

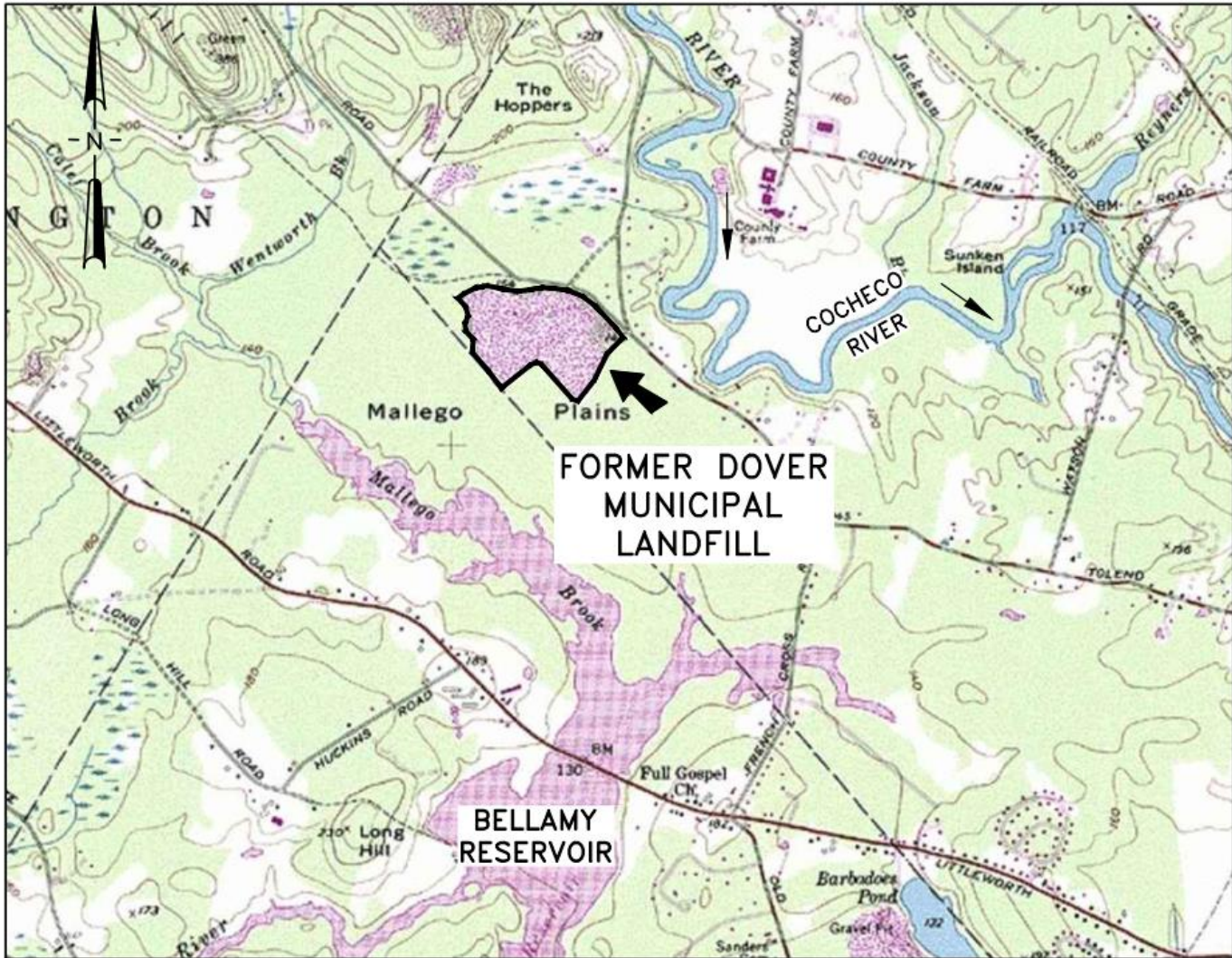


Tolend Road Landfill

**Portsmouth Safe Water Advisory Group
March 7, 2023**

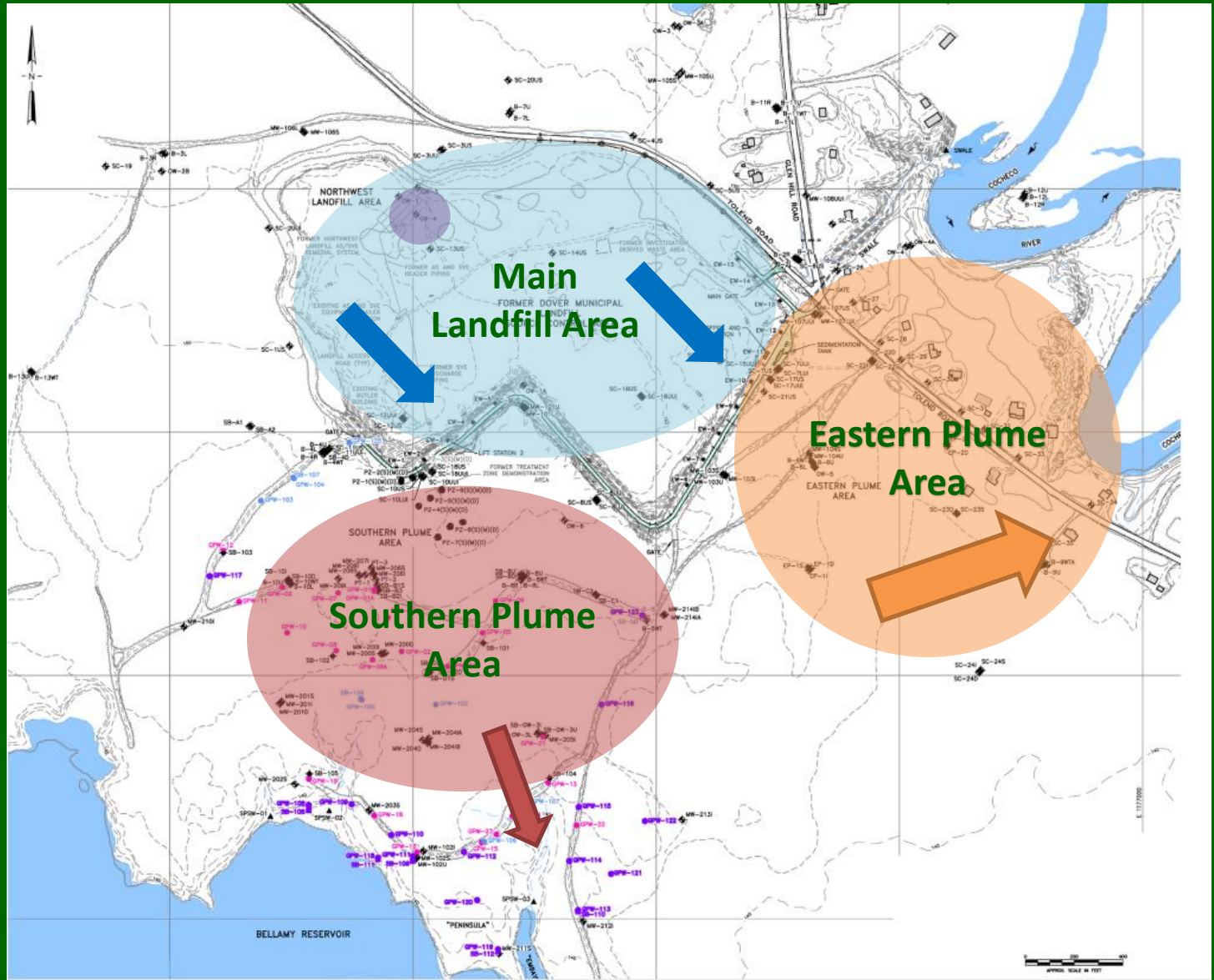
**Gretchen Young, PE
Environmental Projects Manager
&
Christene A. Binger, CHMM
Verdantas**

