ROLLING KNOLLS LANDFILL SUPERFUND SITE

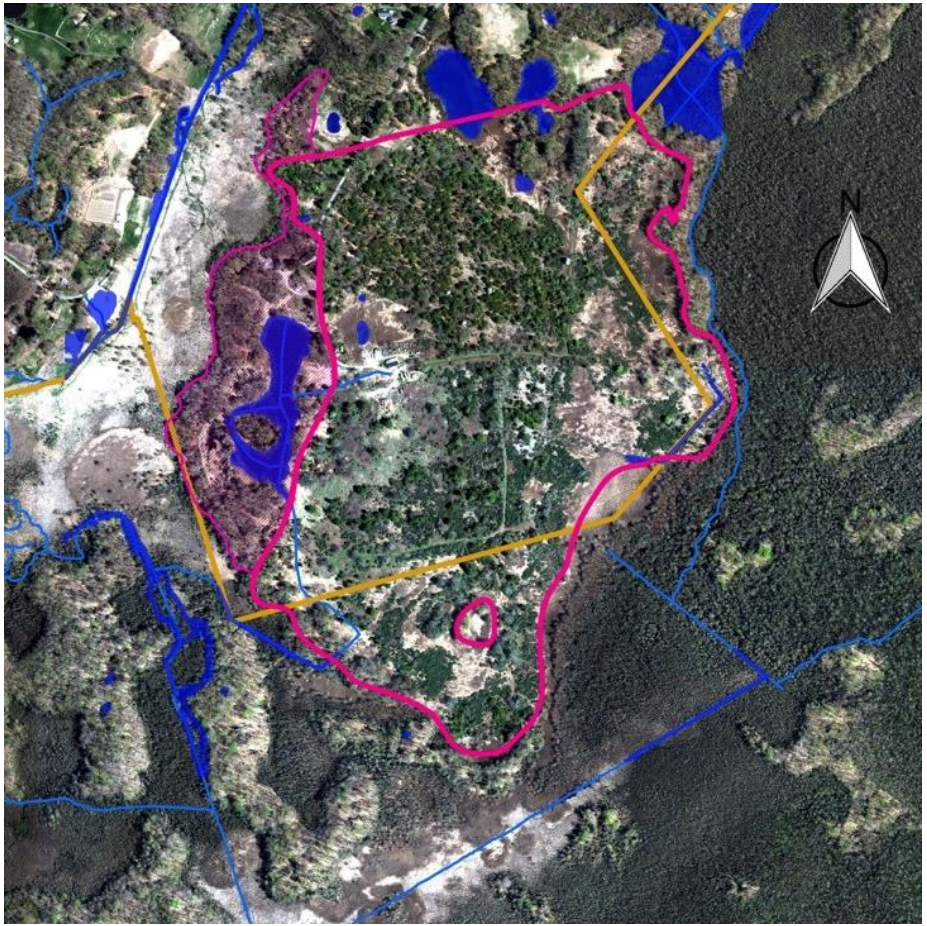
CHATHAM, NJ

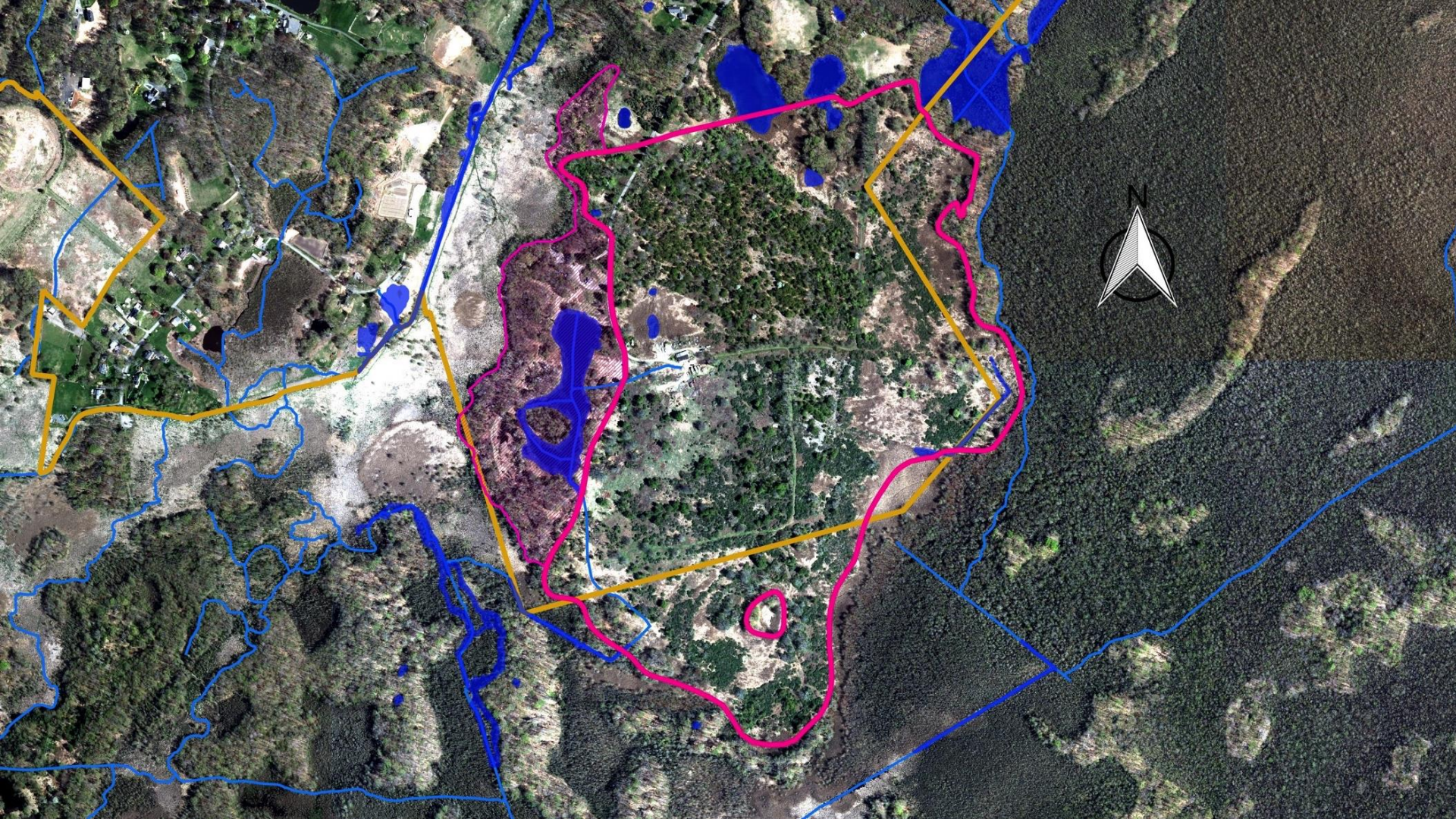
2020 Supplemental Site Characterization

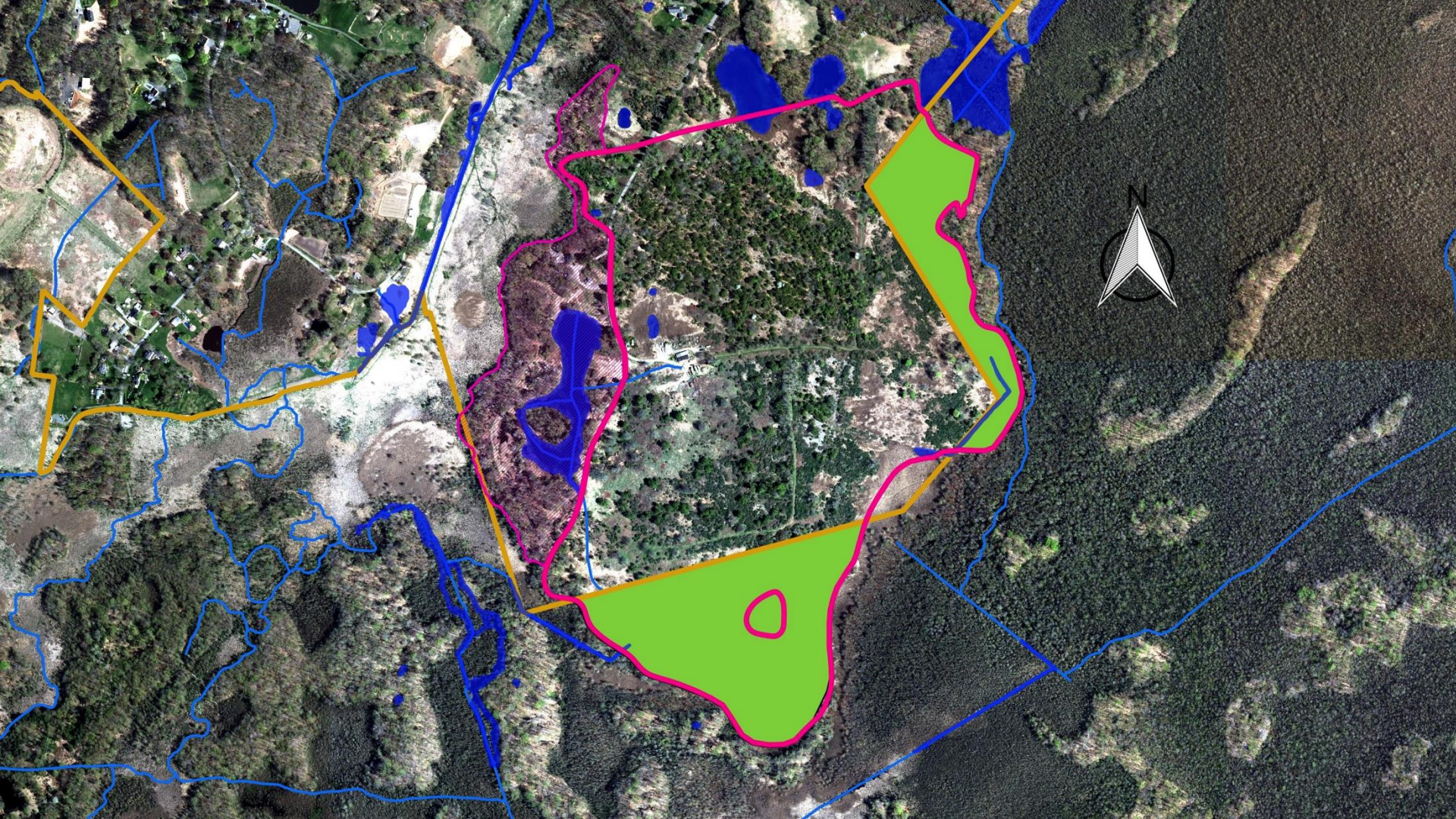
U.S. Fish & Wildlife Service

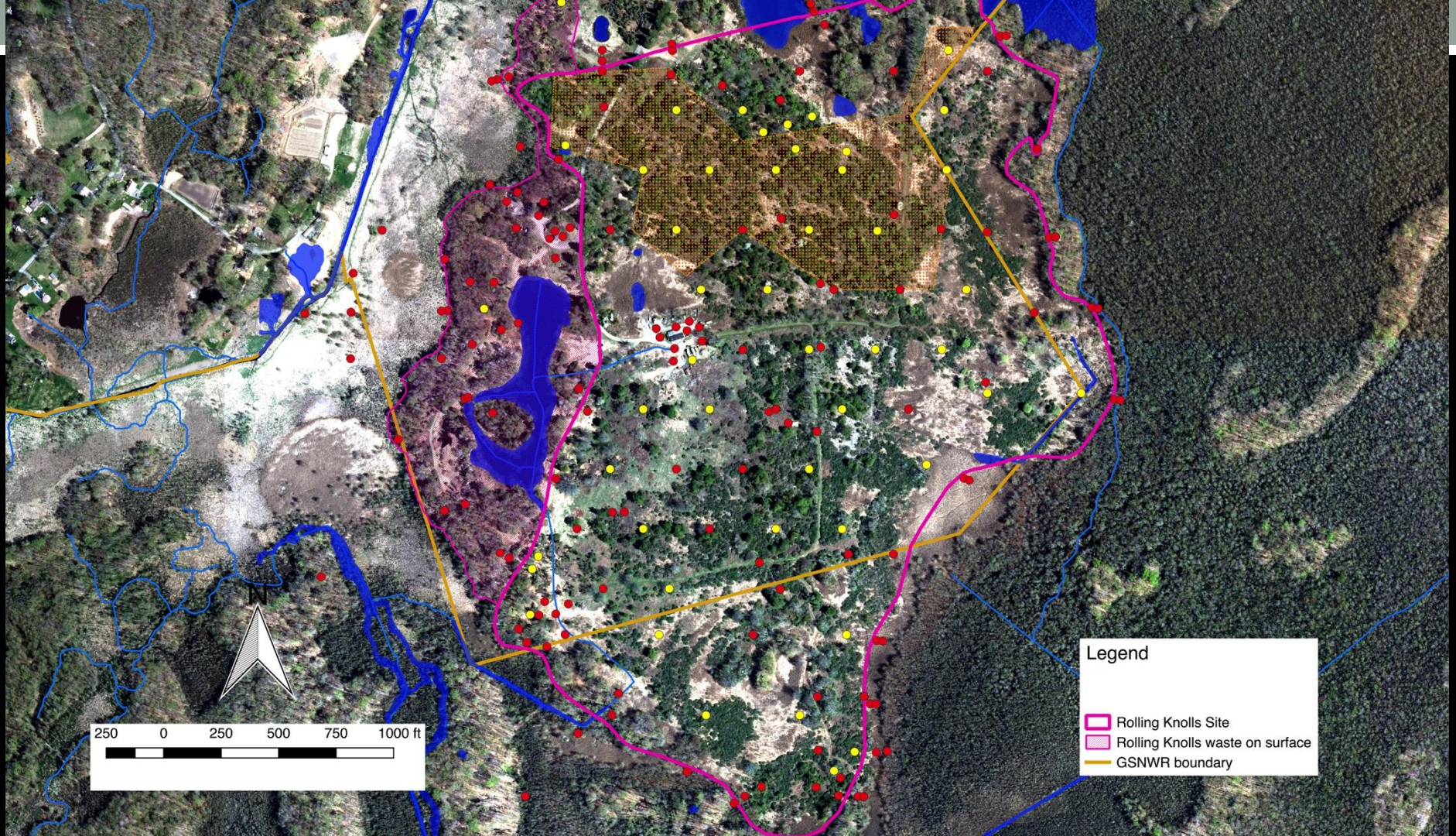
Site Background

