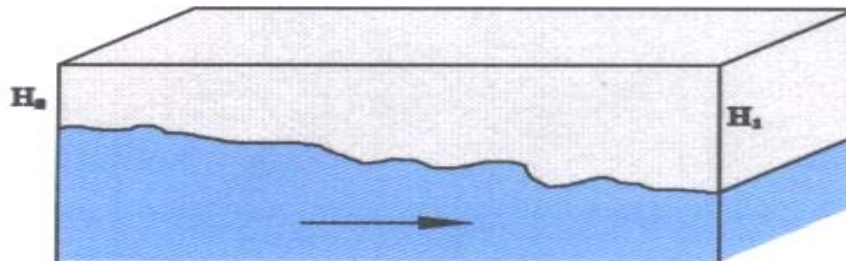
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REPRESENTS PROCESS WASTE FLOW

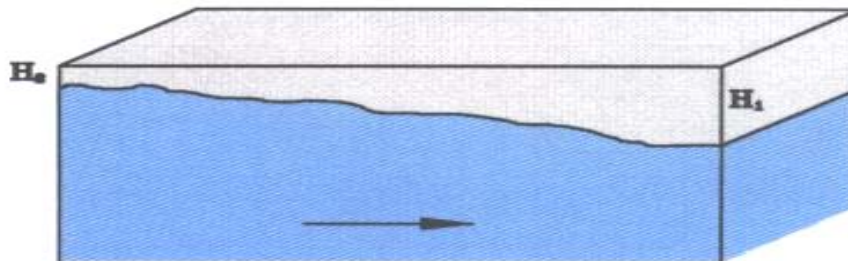


SEPTEMBER 18, 2003

INITIAL LOAD

30'x11.5'x(H<sub>1</sub>=2.0' H<sub>2</sub>=1.0')

APPROXIMATE VOLUME: 570 CU. FT.



OCTOBER 2, 2003

FIRST MEASUREMENT AFTER BIO DOSING

30'x11.5'x(H<sub>1</sub>=1.25' H<sub>2</sub>=0.33')

APPROXIMATE VOLUME: 299 CU. FT.

# Pilot Program

- Grease Had Been Reduced by More Than 50% in Two Weeks!
- Sampled;
  - Spray Bar Effluent
  - Skimmer Effluent on Pilot
  - Skimmer Effluent on Tank #2
  - Top of Grease
  - Under Grease

# Pilot Program

## Sample Results COD (mg/L)

	Treated Tank #1	Untreated Tank #2	Raw
9/22/03	329		
9/23/04	1890	7920	
9/24/03	338		
9/29/03	13		
10/2/03	525		
10/3/03	480		
10/6/03	410		
10/9/03	164	871	1328
10/13/03	359		