Landfill Location

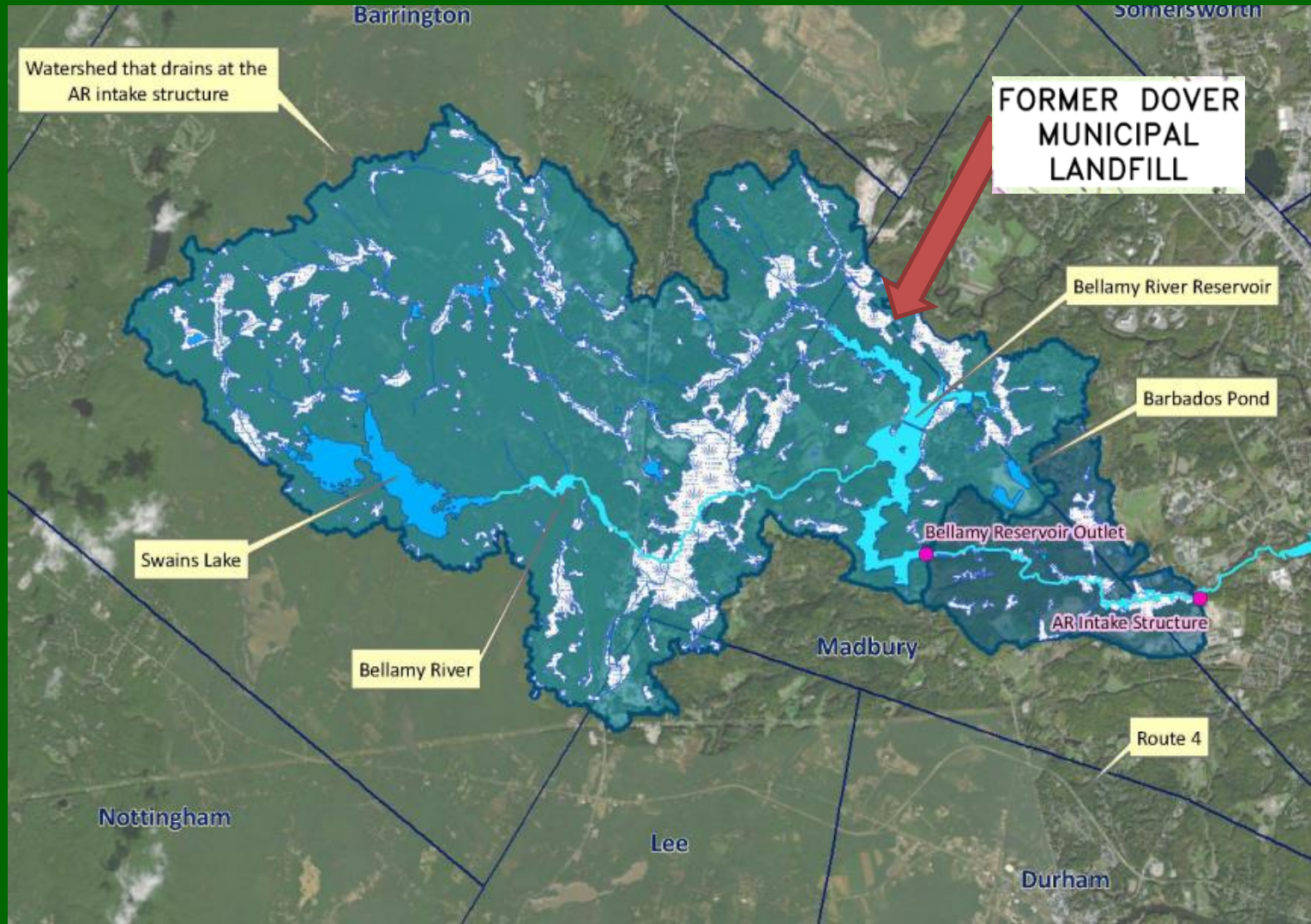


SITE AREA PLAN

Landfill Area

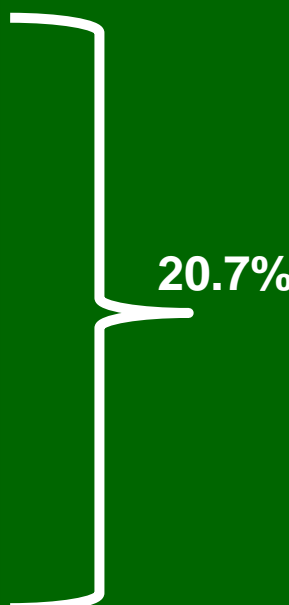


Bellamy Reservoir Watershed



“Dover Landfill Group” (DLG) Potential Responsible Parties

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



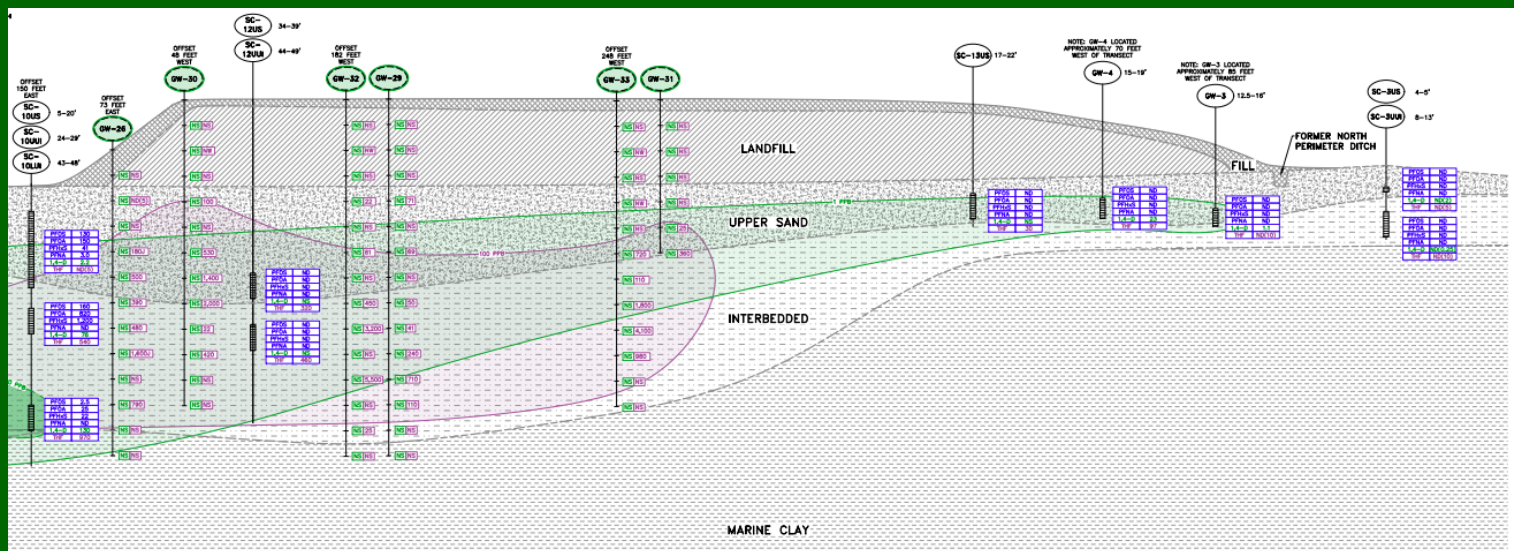
20.7%

Landfill History

1960-
1979

- Landfill Operational

- 47-acre footprint
- Typical thickness 8-12 feet
- Domestic & Industrial waste
- Sited on sand over marine clay



