



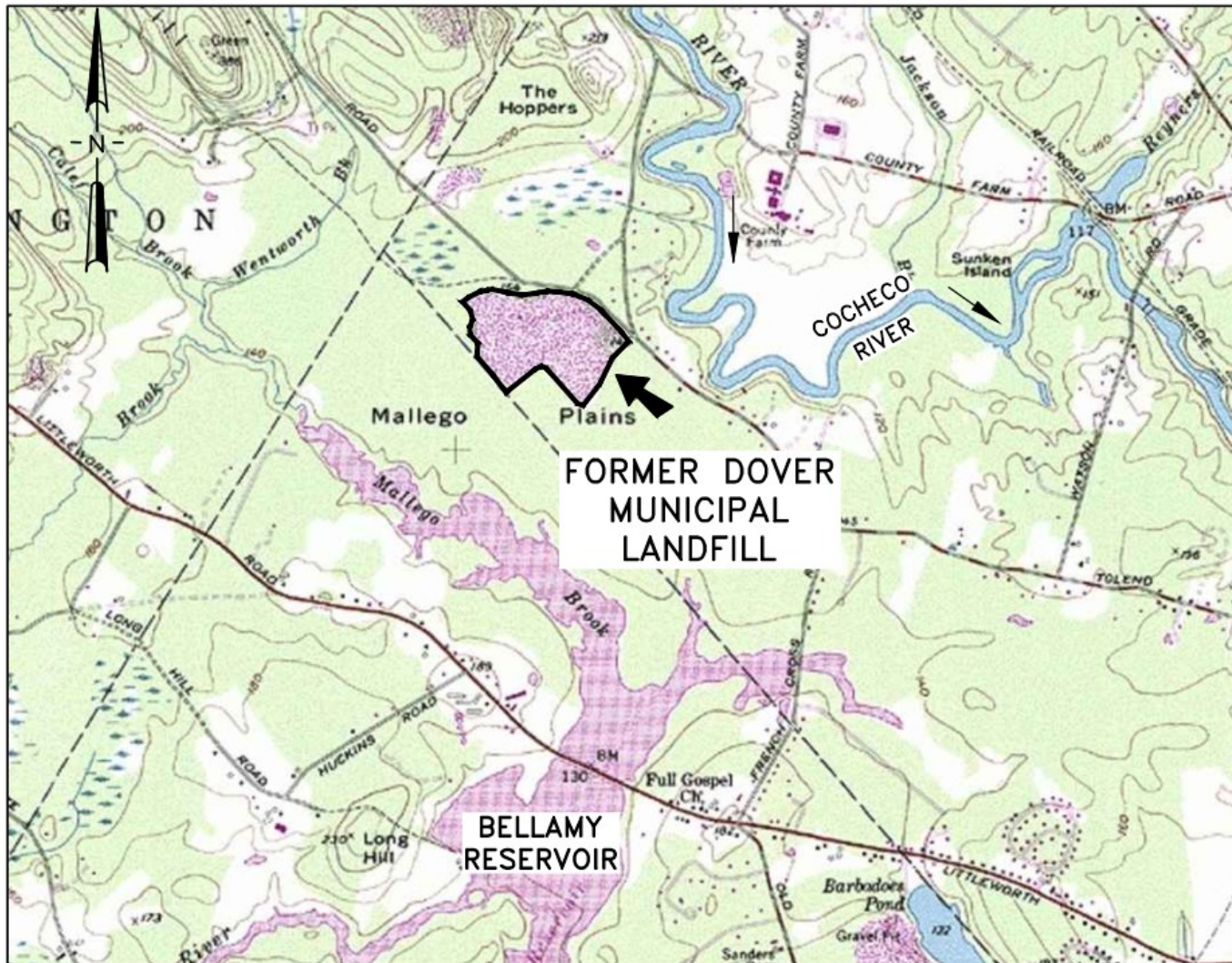
Tolend Road Landfill

**Dover City Council Workshop
January 11, 2023**

**Gretchen Young, PE
Environmental Projects Manager
&
Christene A. Binger, CHMM
Verdantas**



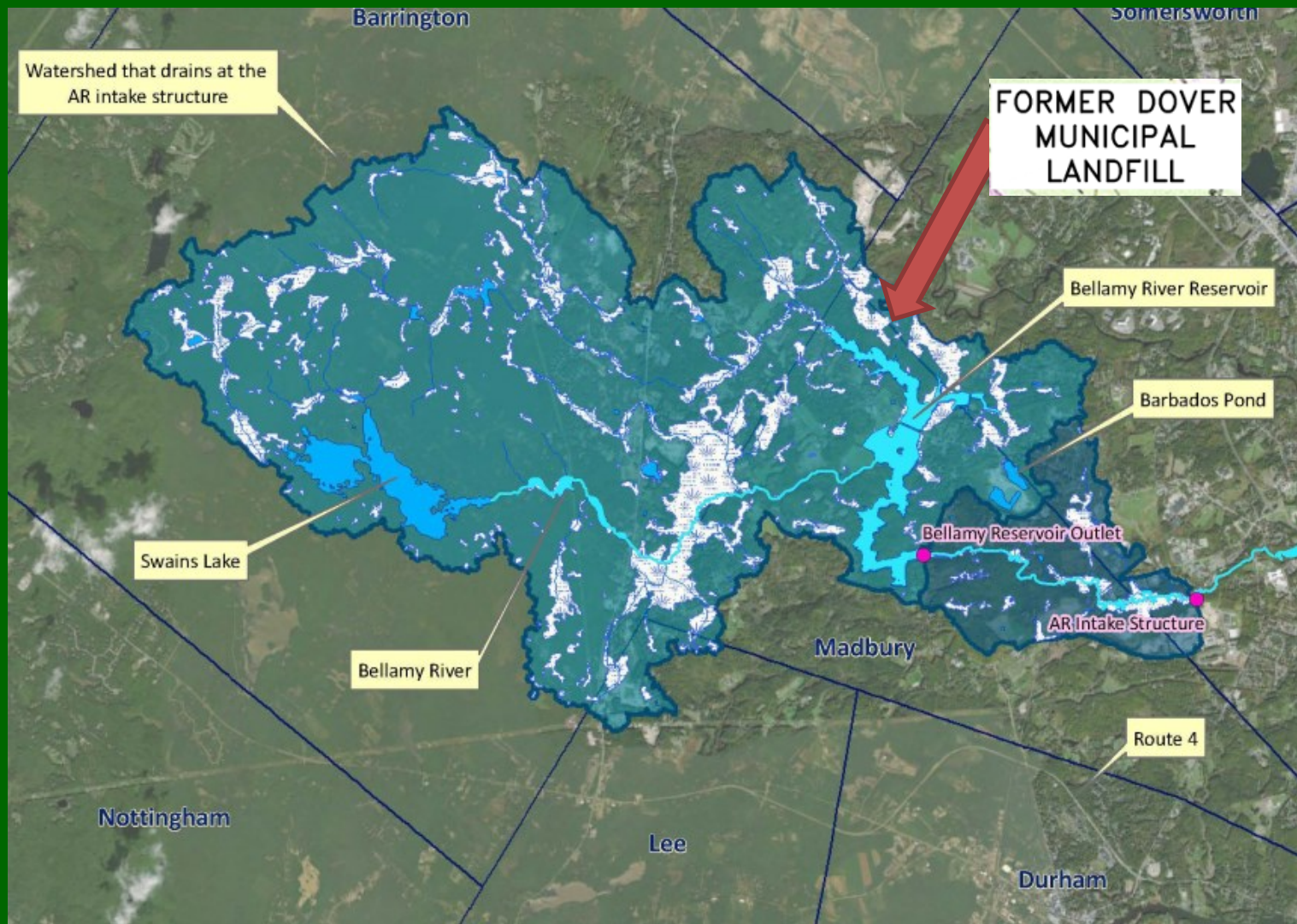
Landfill Location



SITE AREA PLAN



Bellamy Reservoir Watershed





“Dover Landfill Group” (DLG) Potential Responsible Parties

Entity	Percent Responsible	
Dover	42.7%	
Textron	36.6%	
Clarostat	4.4%	} 20.7%
Melville	4.4%	
Moore	4.4%	
BFI	3.6%	
Eastern Air Devices	2.3%	
Wentworth	1.8%	