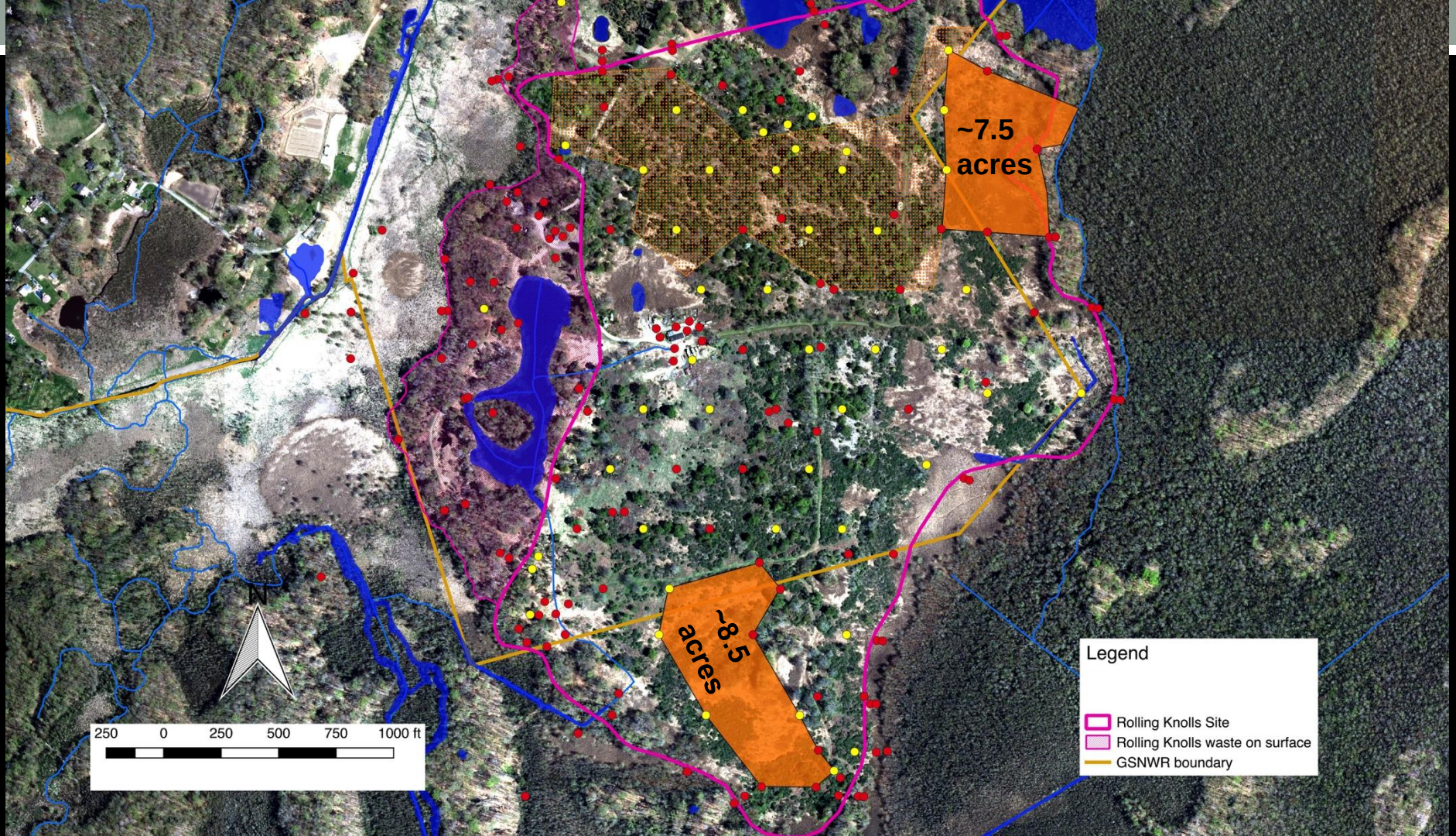
- Former landfill that operated from the 1930s to approximately 1968
- Approximately 170 acres
- Approximately 35 acres of the landfill are on the Great Swamp National Wildlife Refuge, owned by the United States and managed by the United States Fish and Wildlife Service (USFWS)