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

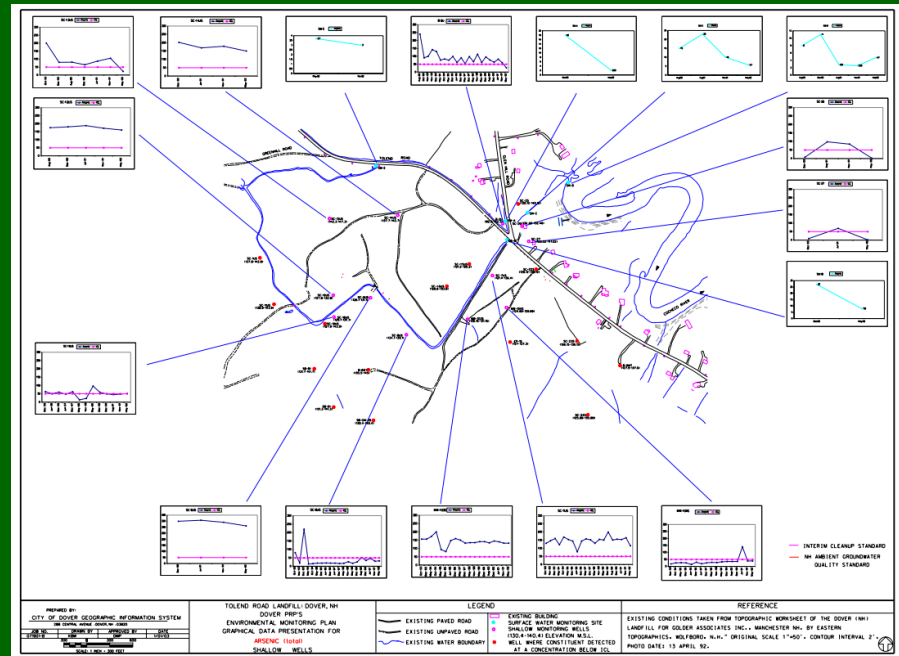
1983

- Site included in the National Priority List (NPL)

Landfill History

1992-
1994

- EPA issued Amended Administrative Order on Consent (AOC)
 - Initial recommendation is to cap the landfill
- DLG further characterizes the horizontal and vertical extent of Southern Plume
- DLG conducts a Southern Plume Pre-Design Investigation



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)

