Tyco Meeting Agenda

- Welcome and Introductions (5 minutes)
- Meeting Overview (5 minutes)
- Technical Presentation (45 minutes)
- Questions and Answers – Group (25 minutes)
- BREAK (5 minutes)
- Questions and Answers – Break-out (30 minutes)
# Basic Details

<table>
<thead>
<tr>
<th><strong>Site Address</strong></th>
<th>2700 Industrial Parkway South Marinette, WI</th>
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<tbody>
<tr>
<td><strong>Site Ownership</strong></td>
<td>Tyco Fire Products, LP</td>
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<td><strong>Current Site Use</strong></td>
<td>Fire Fighting Training and Research Center of Excellence</td>
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<td><strong>Parameters</strong></td>
<td>Per- and Poly-Fluoroalkyl Substances (PFAS)</td>
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<td><strong>Where found</strong></td>
<td>Soil, Groundwater, Surface Water</td>
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<td><strong>Regulatory Agencies Involved</strong></td>
<td>Wisconsin Department of Natural Resources (WDNR), Wisconsin Department of Health Services (WDHS)</td>
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Technical Presentation Agenda

- Geologic Background/Setting
- Investigations and Data Update
  - Groundwater Investigation
  - Drinking Water (Potable) Well Sampling
- Review of Drinking Water Options
- Next steps
- Information Resources
What are PFOA and PFOS?

- Definitions
  - PFAS: per- and poly-fluoroalkyl substances
  - PFCs: perfluorinated compounds
  - PFOA: perfluorooctanoic acid
  - PFOS: perfluorooctanesulfonic acid
  - HAL: USEPA Health Advisory Level
  - ppt: parts per trillion
- Found in many consumer and industrial products
Overview of Investigation

• Sampling Overview – Groundwater and Ditch Water
  • Groundwater
    – 24 borings, 98 intervals sampled, concentrations from ND to 1,653 ppt
  • Ditch Water (on site)
    – 4 samples, concentrations from 417 to 4,620 ppt

Note: Combined PFOS + PFOA concentration values referenced above
Drinking Water Wells Investigation Summary

- Range for detections below HAL: 3.9 to 44 ppt
- Range for detections above HAL: 84 to 690 ppt

Note: Status as of January 22, 2018
Geologic Background/Setting
Below the water table (about 10 feet in Marinette) all pore-spaces in soil are water-filled

- Like surface water, groundwater flows under force of gravity
- The water flows “downhill” and replenishes rivers and lakes

Groundwater is just one component of hydrologic cycle.

From: Illinois State Geological Survey
Aquifers

- Groundwater may exist in multiple aquifers at different depths
- Aquifers behave differently depending on the material
- Shallow aquifers are most sensitive to contamination
Groundwater Flow

• Groundwater moves slowly (measured in years)

• In shallow aquifers, water is youngest and recharged nearby

• In deeper aquifers, water is typically older and recharged farther away

• Aquifer often separated by confining beds, that restrict vertical flow

Local Geology

Generalized Sections
- Based on publicly available well logs (diagrams)
- General view of soils and bedrock in this area
Bedrock Surface

- Bedrock surface slopes steeply to east
- Rock may be as shallow as 30 feet bgs, in west of Site
- Rock more than 100 feet deep adjacent to Green Bay
Below-Ground Profile

Generalized Unit | Approx. Thickness | Typical Characteristics
--- | --- | ---
Sand | 30-50 ft | Mostly fine sand, with silt. Occasional coarser sand beds. Medium to high water production.
Silt and Clay | 5-20 ft | Silt and clay, lake-bed deposits. Restricts groundwater movement.
Glacial Till | 5-30 ft | Dense mixture of silt, sand and gravel. Restricts groundwater movement.
Bedrock | >50 ft | Dolomite. Good water-producing unit.
Investigations and Data Update
Objectives of Investigation

• Objectives of investigation work
  • Define nature and extent of PFOA and PFOS in groundwater, on-site ditch standing water, and drinking water wells
  • Collect data that can be used to develop the most appropriate measures to address PFOA and PFOS in the environment
Groundwater Investigations

• How investigations like this work; stepwise approach
• How samples are collected
• Data review and quality control
• How results are communicated
Groundwater Investigations

- Actions taken based on initial VAP results
  - Identified Phase 1 private well sampling area
  - December resident meeting
  - Bottled water distribution
  - Drinking water well sampling
- Actions taken based on additional VAP results
  - Identified Phase 2 private well sampling area
  - Private well results and data privacy
Groundwater Investigations
Groundwater Investigations