Landfill History

1977

- State installed monitoring wells
- found Volatile Organic Compounds (VOC's) and Arsenic present in groundwater

1979

- Landfill is taken out of operation

1983

- Site included in the National Priority List (NPL)

1983

- **DLG extends Municipal Water to serve the area**



Landfill History

1993-
present

- **DLG implements Environmental Monitoring Plan (EMP)**
 - Quarterly, then semi-annual sampling program until 2010
 - Annual events 2011 to 2022
 - Groundwater/Surface Water Monitoring
 - Permeable Cover inspections
 - Soil Vapor Intrusion Monitoring
 - River Sediment Ecotoxicity Monitoring (5-year events)
 - Wetland Monitoring





Landfill History

1996

- **100% Remedial Design submitted to EPA**
- **Design included Source Control Remediation and an in-situ bioremediation approach (not a traditional cap)**

1998-
2004

- EPA reviews design
- Conducts Pilot Project
- **DLG prepares a Revised Focused Feasibility Study**

2004

- EPA issues Amended Record of Decision (AROD)
 - Requires a treatment trench (not capping)
 - Requires additional risk evaluation and Pre-Design Investigations (PDIs)

2006-
2011

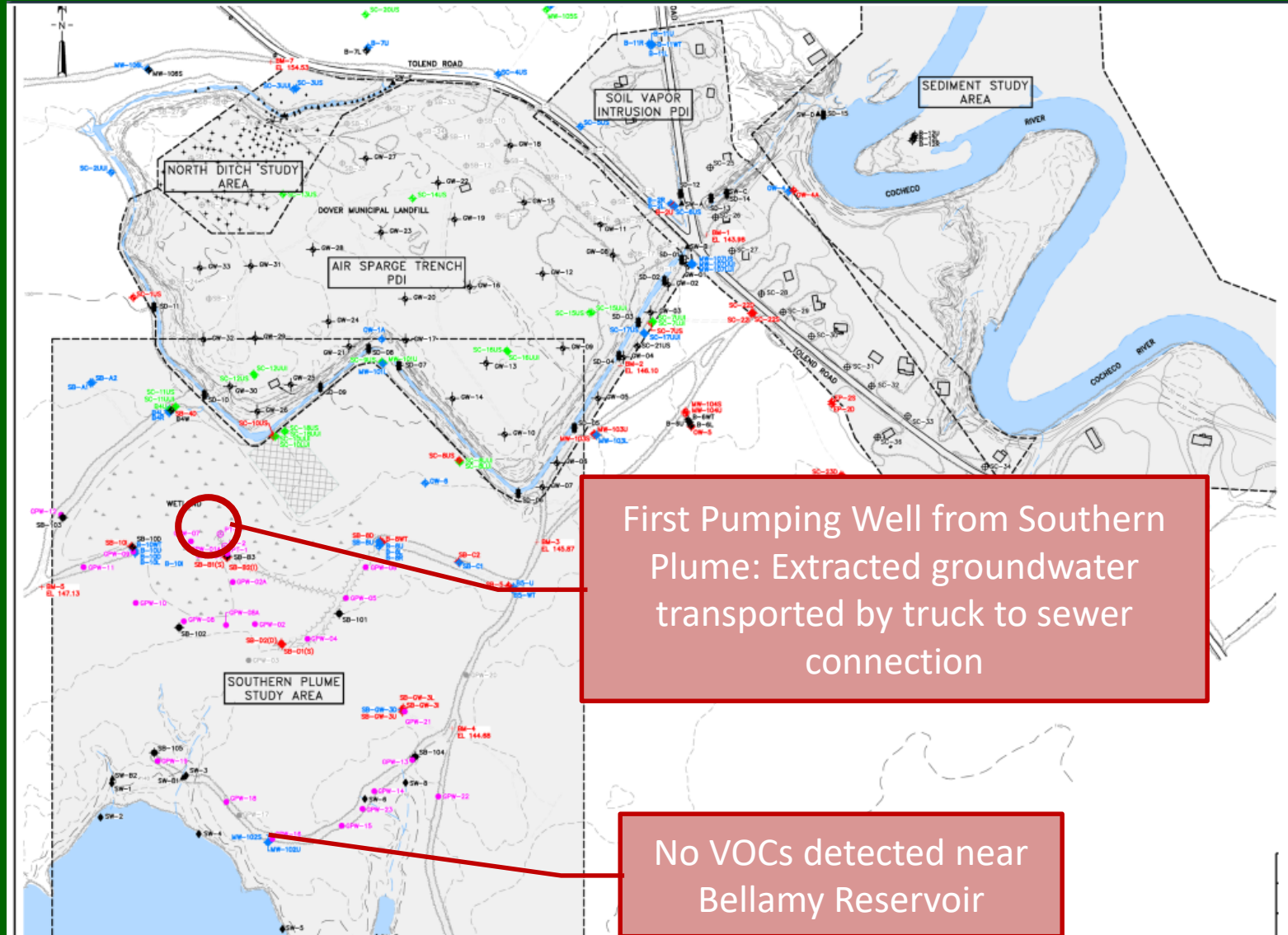
- **Southern Plume PDI (2006-2007)**
- **Southern Plume Groundwater Extraction Operation in operation (2007 to 2011)**