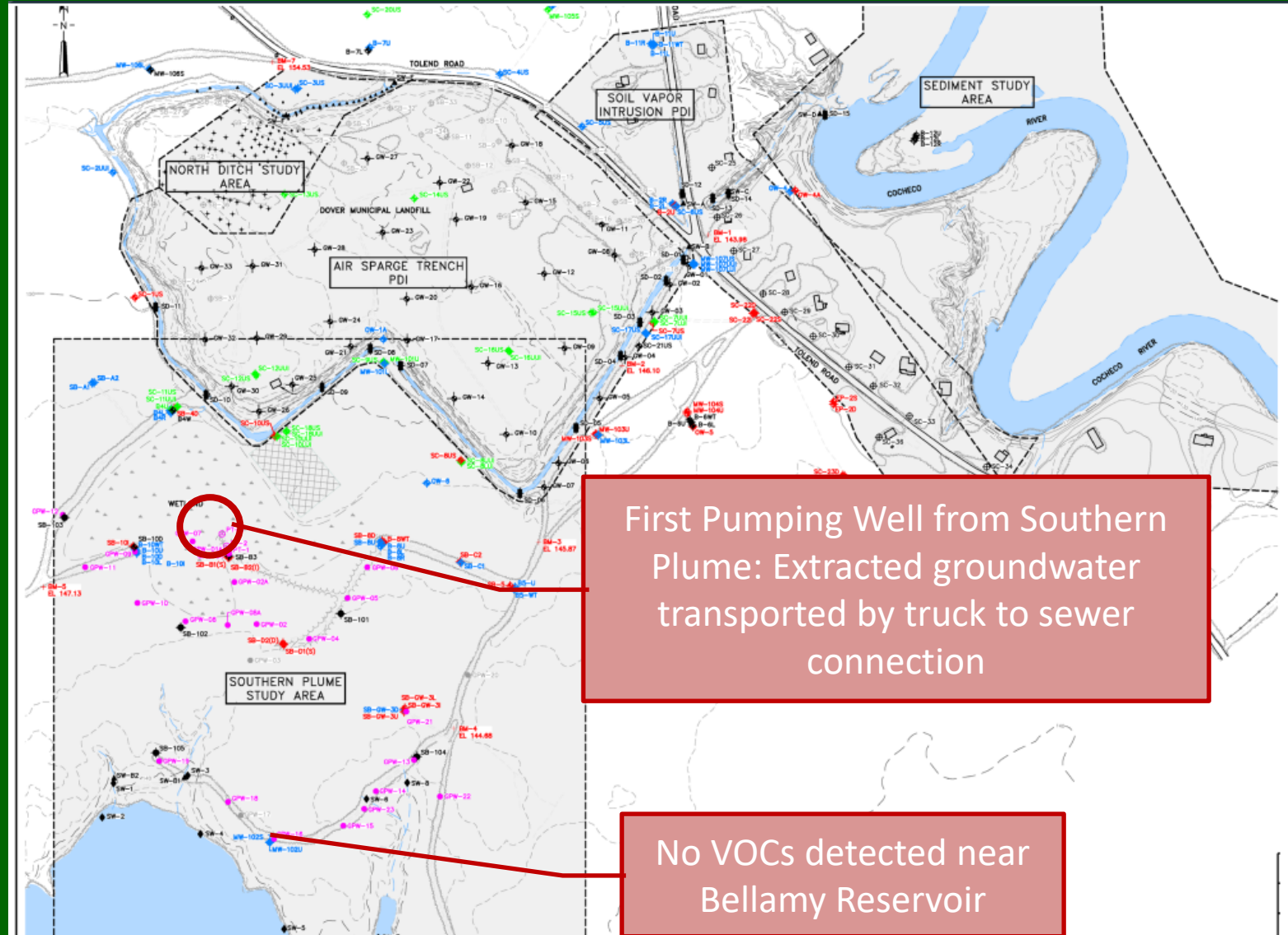
2006-
2011

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

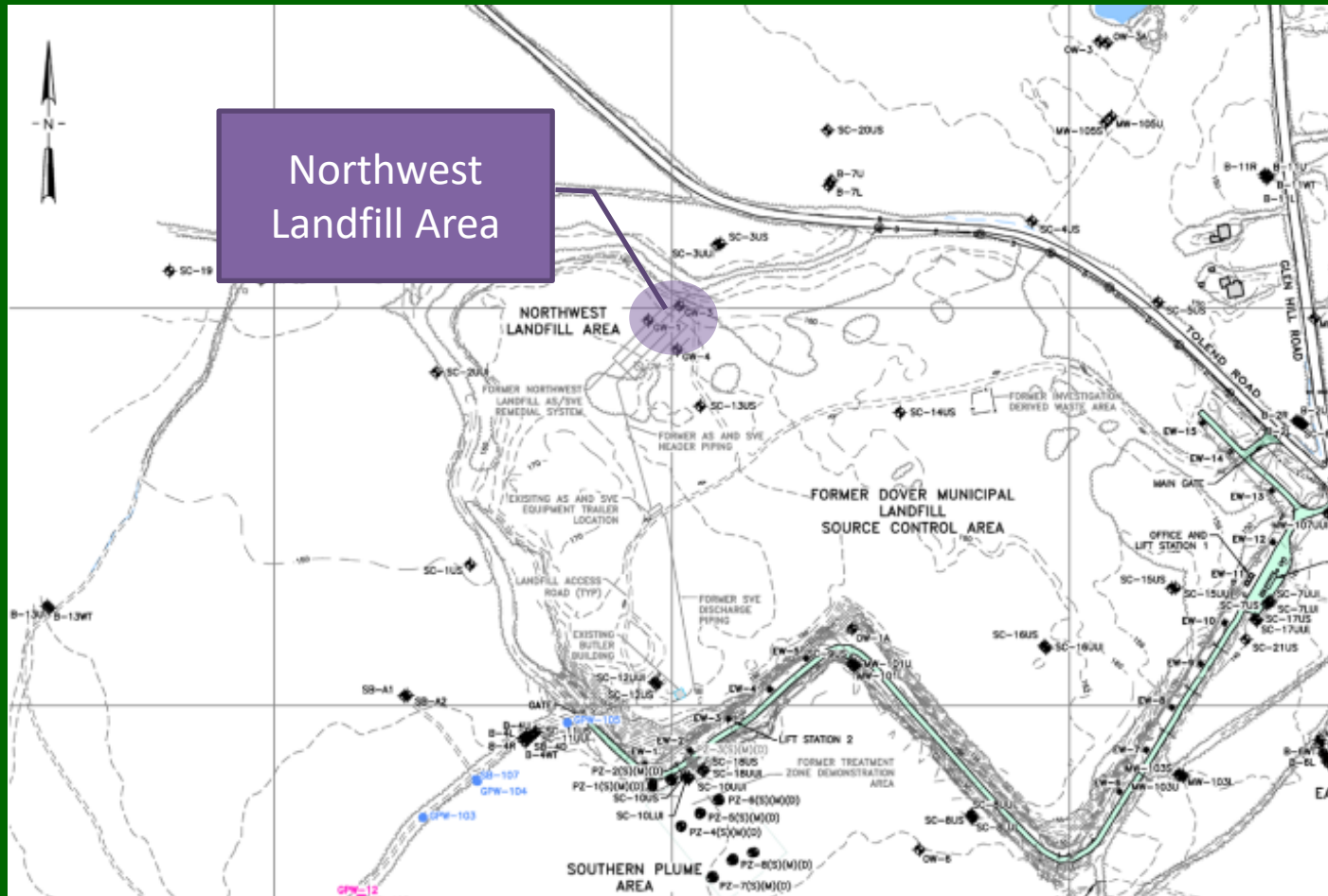
2008-
2009

- **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

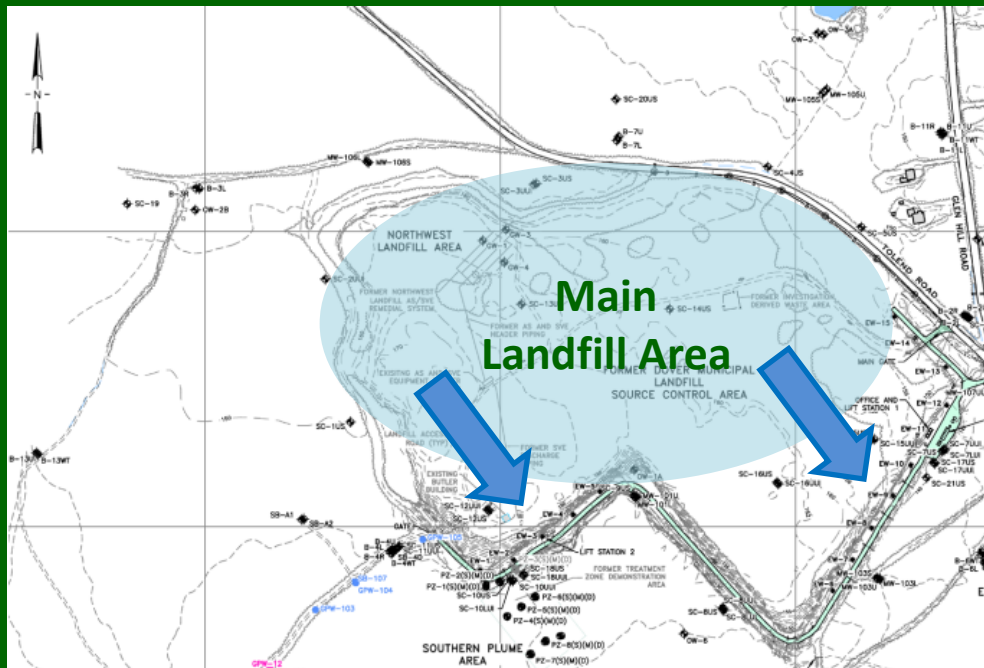
2010

- 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)



Main Landfill Area

