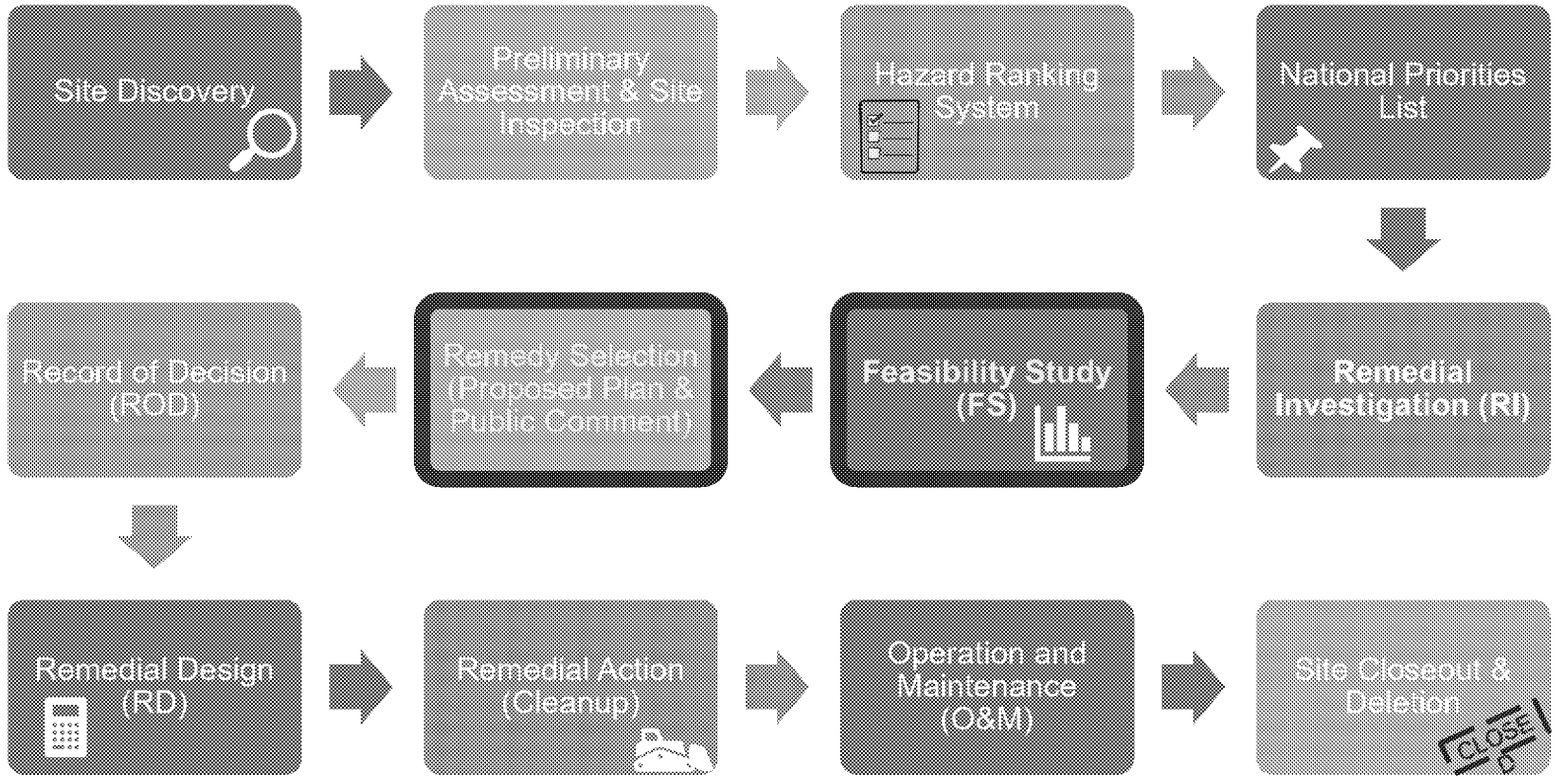
Rolling Knolls Landfill Superfund Site

Review of Remedial Investigation and its Intersection with the Human Health and Ecological Risk Assessments