2008-
2009

- **DLG evaluates vapor intrusion in homes and sediment impacts in Cocheco River**
- EPA concluded that concentrations in these two media do not pose unacceptable risks

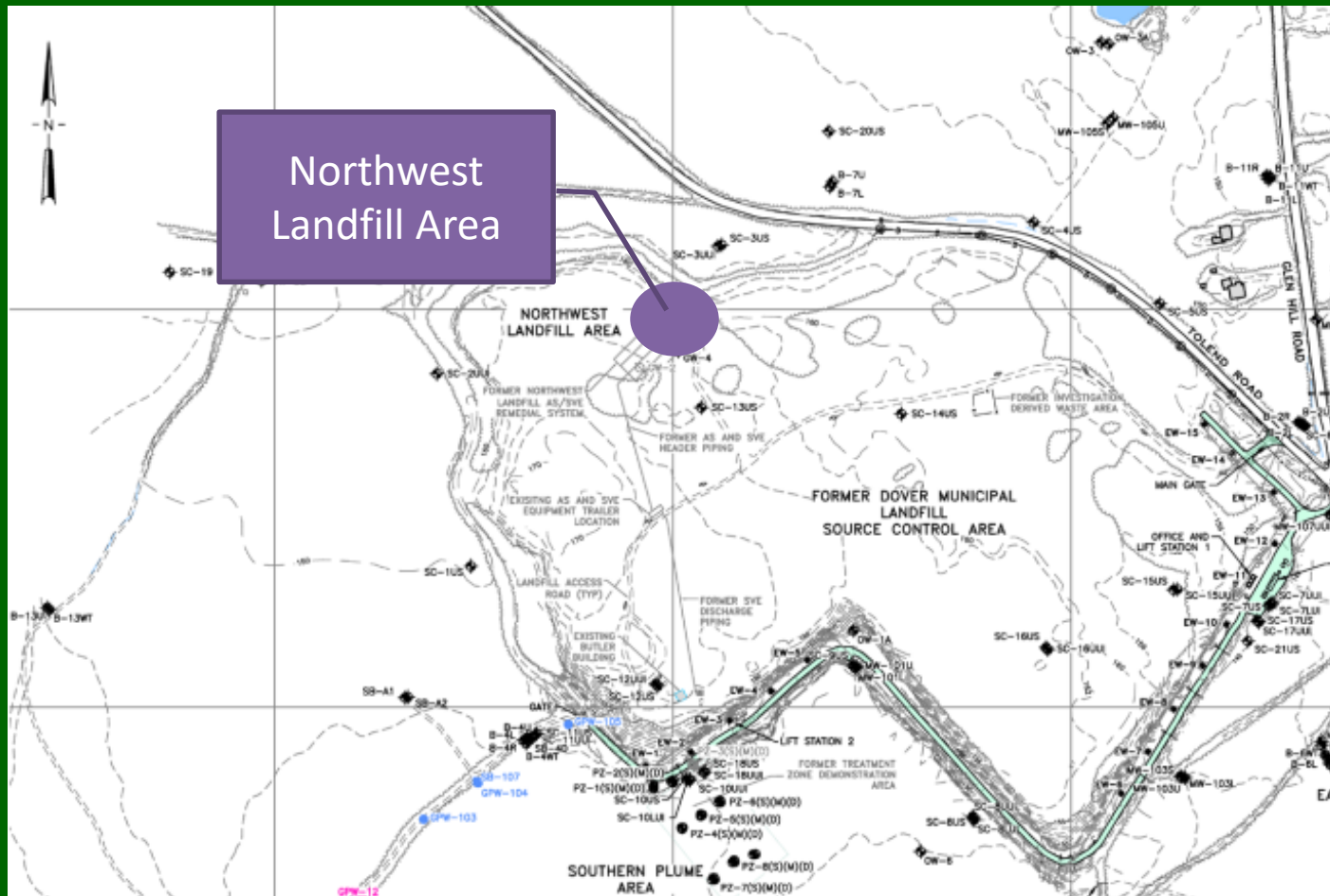


Landfill History





Northwest Landfill Area





Northwest Landfill Area

PRPs implement full-scale air sparge/soil vapor extraction remedy in northwest portion of landfill (remove mass)



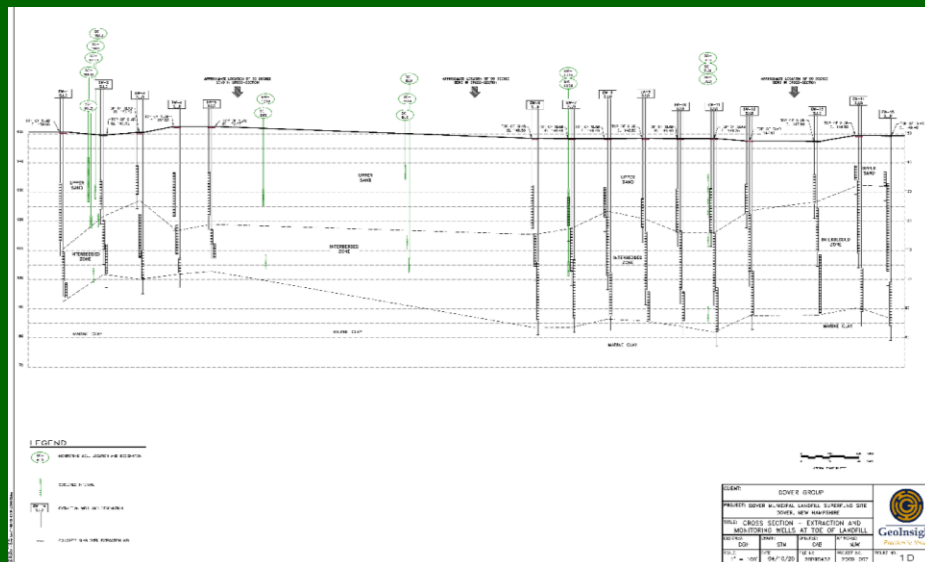
- **>43,000 lbs VOCs removed**
- **Operational for 3 years**
- **EPA finds system met intended goals**



Landfill History

2007 -
2009

- PRPs conduct a Source Control Focused Feasibility Study (SCFFS: 2007) – identified site conditions would present challenges to a treatment trench
- EPA issues an Explanation of Significant Differences (2009 ESD)
- Changed treatment trench (2004) to multi-level groundwater extraction
- Initial NHDES Groundwater Management Permit issued