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



- >260 Million Gallons of impacted groundwater removed
- Groundwater is captured and diverted via sewer to the Dover WWTF

Landfill History

2012-
2017

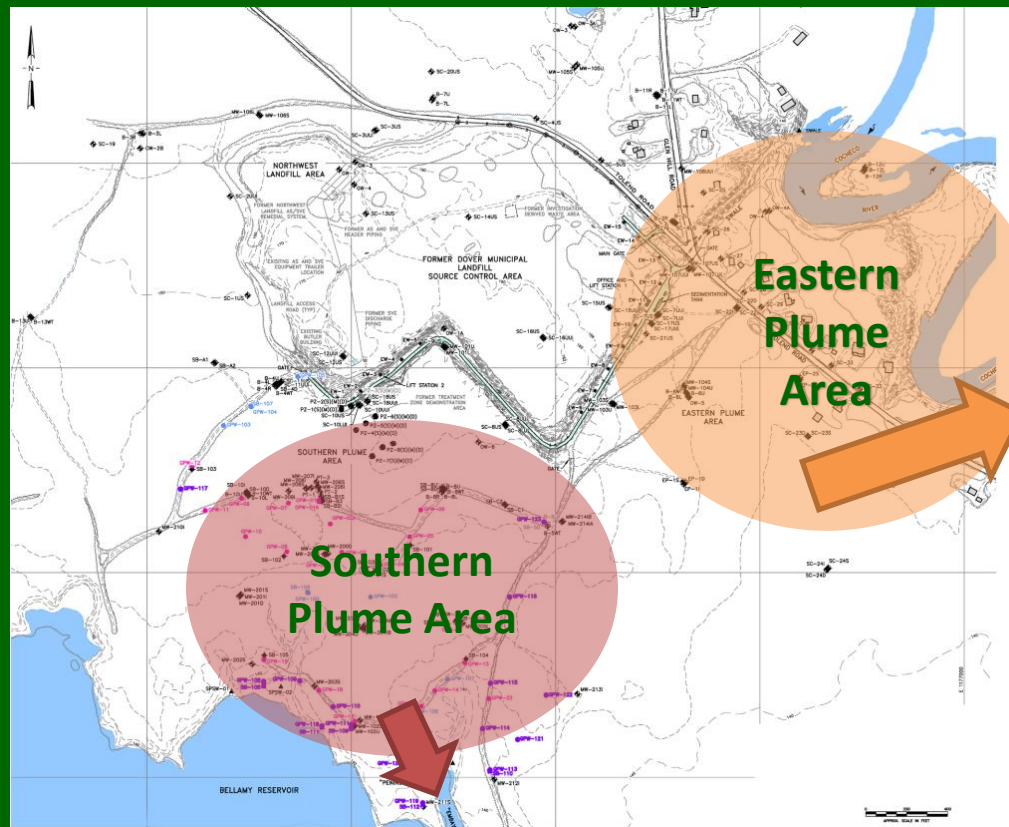
- Extraction and Conveyance System is fully operational
- Environmental Monitoring is occurring regularly
- Groundwater Management Plan in place