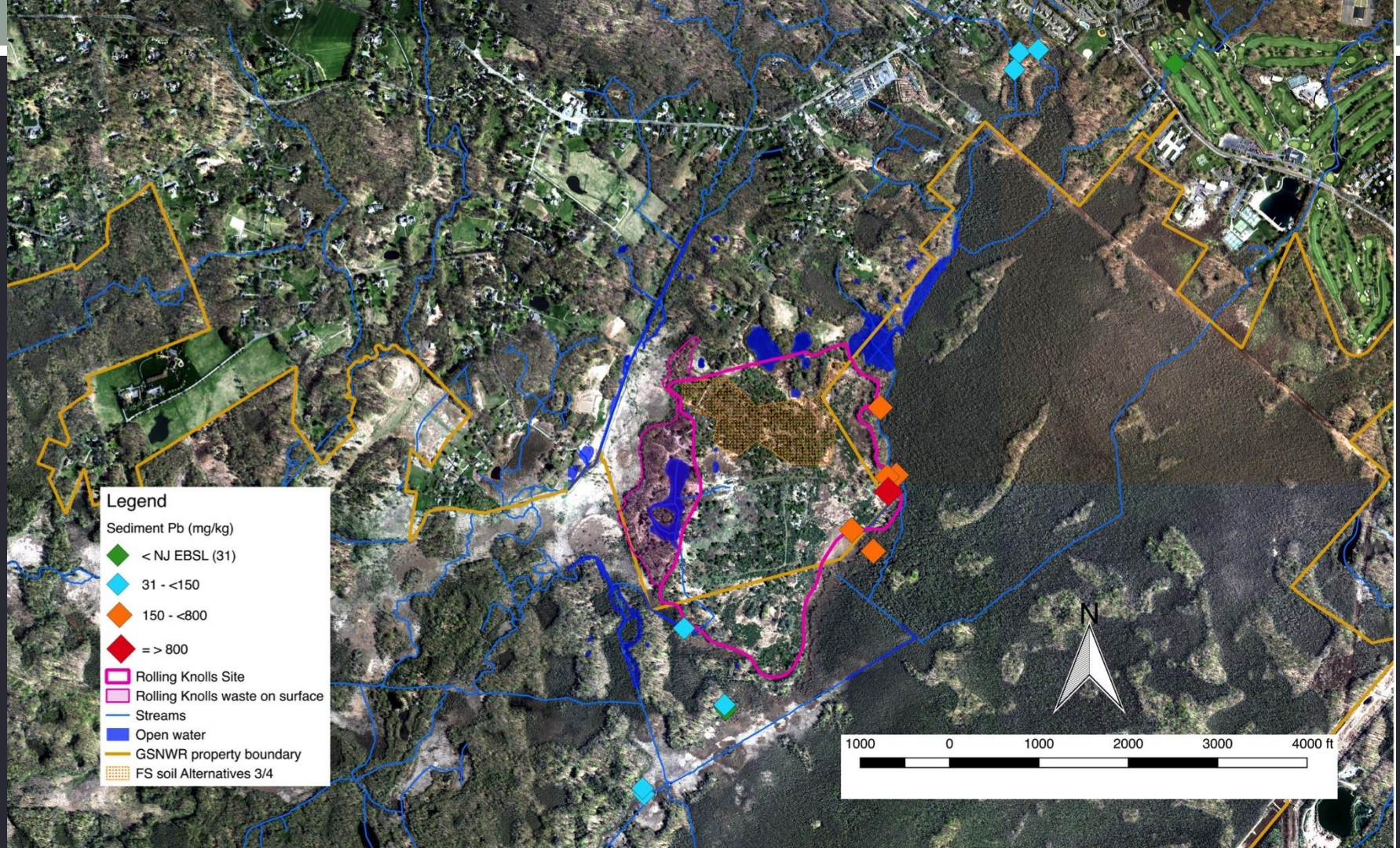


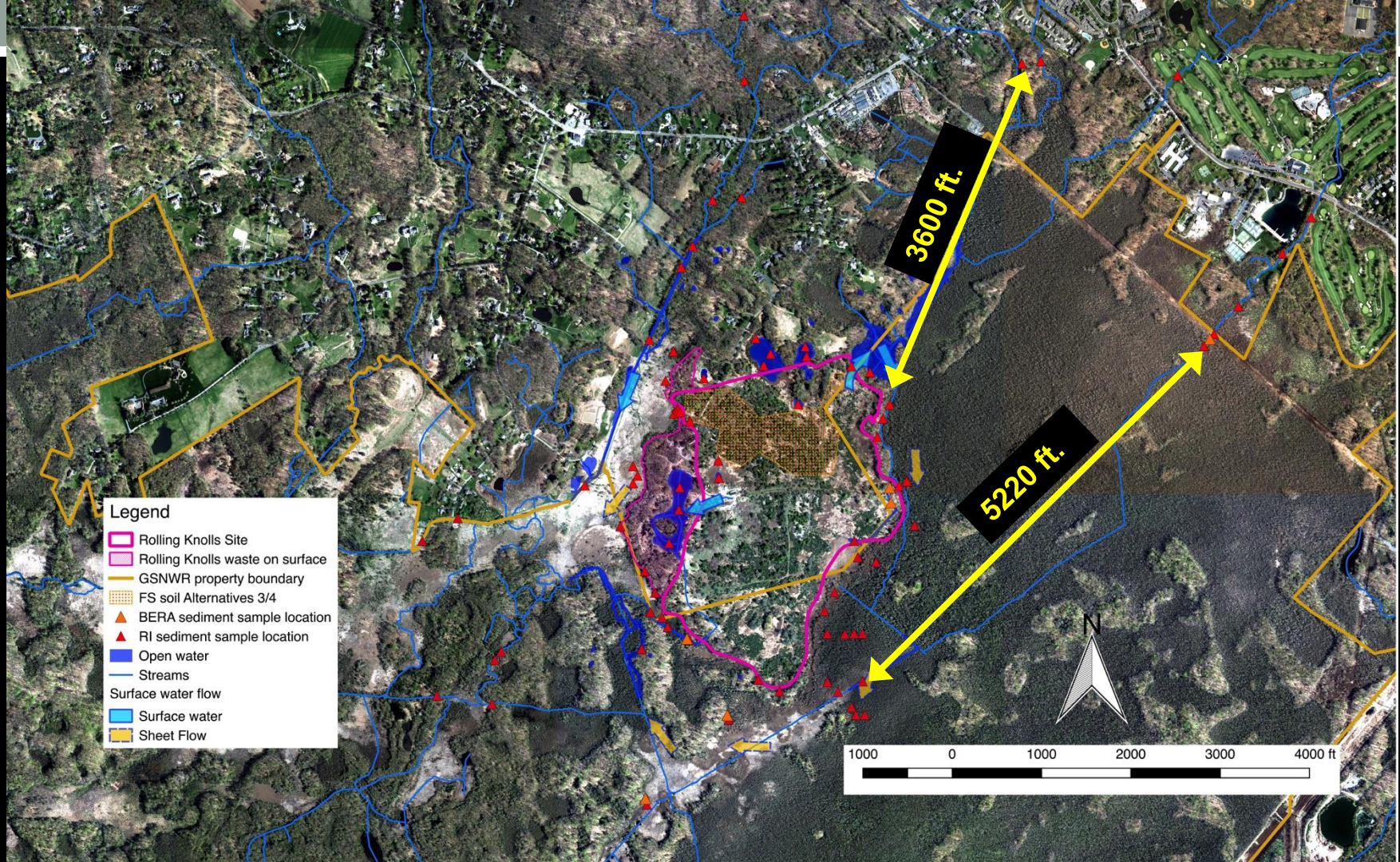

N

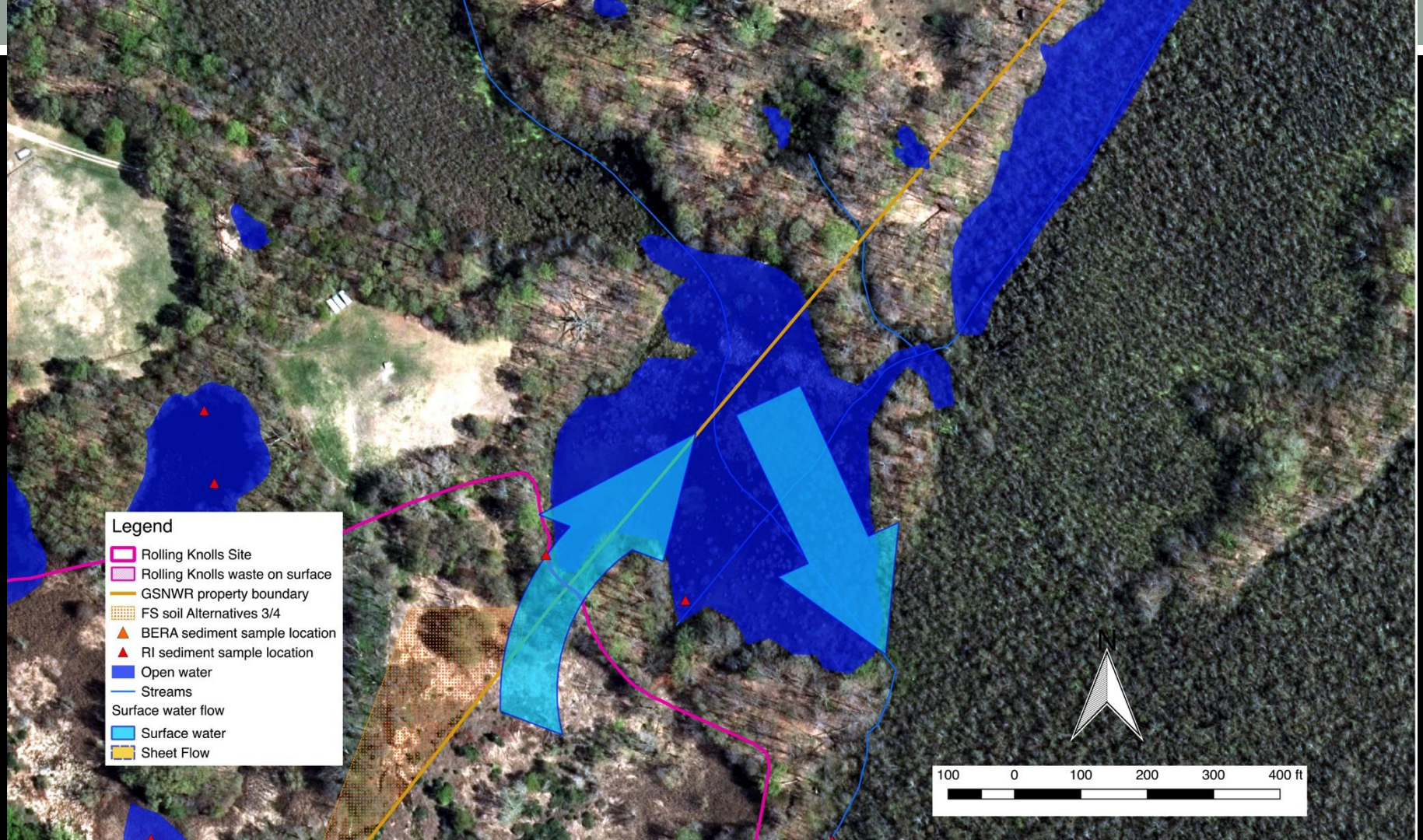

N