RESULT > 70 PPT
RESULT < 70 PPT

Approximate TYCO Property Boundary
Approximate Marinette City Boundary

0 1,500 Feet
Drinking Water Well Investigation

LEGEND:
- VAP BORING LOCATION
- PRIVATE WELL LOCATION
- APPROXIMATE TYCO PROPERTY BOUNDARY
- APPROXIMATE MARINETTE CITY BOUNDARY
- PHASE 1 PRIVATE WELL SAMPLING AREA
- PHASE 2 PRIVATE WELL SAMPLING AREA
- WATERBODY
Results Summary:
- 62 Wells Sampled to Date
- 60 Results Received
- 2 Results Pending

Note: Status as of January 22, 2018
Drinking Water Wells Investigation – Phase 1

Results Summary:
- 62 Wells Sampled to Date
- 60 Results Received
- 2 Results Pending
- 8 Results >HAL (70 ppt)

Note: Status as of January 22, 2018

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Note: Status as of January 22, 2018
Drinking Water Wells Investigation – Phase 1

• Results Summary:
  • 62 Wells Sampled to Date
  • 60 Results Received
  • 2 Results Pending
  • 8 Results >HAL (70 ppt)
  • 16 Results Detected <HAL
Drinking Water Wells Investigation – Phase 1

• Results Summary:
  - 62 Wells Sampled to Date
  - 60 Results Received
  - 2 Results Pending
  - 8 Results >HAL (70 ppt)
  - 16 Results Detected <HAL
  - 36 Results Not Detected

Note: Status as of January 22, 2018
Drinking Water Wells Investigation – Phase 2

• Results Summary:
  • 27 Wells Sampled to Date
  • 22 Results Received
  • 5 Results Pending

Note: Status as of January 22, 2018
Drinking Water Wells Investigation – Phase 2

- Results Summary:
  - 27 Wells Sampled to Date
  - 22 Results Received
  - 5 Results Pending
  - 0 Results >HAL (70 ppt)

Note: Status as of January 22, 2018
Drinking Water Wells Investigation – Phase 2

- Results Summary:
  - 27 Wells Sampled to Date
  - 22 Results Received
  - 5 Results Pending
  - 0 Results >HAL (70 ppt)
  - 1 Result Detected <HAL

Note: Status as of January 22, 2018
Drinking Water Wells Investigation – Phase 2

- Results Summary:
  - 27 Wells Sampled to Date
  - 22 Results Received
  - 5 Results Pending
  - 0 Results >HAL (70 ppt)
  - 1 Result Detected <HAL
  - 21 Results Not Detected

Note: Status as of January 22, 2018
Drinking Water Wells Investigation Summary

Phase 1 and 2 Results Summary:

- 89 Wells Sampled to Date
- 82 Results Received
- 7 Results Pending
- 8 Results >HAL (70 ppt)
- 17 Result Detected <HAL
- 57 Results Not Detected

Note: Status as of January 22, 2018
Review of Drinking Water Options
Private Drinking Water Wells – Primary Options

- Bottled water (immediate/interim measure)
- Water treatment system (point of entry treatment or POET system)
- New deep well (bedrock)
- Public water

- Further evaluation needed in order to determine the most feasible/available option for each well
Water Treatment Systems

- Rapid deployment
- Installation process
- Performance monitoring
Bedrock Wells and Public Water

• Evaluation of options – considerations
  • Remaining data from private well sampling program
  • Further delineation of groundwater levels
  • Better understanding of bedrock conditions
  • Property owners uses and locations
  • Town of Peshtigo and City of Marinette input
  • Road/property access
Next Steps and Information Resources
Upcoming Activities

• Further groundwater and soil investigation
• Additional ditch investigation – sediments, groundwater/surface water interaction, water
• Drinking water well re-sampling by end of Spring
• Long-term monitoring program
• Future community updates
Information Resources

- Tyco website and WDNR website (BRRTS on the Web)
- Contact sheet available tonight (toll-free number, WDNR, WDHS, web links)
  - Toll-free number: **800-314-1381**
  - Some web sites:
    - Tyco Fire Products website for this matter: [http://marinette.tycofpp.com/](http://marinette.tycofpp.com/)
    - WDNR - Bureau for Remediation and Redevelopment Tracking System (BRRTS) on the Web: [http://dnr.wi.gov/botw/GetActivityDetail.do?adn=0238580694&siteId=1552500&crumb=1&search=b](http://dnr.wi.gov/botw/GetActivityDetail.do?adn=0238580694&siteId=1552500&crumb=1&search=b)
Meeting Break and Question & Answer Tables