CAG Meeting

April 11, 2019

Superfund Process



Remedial Investigation

- A Remedial Investigation was conducted to define the physical characteristics of the site, the nature and extent of contamination at the site, the sources of the contamination at the site and the fate and transport of the contamination present. The information collected during the RI was also used to evaluate the risks posed by the site to human health and the environment.
- The Remedial Investigation was conducted pursuant to a 2005 Settlement Agreement with a group of Potentially Responsible Parties for the site, with direct oversight by EPA, and in consultation with FWS and NJDEP
- The Remedial Investigation Report was approved in 2018.

Remedial Investigation Field Work

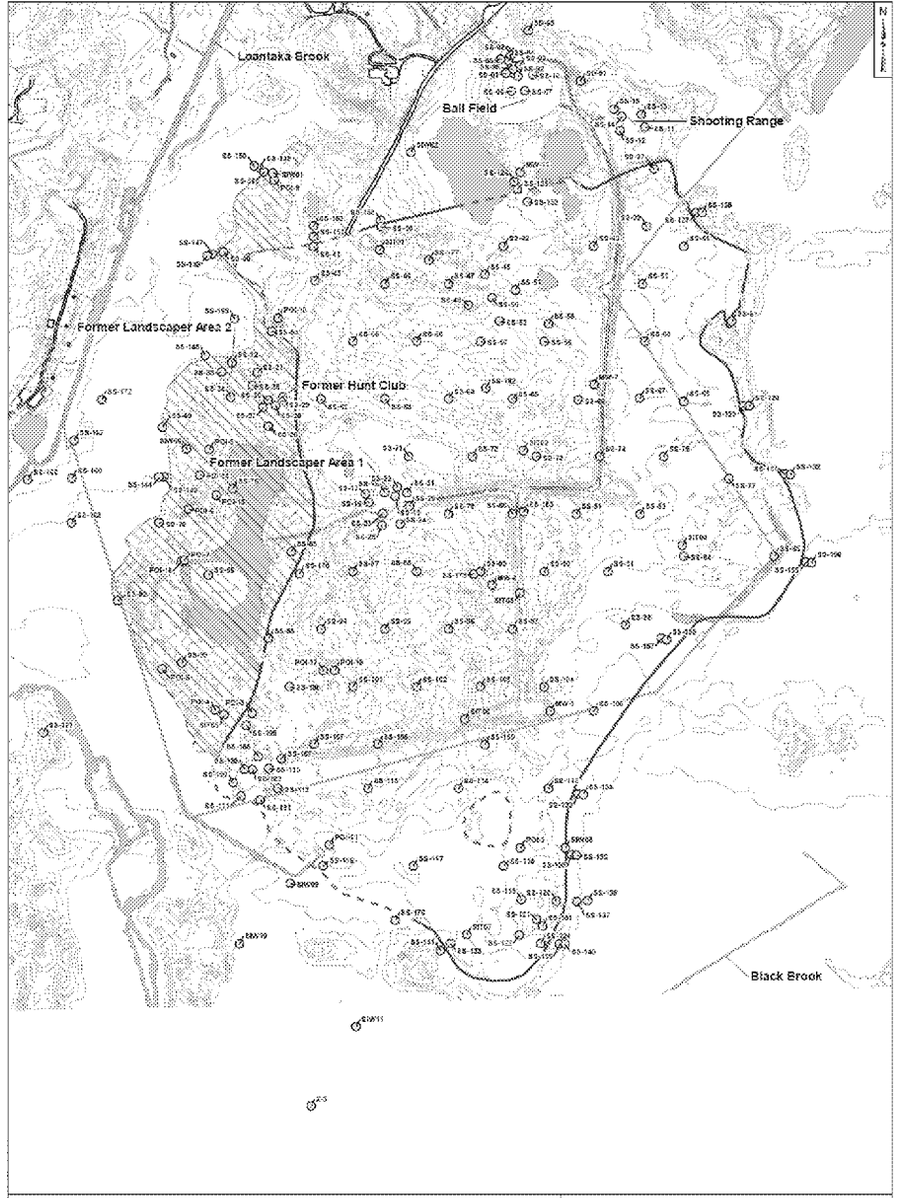
- Field work conducted from 2007 to 2015
- Determine physical characteristics of site
- Characterize nature and extent of contamination for all media
  - Soil
  - Groundwater
  - Sediment
  - Surface water
  - Indoor air
  - Biota/Ecological