Landfill History

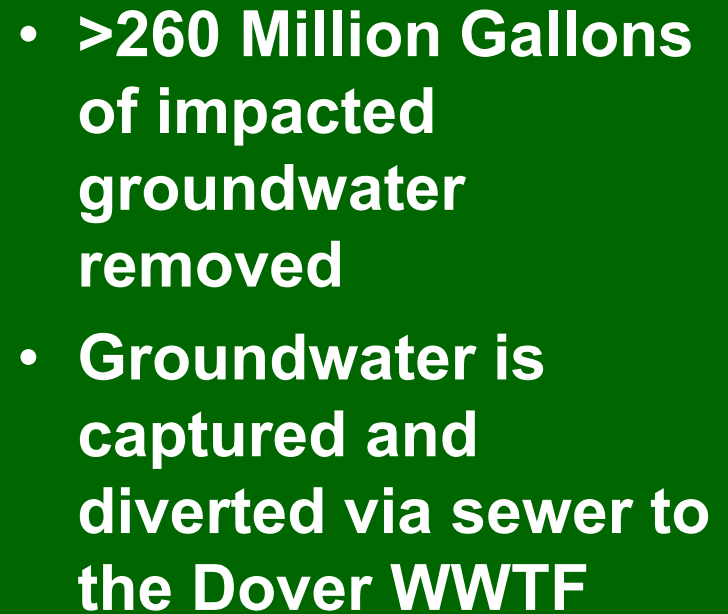
2010

- DLG completes and submits design of preferred remedy (extraction and conveyance system) for source control of main landfill area
- Dover extends sewer line from landfill to County Farm Road (force main to gravity)





- **Source Control system in place (2012)**
- **Ditch surrounding landfill is removed**
- **Groundwater extraction system constructed**





Landfill History

2012-
2017

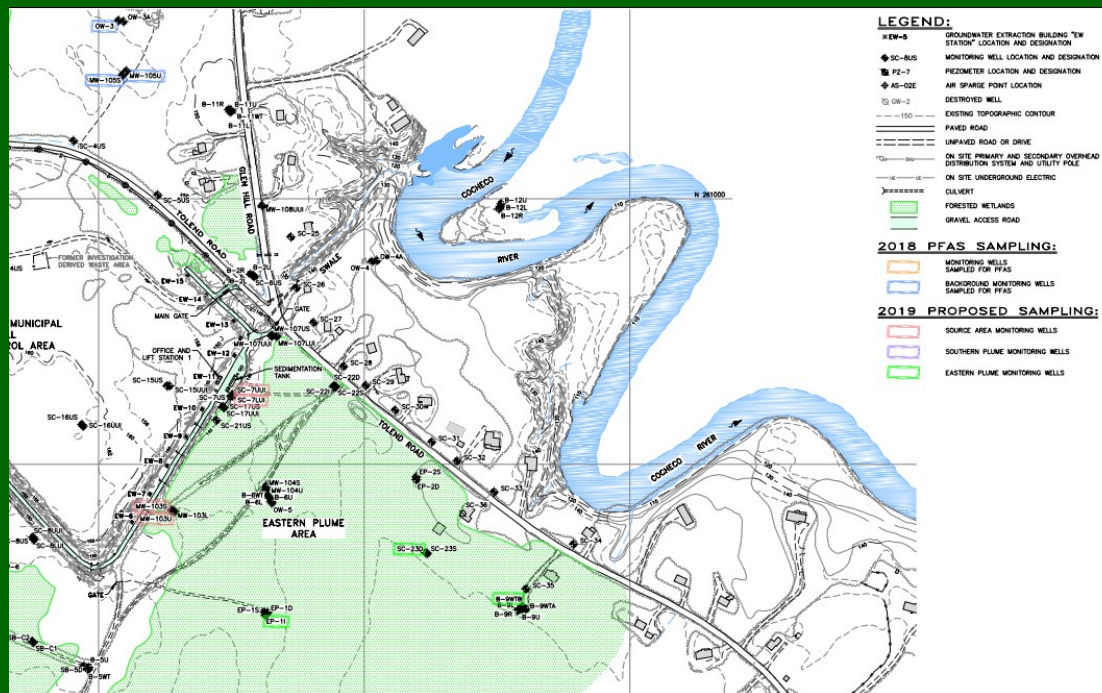
- Extraction and Conveyance System is fully operational
- Environmental Monitoring is occurring regularly
- Groundwater Management Plan in place