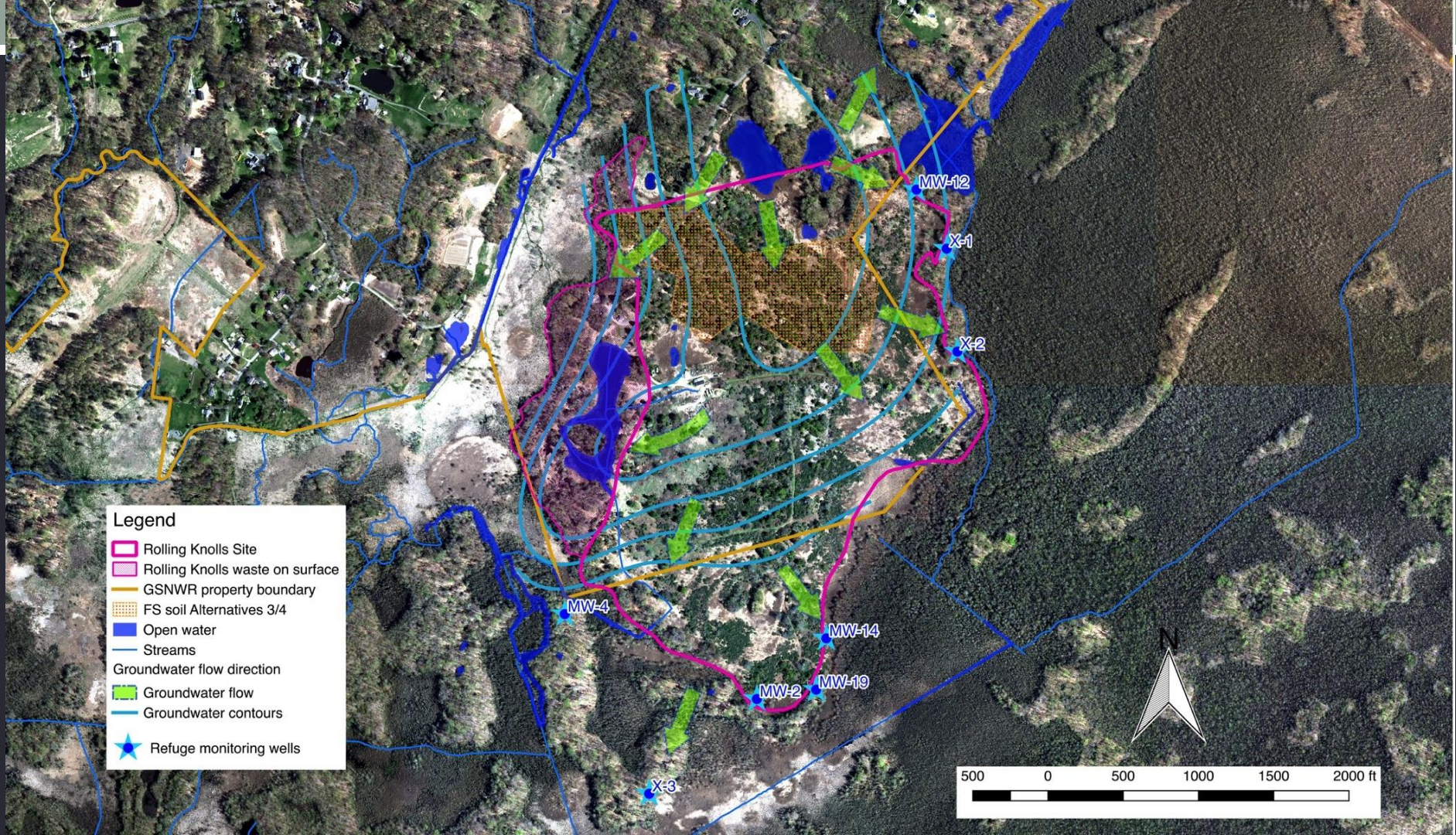

N
250 0 250 500 750 1000 ft
Legend
Rolling Knolls Site
Rolling Knolls waste on surface
GSNWR boundary