# Pilot Program

## Sample Results

### Oil & Grease (mg/L)



	Treated Tank #1	Untreated Tank #2
10/2/03	2.56	
10/3/03	23	
10/9/03	48.3	64.64

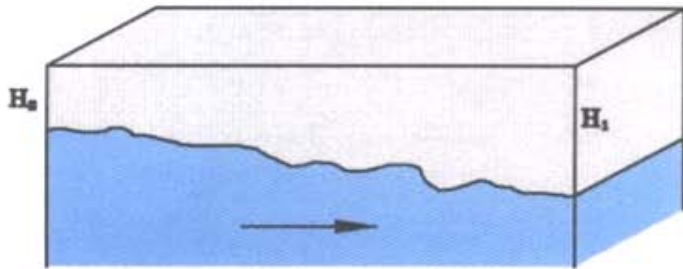
# GREASE REDUCTION PROJECT

CINCINNATI MSD

SKIMMER BLD. / SKIMMER #1

9/18/03 - 10/23/03

 REPRESENTS GREASE BUILDUP  
 REPRESENTS PROCESS WASTE FLOW

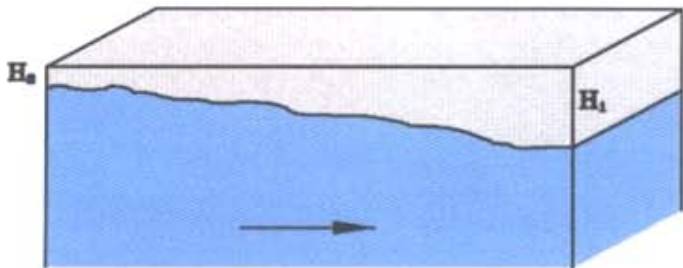


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APPROXIMATE VOLUME: 570 CU. FT.

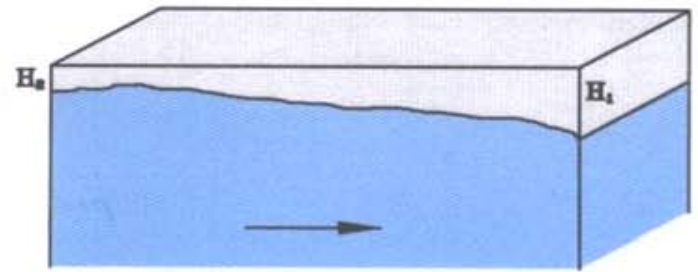


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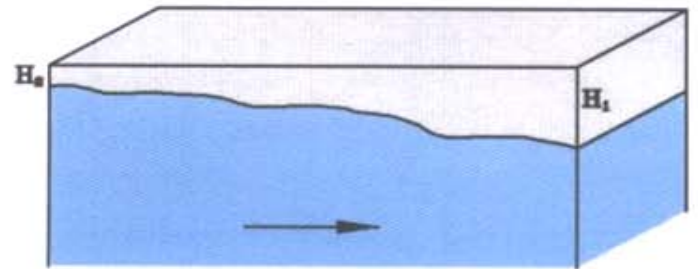
APPROXIMATE VOLUME: 299 CU. FT.



OCTOBER 9, 2003

SECOND MEASUREMENT AFTER BIO DOSING  
30'x11.5'x(H<sub>1</sub>=1.10' H<sub>2</sub>=0.40')

APPROXIMATE VOLUME: 260 CU. FT.



OCTOBER 16, 2003

BIO DOSING STOPPED 10/14/03

30'x11.5'x(H<sub>1</sub>=1.20' H<sub>2</sub>=0.33')

APPROXIMATE VOLUME: 265 CU. FT.

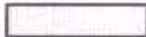

- 305 Cu/Ft Grease Removed in 4 Weeks
- Samples Show Grease Didn't Pass Through
- COD Lower on Treated Tank
- O&G Lower on Treated Tank
- Primary Tank Which Receives Effluent Had No Grease on Surface
- Project Very Successful

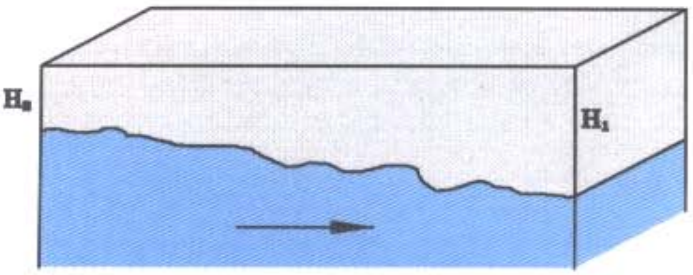
# GREASE REDUCTION PROJECT

## CINCINNATI MSD

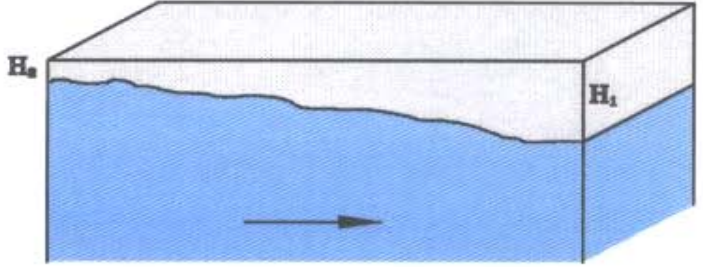
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9/18/03 - 10/23/03