Eastern Plume

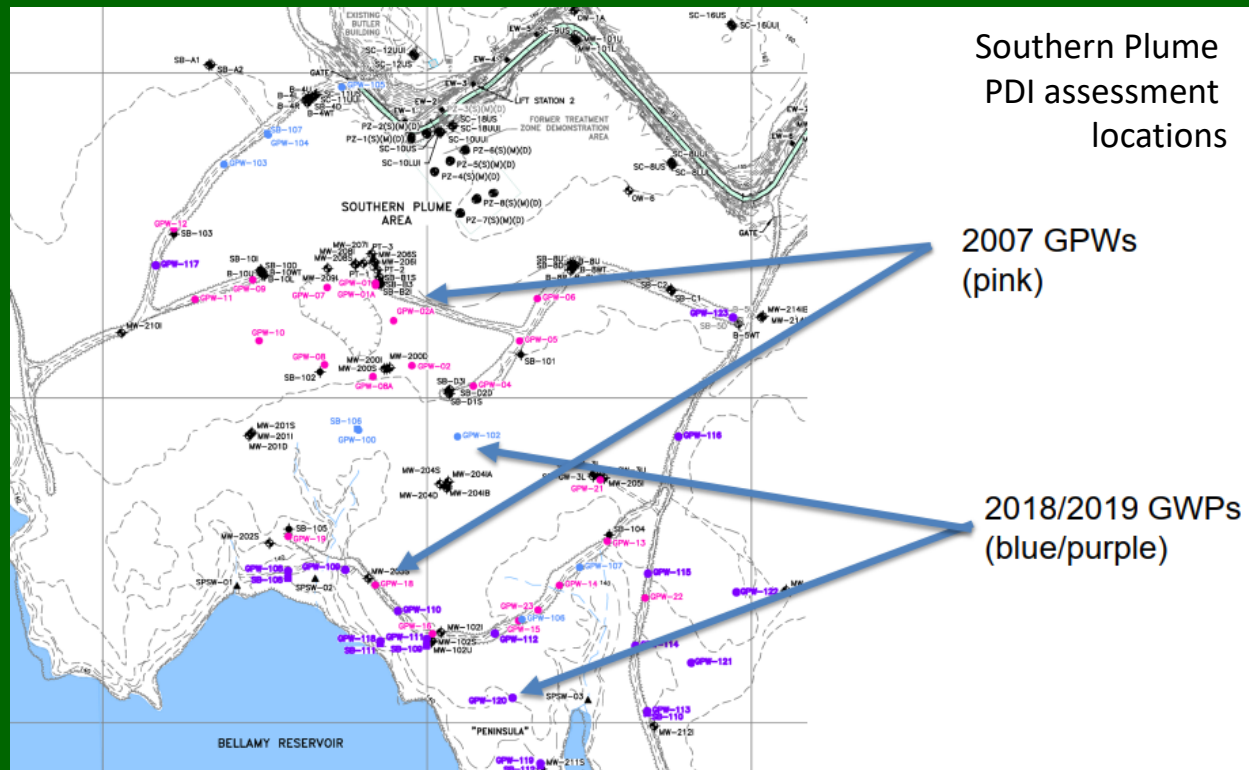
- Increased analysis in Eastern Plume showed Natural Attenuation of VOCs
- VOCs decreasing - no vapor intrusion risk identified
- Sediment in river evaluated - no risk identified
- Ongoing evaluation every 5 years





2018-2019

- Southern Plume Investigation show low levels 1,4-dioxane and PFAS
- 4-inch pumping well restarted in 2019 with seasonal operations

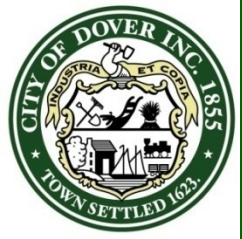




2020-2022

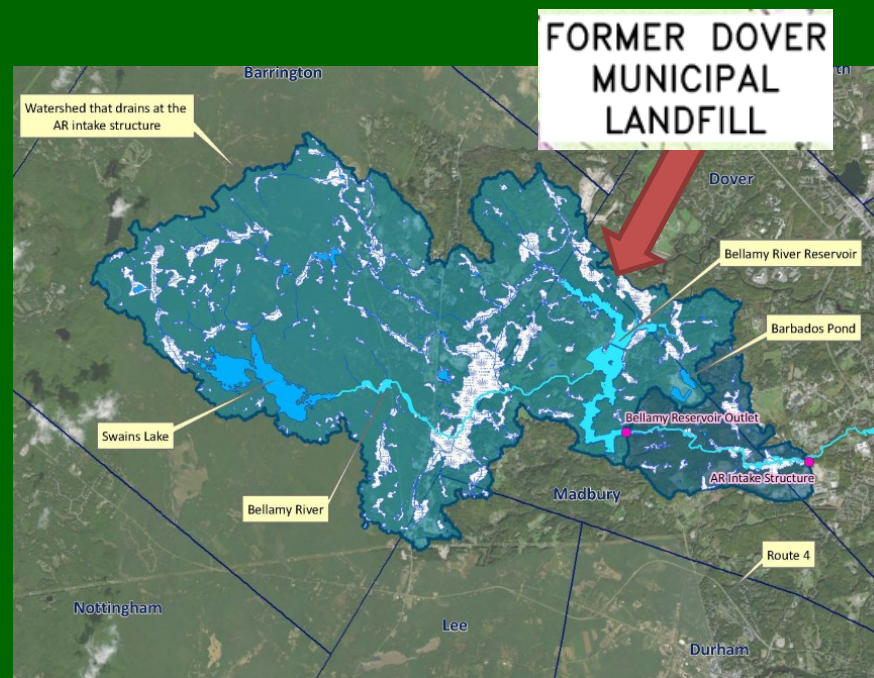
- Additional and ongoing monitoring of Southern Plume
- DLG work with agencies to evaluate preferred remedy
- 1,4-Dioxane levels are holding steady
- Agencies want to do additional modeling prior to finalizing and implementing a remediation approach