~7.5 acres
~8.5 acres
N
250 0 250 500 750 1000 ft
Legend
Rolling Knolls Site
Rolling Knolls waste on surface
GSNWR boundary


Legend
Sediment Pb (mg/kg)
< NJ EBSL (31)
31 - <150
150 - <800
= > 800
Rolling Knolls Site
Rolling Knolls waste on surface
Streams
Open water
GSNWR property boundary
FS soil Alternatives 3/4
N
1000 0 1000 2000 3000 4000 ft


3600 ft.
5220 ft.
Legend
Rolling Knolls Site
Rolling Knolls waste on surface
GSNWR property boundary
FS soil Alternatives 3/4
BERA sediment sample location
RI sediment sample location
Open water
Streams
Surface water flow
Surface water
Sheet Flow
N
1000
0
1000
2000
3000
4000 ft


Legend
Rolling Knolls Site
Rolling Knolls waste on surface
GSNWR property boundary
FS soil Alternatives 3/4
BERA sediment sample location
RI sediment sample location
Open water
Streams
Surface water flow
Surface water
Sheet Flow
N
100 0 100 200 300 400 ft

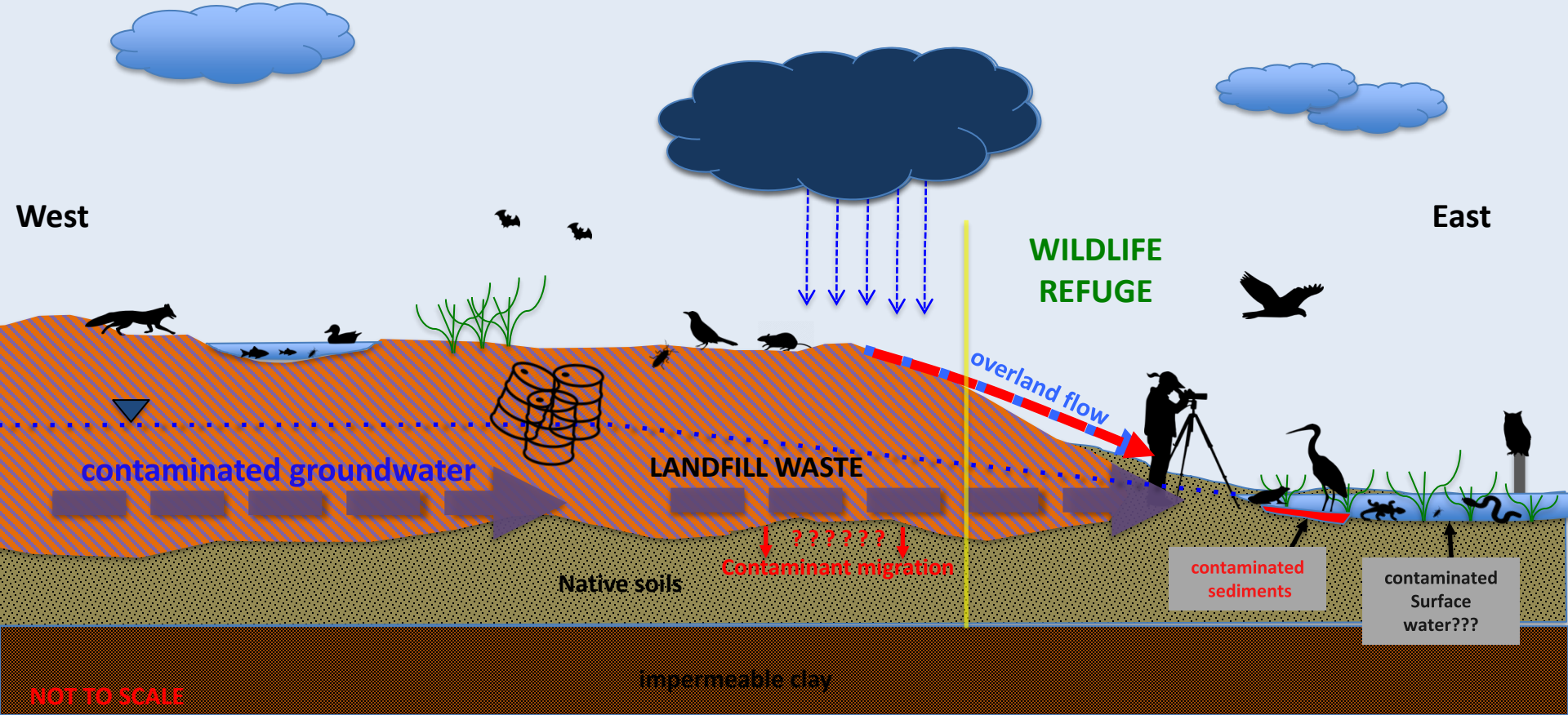

MW-12
X-1
X-2
MW-4
MW-14
MW-2
MW-19
X-3
Legend
Rolling Knolls Site
Rolling Knolls waste on surface
GSNWR property boundary
FS soil Alternatives 3/4
Open water
Streams
Groundwater flow direction
Groundwater flow
Groundwater contours
Refuge monitoring wells
N
500 0 500 1000 1500 2000 ft

Data Gaps for Refuge Property

Findings

- Few sediment and surface water samples from Refuge area and directly upgradient
- Concern for contaminated groundwater discharging into Refuge wetlands
  - Are sediments/surface water being contaminated at groundwater discharge areas?
- Large areas on Refuge with no surface soil data
- Few subsurface samples in landfill on Refuge (hotspots?)
- Has soil beneath the landfill been contaminated?

Rolling Knolls Site – Conceptual Site Model



2020 Data Gaps Sampling and Analysis Plan

Purpose

- This investigation will be conducted to supplement existing data sets

- The combined data will be used to fill data gaps relative to the nature and extent of environmental contamination within sediment, sediment pore water, surface water, groundwater, soil and landfill wastes on Refuge property

2020 Data Gaps Sampling and Analysis Plan

Study Questions/Goals

1) What are the distributions and concentrations of sediment contaminants on, and adjacent to the Refuge portion of the Site in uncharacterized areas?

2) What are the distributions and concentrations of surface water contaminants on, and adjacent to the Refuge portion of the Site in uncharacterized areas?

3) What are the distributions and concentrations of contaminants within pore water and sediment at potential groundwater discharge to surface water areas adjacent to the Refuge portion of the Site in uncharacterized areas?