Landfill History

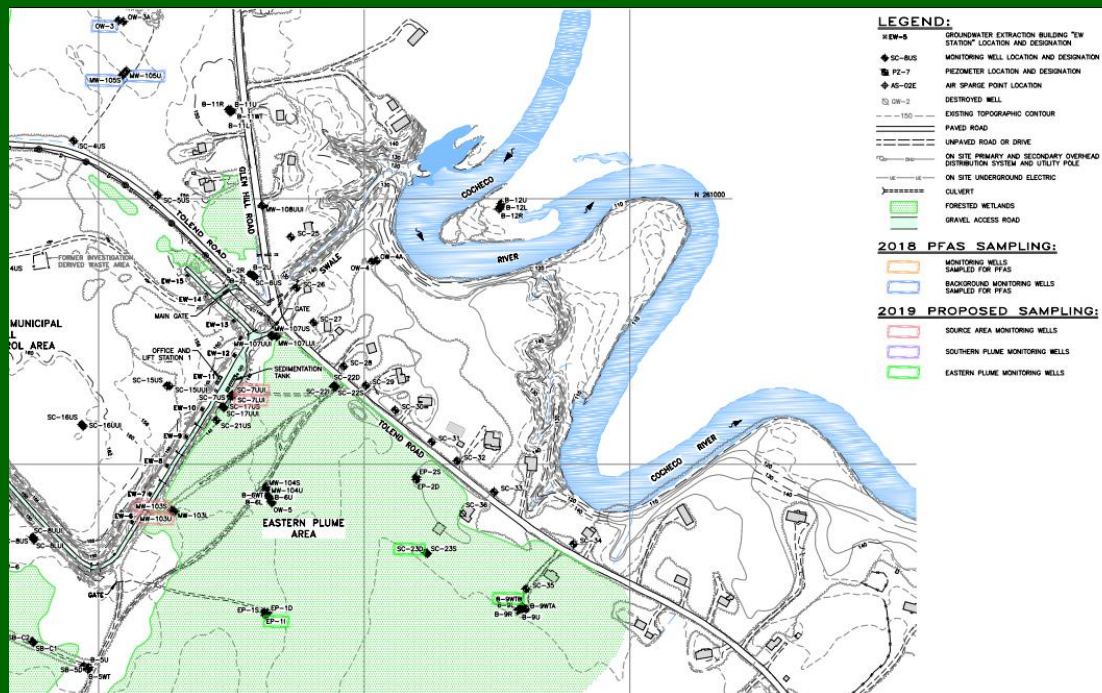
2017

- First EPA 5-Year review conducted
- Begin to question presence of emerging contaminants (PFAS and 1,4 dioxane) in Southern and Eastern Plumes



Eastern Plume

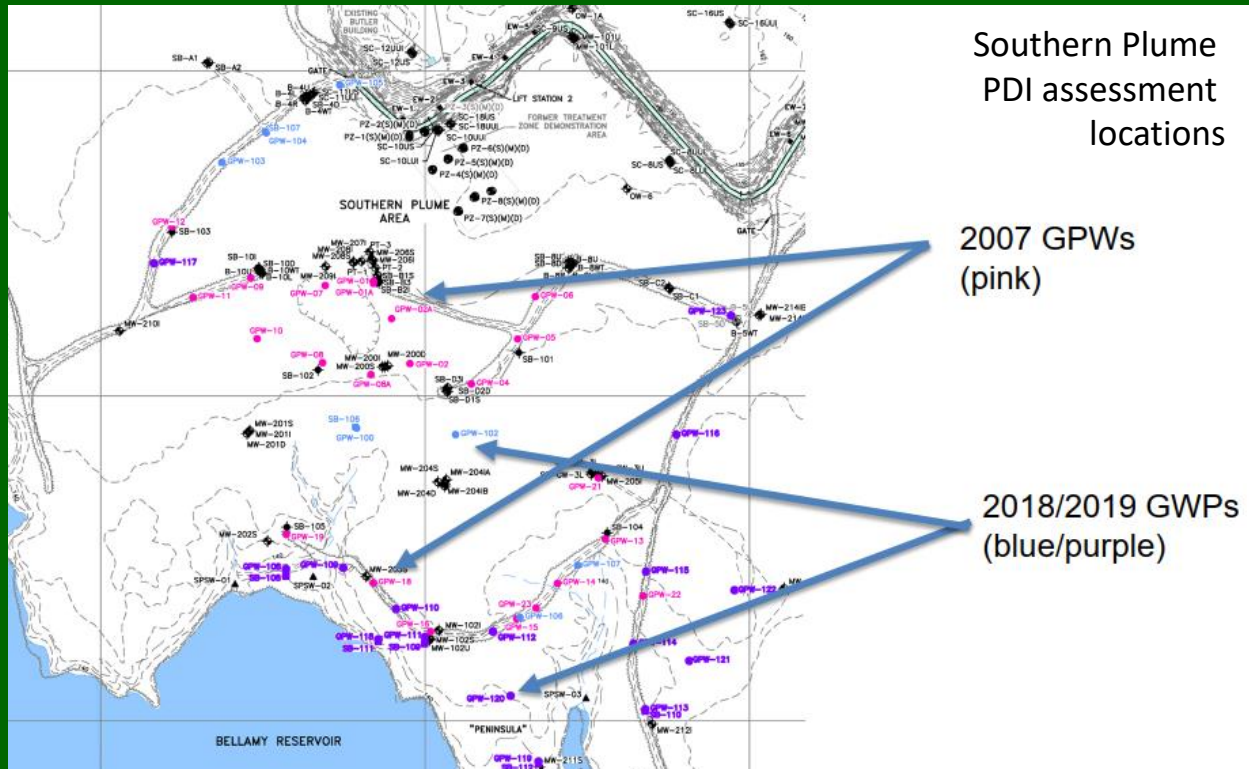
- Increased analysis in Eastern Plume showed Natural Attenuation of VOCs
- VOCs decreasing - no vapor intrusion risk identified
- Sediment in river evaluated - no risk identified
- Ongoing evaluation every 5 years



Southern Plume

2018-2019

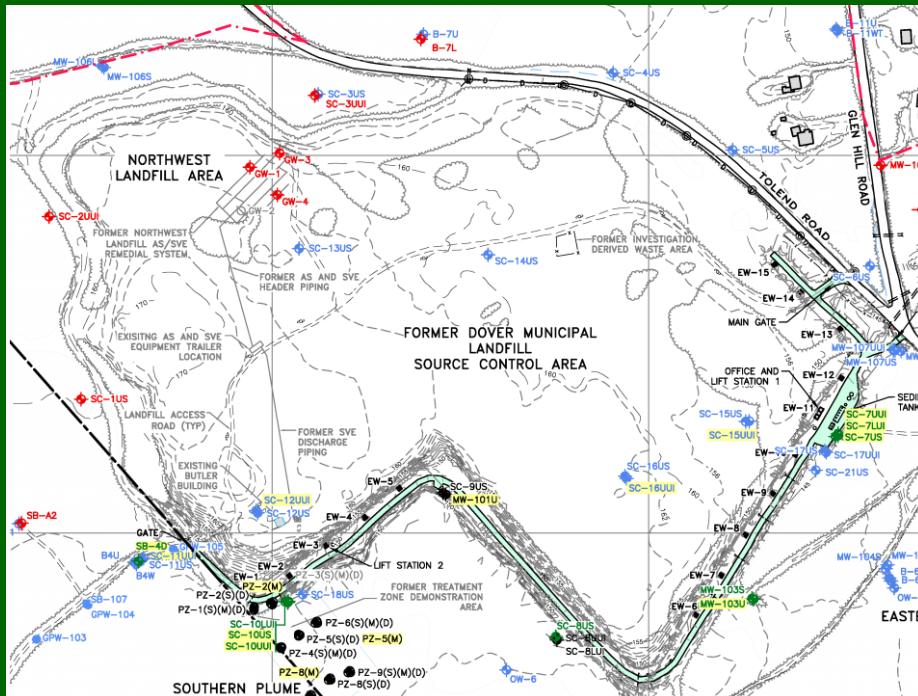
- Southern Plume Investigation show low levels 1,4-dioxane and PFAS
- 4-inch pumping well restarted in 2019 with seasonal operations