Southern Plume

- Low levels of PFAS is ubiquitous throughout watershed; levels upstream of the landfill are consistent with those found at the Bellamy Reservoir Water Intake
- No 1,4-dioxane detected at water intake location
- Monitoring indicates levels are holding steady or decreasing at the shoreline





Next Steps and goals

Winter
2023

- Additional Southern Plume Hydraulic Modeling
 - Required by EPA prior to remediation design submission

Summer
2023

- Installation of additional monitoring wells and piezometers

- Southern Plume Remedial Action Design (once modeling completed)

- EPA final Remedial Action Design approval
- Bid & Award Contract for plan implementation

- Construction of Southern Plume Remedial Action Plan (hopefully in 2024)



EPA 2022 Five-Year Review recommendations

- 1) DLG to prepare a technical memorandum to summarize Eastern Plume site activities...**

Update: We are in the process of preparing memorandum showing Monitored Natural Attenuation (MNA).

Milestone Date: September 30, 2023



EPA 2022 Five-Year Review recommendations

2) DLG to prepare Southern Plume 100% remedial Design Report and implement the optimized remedy in the Southern Plume

Update: In 2020, DLG submitted a proposal for expansion of the existing system with seasonal operation. Based on feedback from agencies, DLG will complete additional modeling and propose a modified design for review and approval.

Milestone Date: September 30, 2023



EPA 2022 Five-Year Review recommendations

3) Submit a work plan for further investigation of the western area of the SCRA GWE system to determine if contaminated groundwater is bypassing the system.

Update: Based on historic analysis of the site and ongoing monitoring, DLG does not believe that high levels of contaminated groundwater is bypassing the system. DLG to meet with agencies to review.

Milestone Date: September 30, 2023



EPA 2022 Five-Year Review recommendations

4) Install porewater wells and seepage meters directly along the shore of the reservoir and within each hydrostratigraphic unit to obtain data with which to demonstrate compliance with Maximum Contaminant Levels.

Update: DLG does not dispute migration toward the Bellamy. A technical meeting is needed to discuss most appropriate/effective monitoring.

Milestone Date: September 30, 2023



EPA 2022 Five-Year Review recommendations

5) Conduct additional investigation to complete delineation of the groundwater contaminant plumes.

Update: A technical meeting is needed to determine whether historical monitoring could address the questions, and where additional delineation is needed.

Milestone Date: September 30, 2023



EPA 2022 Five-Year Review recommendations

6) DLG will continue to monitor PFAS in site groundwater and other media as needed. EPA will determine if PFAS should be added as a site Contaminant of Concern.

Update: DLG continues to monitor PFAS and treats it as a Contaminant of Concern.

Milestone Date: September 30, 2023



Funding for Dover (2023)

Dover Landfill Group:

Consulting/Legal fees: ± 583,000\$

Review fees from agencies: ± 205,000\$

Operational Costs ± \$808,950

Potential Construction Costs: ± \$1,500,000 (one time)

Dover Only:

Consulting/Legal fees: ± \$45,000

Operational Cost: ± \$100,000

Sewer Revenue: ± \$350,000



Questions??

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