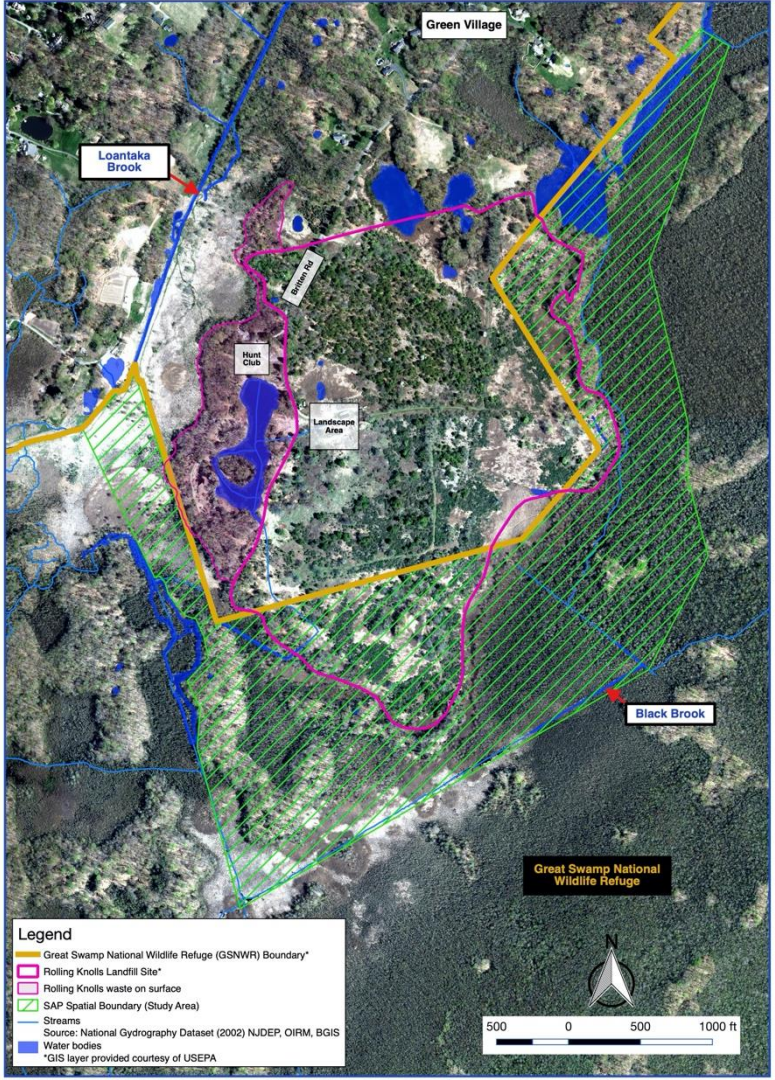
2020 Data Gaps Sampling and Analysis Plan

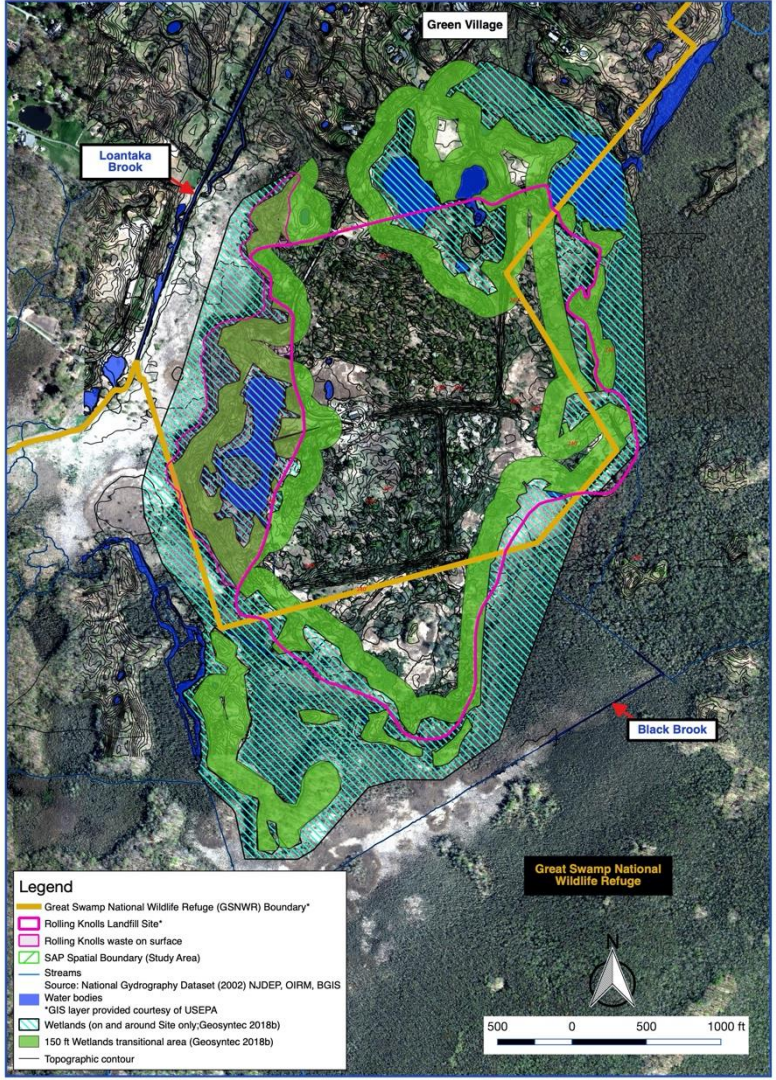
Study Questions/Goals

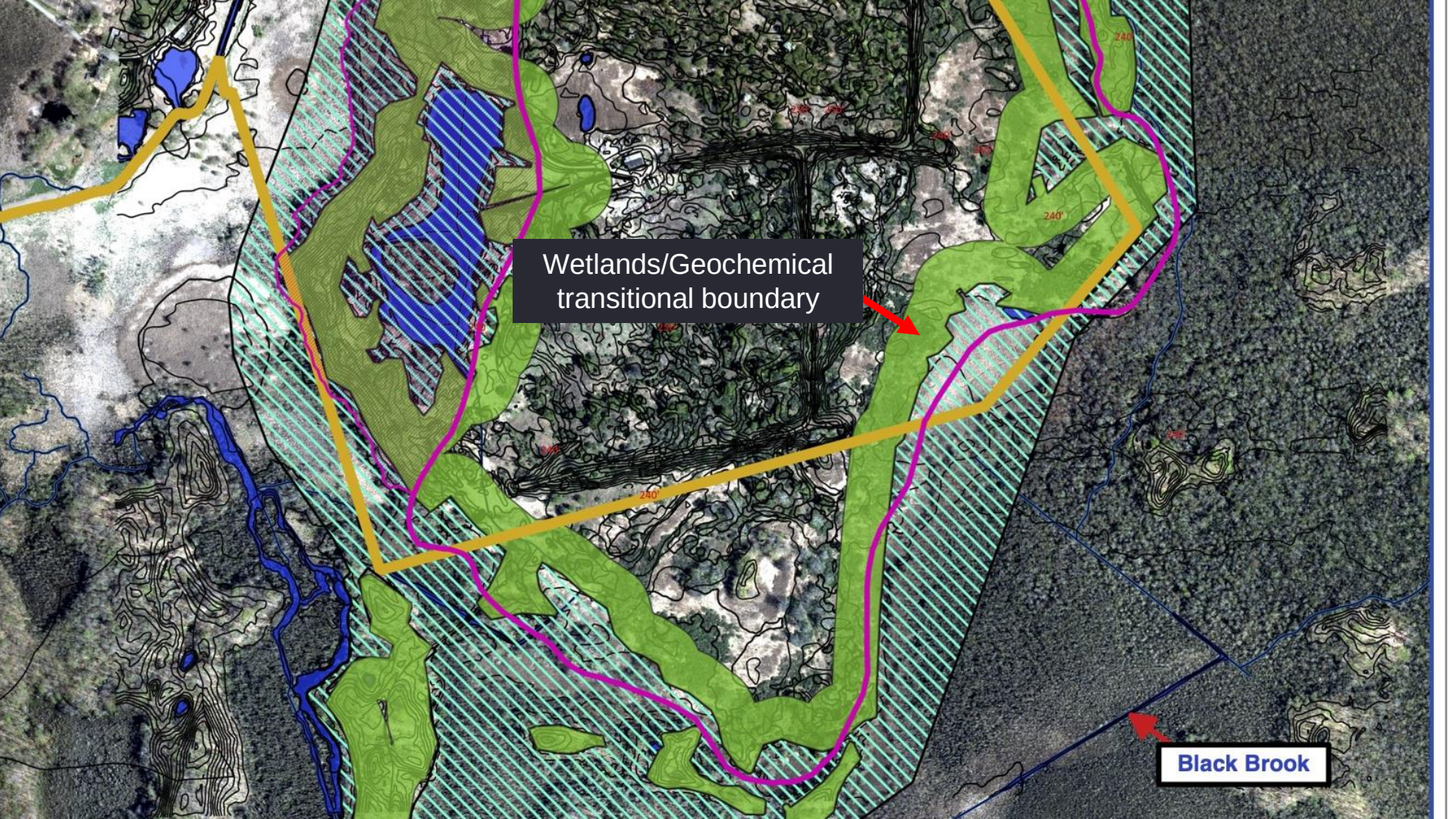
4) What are the distributions and concentrations of pore water (shallow groundwater) contaminants on, and adjacent to the Refuge portion of the Site in uncharacterized areas?