Southern Plume

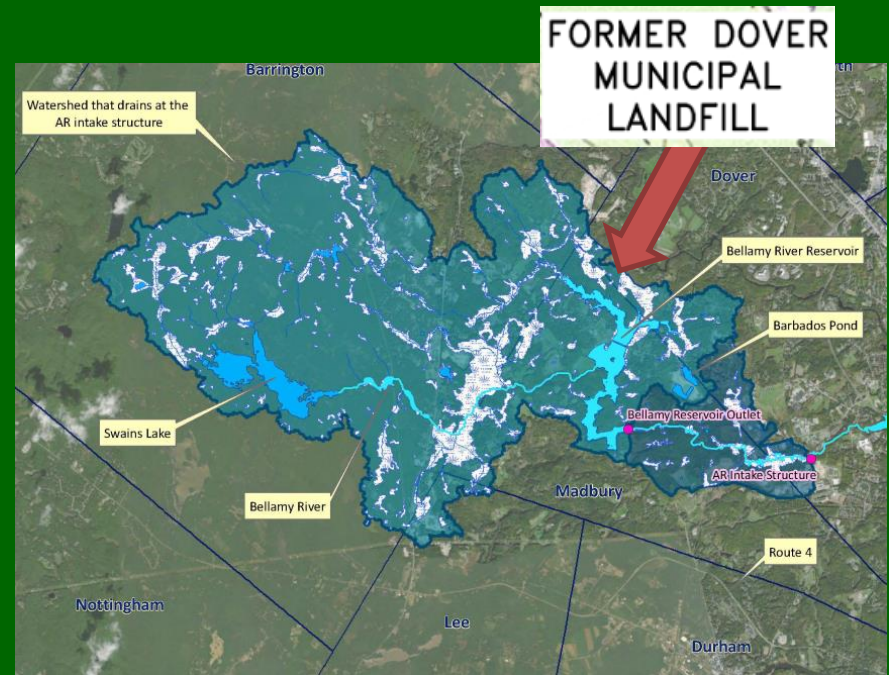
2020-2022

- 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 found at the Bellamy intake
- No 1,4-dioxane detected at water intake
- 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

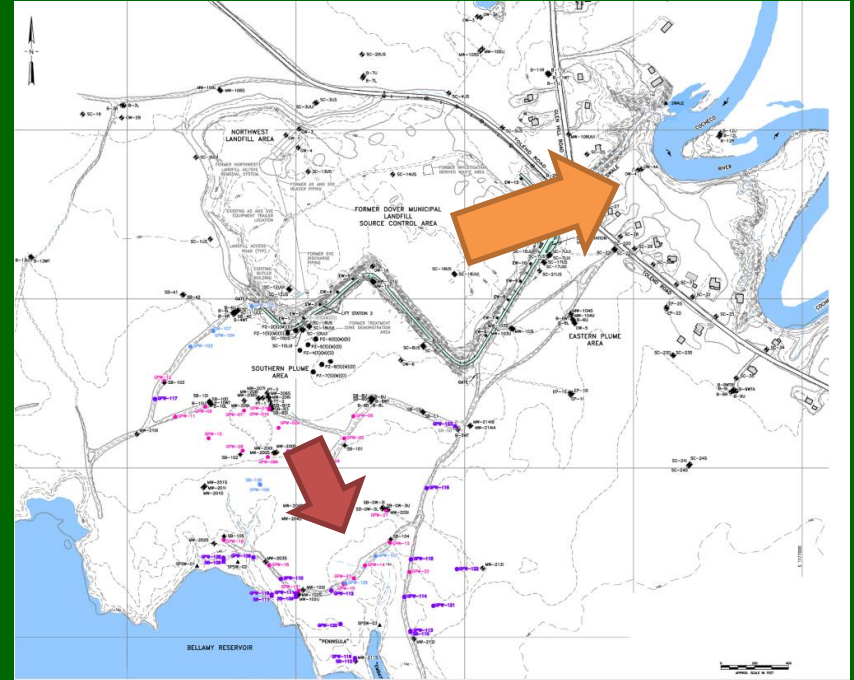
- Construction of Southern Plume Remedial Action Plan (hopefully in 2024)