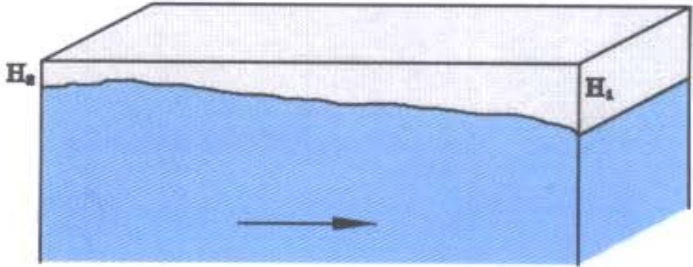
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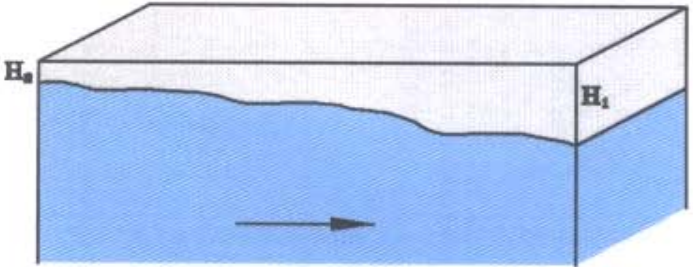
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**APPROXIMATE VOLUME: 570 CU. FT.**



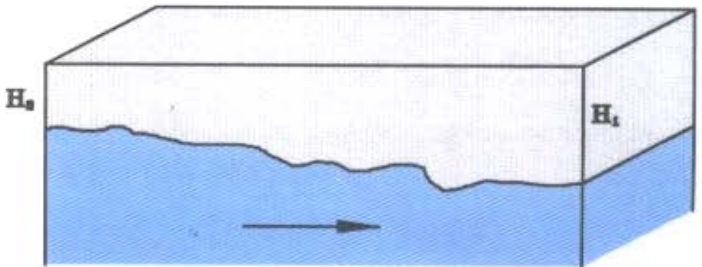
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**APPROXIMATE VOLUME: 299 CU. FT.**



**OCTOBER 9, 2003**  
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**30'x11.5'x(H<sub>1</sub>=1.10' H<sub>2</sub>=0.40')**  
**APPROXIMATE VOLUME: 260 CU. FT.**



**OCTOBER 16, 2003**  
**BIO DOSING STOPPED 10/14/03**  
**30'x11.5'x(H<sub>1</sub>=1.20' H<sub>2</sub>=0.33')**  
**APPROXIMATE VOLUME: 265 CU. FT.**



**OCTOBER 23, 2003**  
**NO BIO DOSING SINCE 10/14/03**  
**30'x11.5'x(H<sub>1</sub>=1.80' H<sub>2</sub>=1.0')**  
**APPROXIMATE VOLUME: 483 CU. FT.**