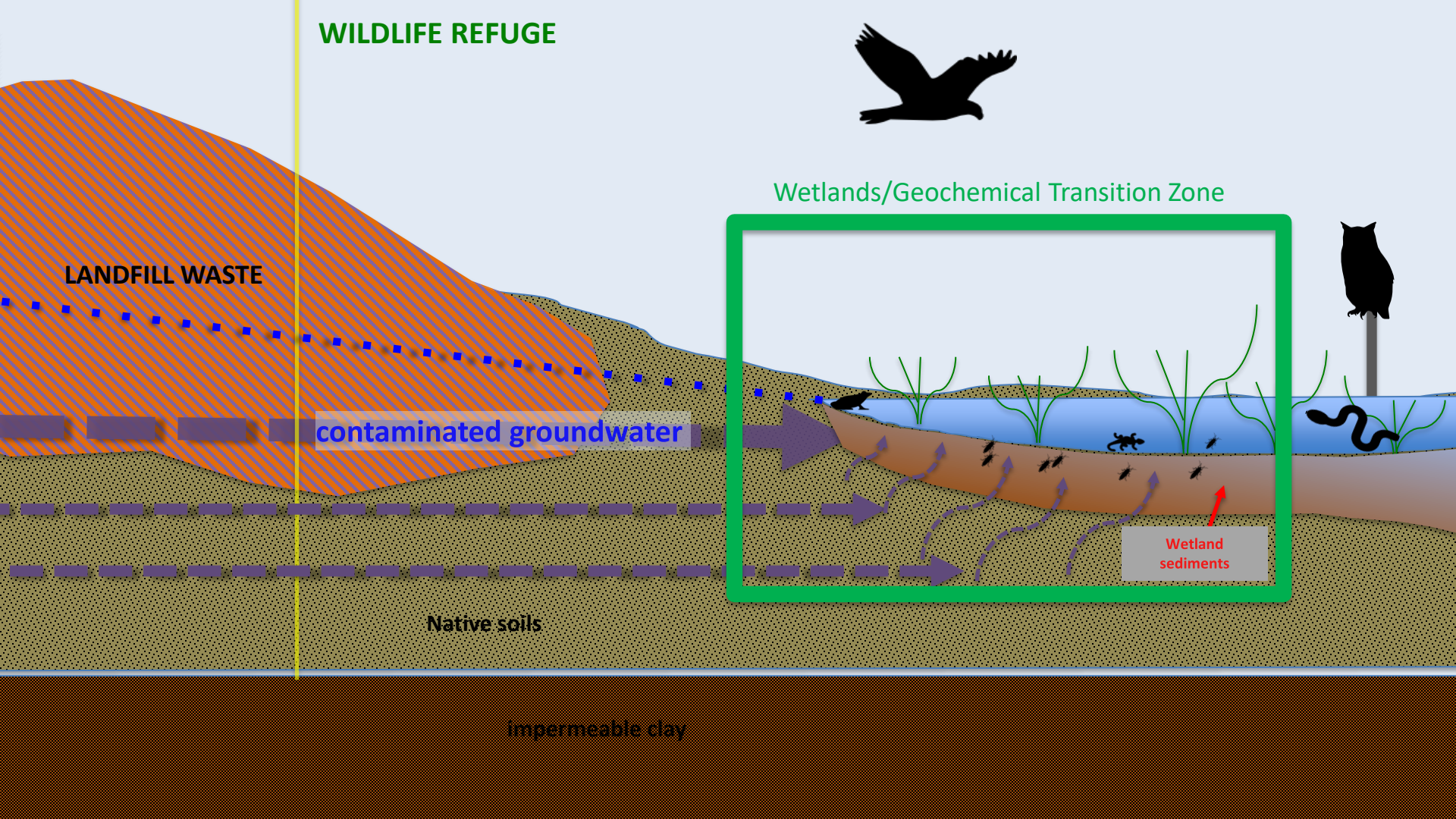
5) What are the distributions and concentrations of soil contaminants on the Refuge portion of the Site in uncharacterized areas?

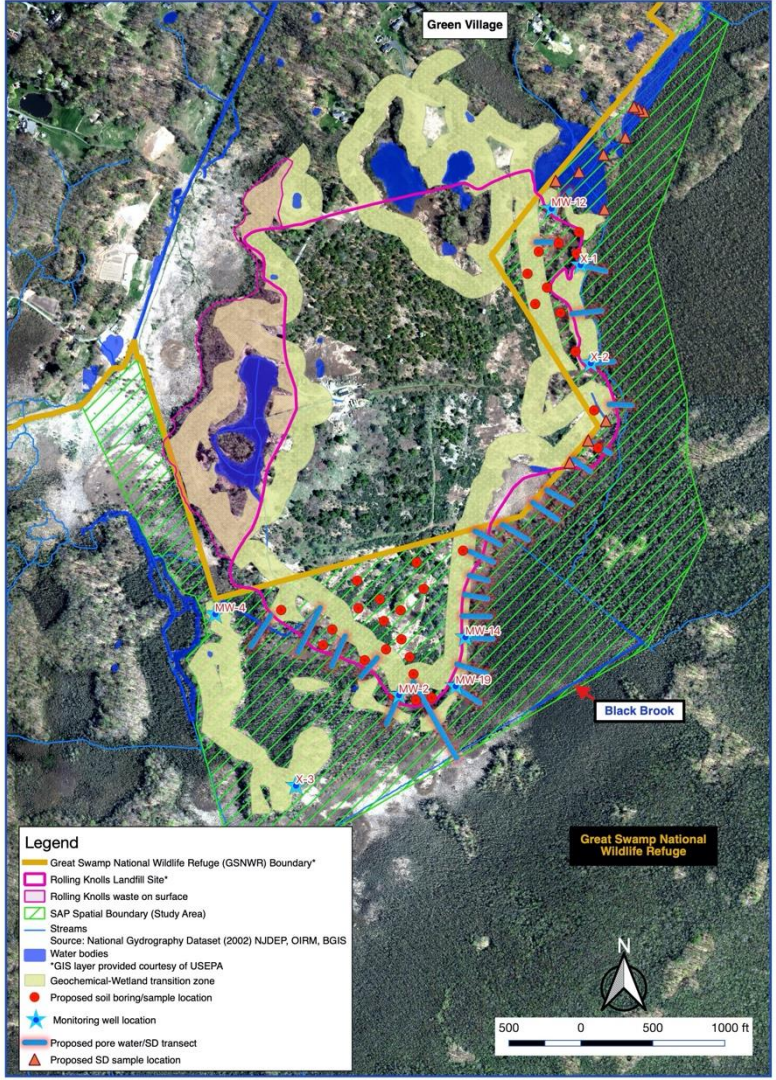
6) What are the chemical properties of the soil between the Landfill wastes and the underlying clay layer on the Refuge portion of the Site (i.e., have contaminants migrated from the overlying landfill into the native soils beneath)?