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

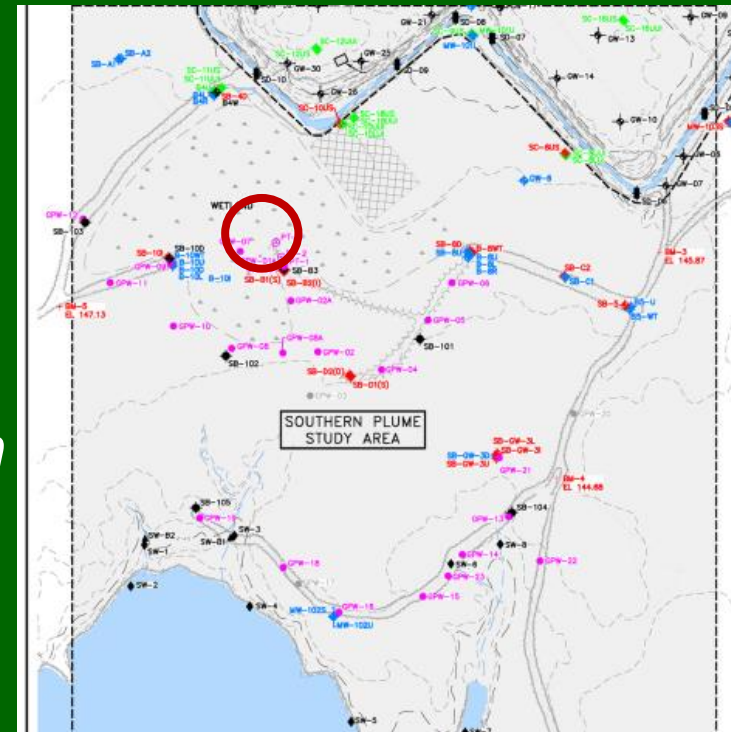


EPA 2022 Five-Year Review recommendations

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.*

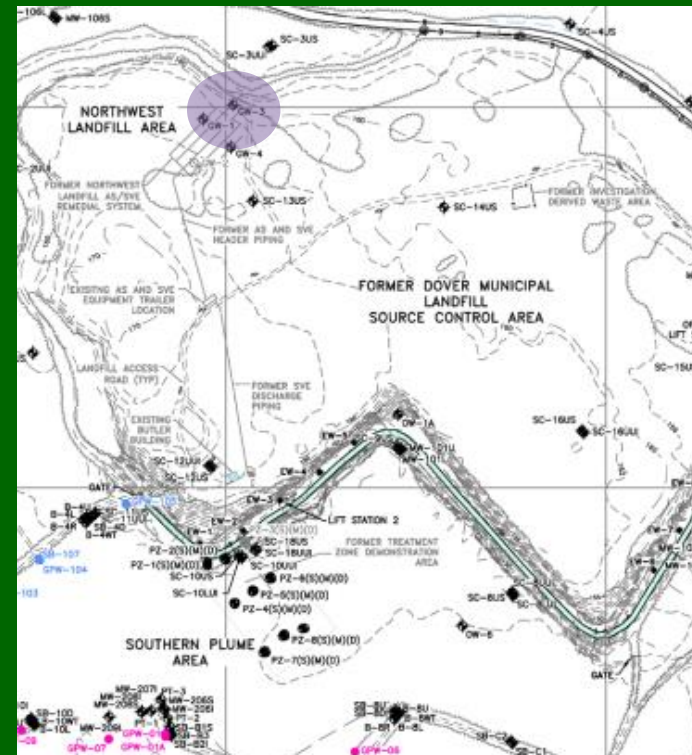
Milestone Date: September 30, 2023



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.

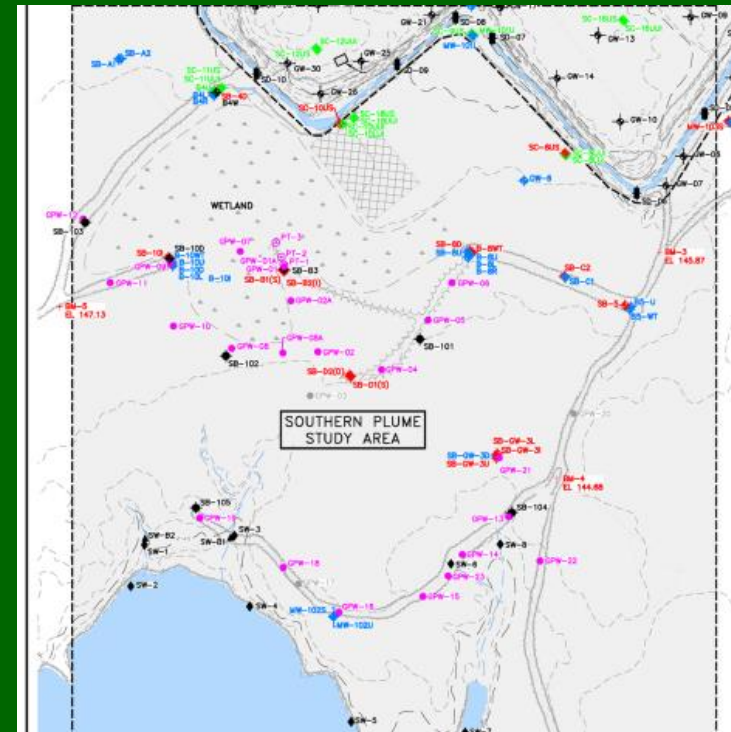


Milestone Date: September 30, 2023

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.



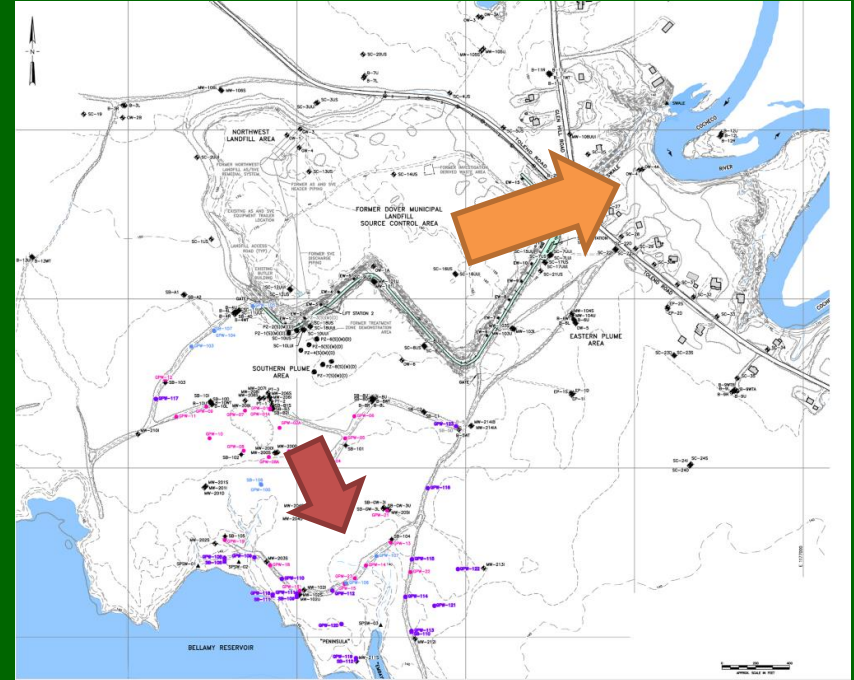
Milestone Date: September 30, 2023

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



Questions??

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