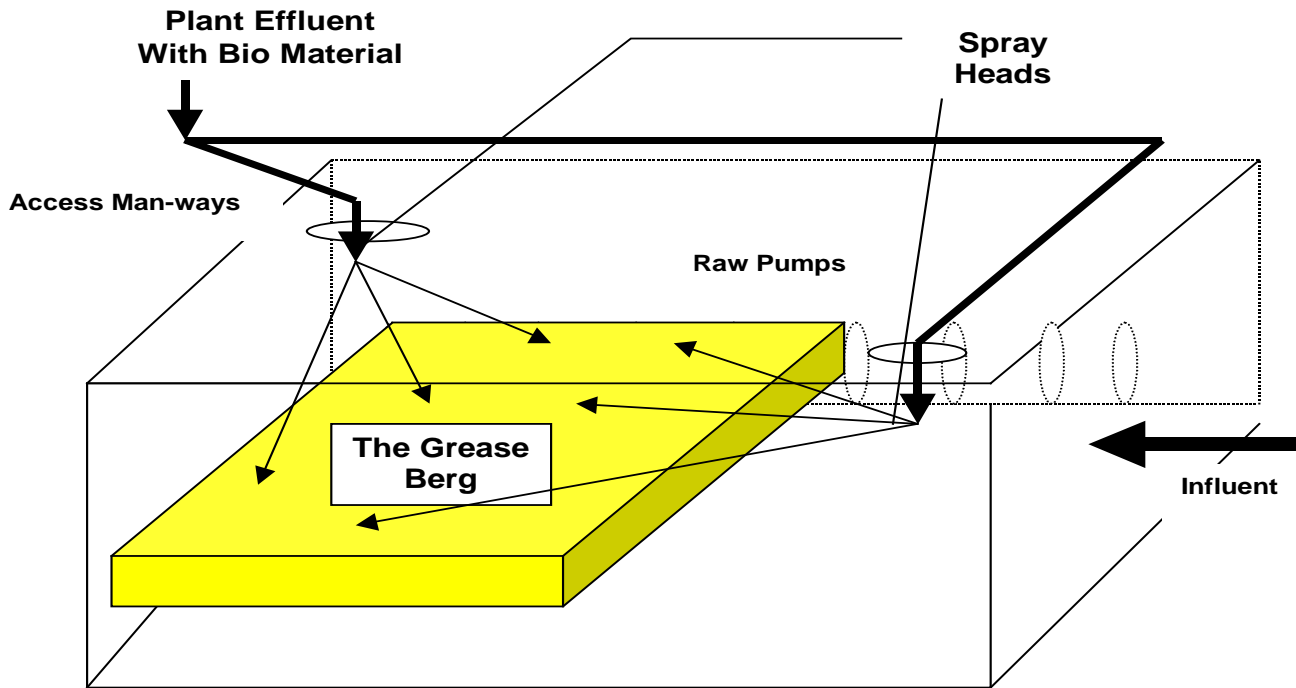
- Stopped Bioaugmentation After 4 Weeks
- As Mentioned No Control on Influent
- Operator Opened Influent to Flush Line
- Water Doesn't Breakdown Grease

# Pilot Project Conclusion

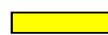
- Conservative Estimate;  
1 Gallon Bio-Product Consumed  
5.4 Cu/Ft of Grease!

# Grease Berg

- Less Extreme Influent Grease Loadings
- Use Plant Water as Carrier
- Feed Bio-Product to 2 Spray Heads
- Runoff Goes to Primary



**Wet Well**  
**200' x 25' x 45' Deep**

 **Approx. 100' x 25' x 6' Deep**

**Cincinnati MSD  
 Mill Creek Plant  
 Raw Wet Well**

# Grease Berg

- Cost Savings;
  - Primary Grease Skimming – Huge Labor Cost
  - Actual Skimming Building
    - Labor To Build Grease
    - Labor To Scrape Grease
    - Labor To Move Grease To Mix Pile
    - Cost of Sawdust At Mix Pile
    - Labor Onto Truck
    - Tipping Fees

# Grease Berg

- IFM Estimate;
  - 6 to 9 Months, 60% - 70% Reduction

Cost Less Than 50% of Physical Removal!

# Grease Berg

- Downstream Benefits
  - Pumps
  - Check Valves
  - Labor
  - Skimmings
  - Organic Reduction on Primary & Secondary Treatment Systems

# NO MORE GREASE BERG

- **An Environmentally Friendly Solution**

# NO MORE GREASE BERG

- **An Environmentally Friendly Solution**
- **Extremely Cost Effective**