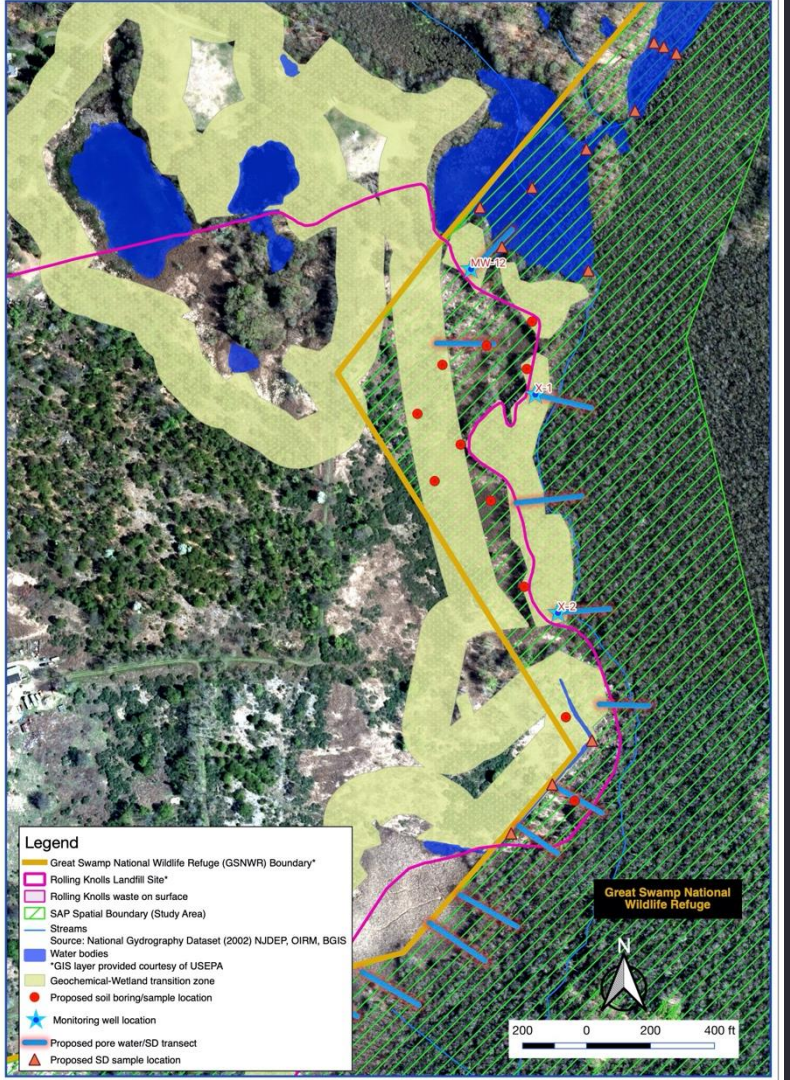

Green Village
Loantaka Brook
Batten Rd
Hunt Club
Landscape Area
Black Brook
Great Swamp National Wildlife Refuge
Legend
Great Swamp National Wildlife Refuge (GSNWR) Boundary*
Rolling Knolls Landfill Site*
Rolling Knolls waste on surface
SAP Spatial Boundary (Study Area)
Streams
Source: National Gydrography Dataset (2002) NJDEP, OIRM, BGIS
Water bodies
*GIS layer provided courtesy of USEPA
N
500 0 500 1000 ft

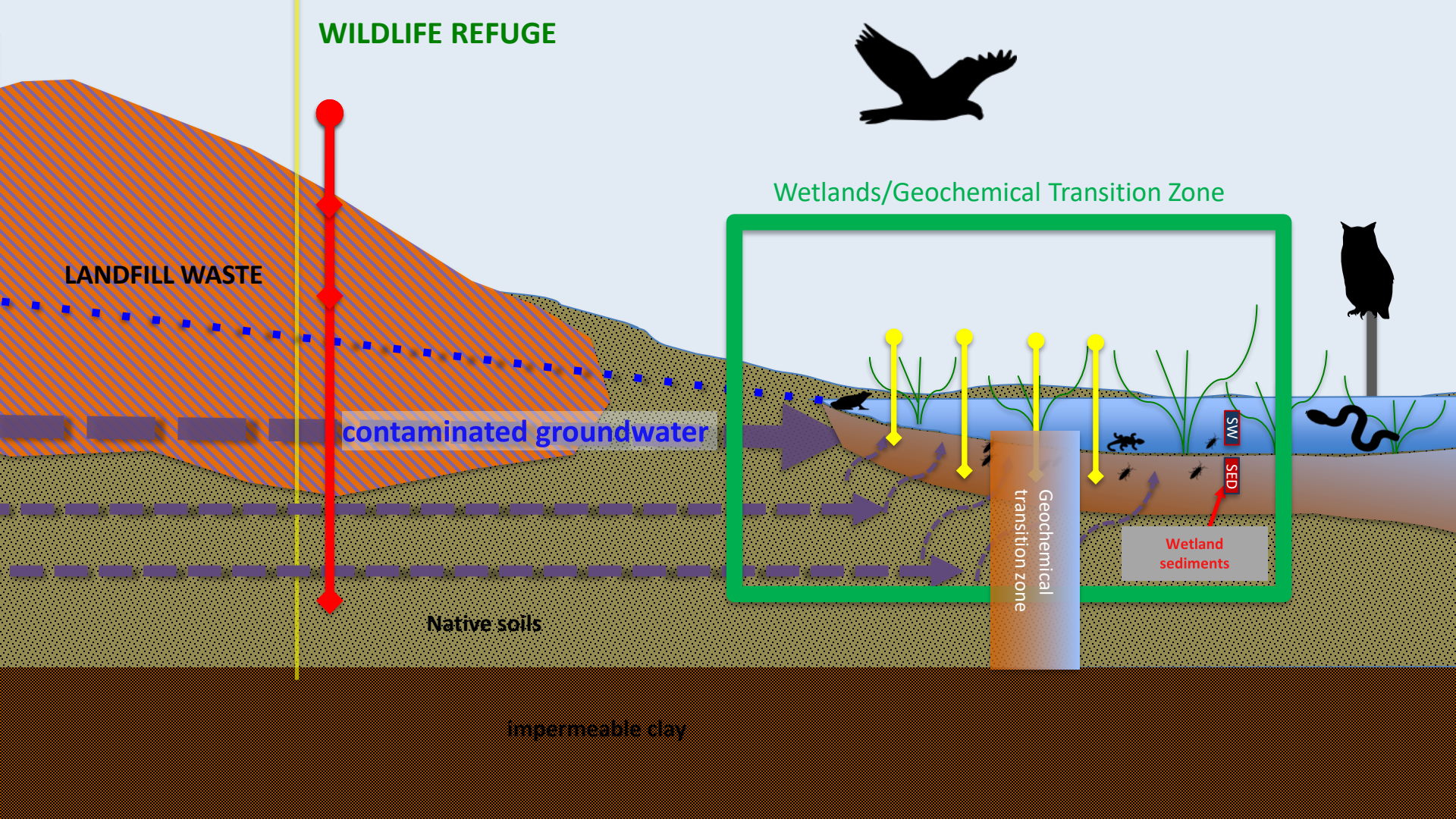

Green Village
Loantaka Brook
Black Brook
Great Swamp National Wildlife Refuge
Legend
Great Swamp National Wildlife Refuge (GSNWR) Boundary*
Rolling Knolls Landfill Site*
Rolling Knolls waste on surface
SAP Spatial Boundary (Study Area)
Streams
Source: National Gydrography Dataset (2002) NJDEP, OIRM, BGIS
Water bodies
*GIS layer provided courtesy of USEPA
Wetlands (on and around Site only;Geosyntec 2018b)
150 ft Wetlands transitional area (Geosyntec 2018b)
Topographic contour
N
500 0 500 1000 ft


Wetlands/Geochemical transitional boundary
Black Brook


WILDLIFE REFUGE
Wetlands/Geochemical Transition Zone
LANDFILL WASTE
contaminated groundwater
Wetland sediments
Native soils
Impermeable clay


Green Village
MW-13
X-1
X-2
MW-4
MW-14
MW-19
MW-2
X-3
Black Brook
Great Swamp National Wildlife Refuge
Legend
Great Swamp National Wildlife Refuge (GSNWR) Boundary*
Rolling Knolls Landfill Site*
Rolling Knolls waste on surface
SAP Spatial Boundary (Study Area)
Streams
Source: National Gydrography Dataset (2002) NJDEP, OIRM, BGIS
Water bodies
*GIS layer provided courtesy of USEPA
Geochemical-Wetland transition zone
Proposed soil boring/sample location
Monitoring well location
Proposed pore water/SD transect
Proposed SD sample location
N
500 0 500 1000 ft


MW-12
X-1
X-2
Great Swamp National Wildlife Refuge
N
200 0 200 400 ft
Legend
Great Swamp National Wildlife Refuge (GSNWR) Boundary*
Rolling Knolls Landfill Site*
Rolling Knolls waste on surface
SAP Spatial Boundary (Study Area)
Streams
Source: National Gydrography Dataset (2002) NJDEP, OIRM, BGIS
Water bodies
*GIS layer provided courtesy of USEPA
Geochemical-Wetland transition zone
Proposed soil boring/sample location
Monitoring well location
Proposed pore water/SD transect
Proposed SD sample location


WILDLIFE REFUGE
Wetlands/Geochemical Transition Zone
LANDFILL WASTE
contaminated groundwater
SW
SED
Geochemical transition zone
Wetland sediments
Native soils
Impermeable clay

2020 Data Gaps Sampling and Analysis Plan

Samples

- Surface and subsurface samples from 30 locations
  - 10 locations in NW portion of Refuge
  - 20 locations in southern portion of Refuge
- Pore water samples from up to 50 locations
  - Oriented along 25 transects
  - ~10 locations within terrestrial portions of the Refuge
- Sediment samples from up to 20 locations
- Surface water samples from up to 10 locations

Questions? - Discussion