Physical Characteristics of the Site

- Elevations range from 227 to 250 feet above sea level
- Soil, organic matter, sand, clay and silt are found to about 25 feet below the surface, and are underlain by a thick clay layer
- Groundwater is found at about 2.5 below the ground surface on average and flows radially away from the site.
- 3 ponds, ranging in size from one to four acres, and vernal pools
- Loantaka and Black Brooks run adjacent to the landfilled areas
- Approximately 110 acres of landfilled area is non-wetland
- Primarily wetlands & flood hazard zones on the remainder of the landfilled area, as well as on adjacent areas
- Habitat for six species on state and federal threatened and endangered species lists identified, only one found on the site

Sampling to Determine Nature and Extent of Contamination

- Test Pits – 57 dug, 37 found waste/debris, 3 found potential industrial waste
- Points of Interest – 18 identified based on surface inspection, drum consolidation conducted at POI-1
- Soil – 150 locations on landfilled area, 35 from other portions of the site, and 22 from background locations on the Wildlife Refuge
- Groundwater – more than 34 permanent and temporary monitoring wells sampled
- Soil gas collected at one location beneath Hunt Club
- Surface Water samples collected from 47 locations both up and downstream of the site
- Sediment samples collected from 47 locations on up and downstream of the site



Note 1:
Site Plan created from Arcadis CAD drawings received December 2015.

400 200 0 400 Feet

Legend
- Soil Sample Location
- Edge of landfilled wastes (dashed where approximate)
- Great Swamp National Wildlife Refuge property boundary
- Waste and debris observed on ground surface but not observed or anticipated below ground surface
- Open water

Remedial Investigation
Soil Sampling Locations

ROLLING KNOLLS LANDFILL SUPERFUND SITE
CHATHAM, NEW JERSEY

Geosyntec consultants

Princeton, NJ | April 2019

Figure 1

Predominant Soil Contaminants

Constituent	Number of Surface Soil Samples Analyzed	Number of Results Above Residential SRS	Percentage of Results Above Residential SRS	Number of Results Above Non-Residential SRS	Percentage of Results Above Non-Residential SRS
Benzo(a)pyrene (PAH)	187	41	22	14	7
Benzo(b) Fluoranthene (PAH)	187	5	3	2	1
Dibenz(a,h) Anthracene (PAH)	187	8	4	2	1
Chlordane (cis) (pesticide)	187	13	7	1	1
Chlordane (trans) (pesticide)	184	11	6	1	1
Dieldrin (pesticide)	186	35	19	2	1
Total PCBs	188	91	48	67	36
Arsenic	188	25	13	25	13
Lead	188	82	44	67	36

Reasonably Anticipated Future Use

- A formal reuse evaluation was conducted in 2017 to help understand anticipated future uses for the site.
- Informal discussions have been being held with the community and local stakeholders throughout the RI process.
- Both the formal evaluation and feedback received from the community suggest that there is strong support for limited future use, consistent with a passive recreational user:
  - In July 2018, the approved 2014 human health risk assessment was updated to reflect this future use.
  - Assumes adults and adolescents access the site 84 days per year and have higher dermal contact with site soil than the default non-residential worker would.

Legend
Great Swamp National Wildlife Refuge Property Boundary (dashed where approximate)
Proposed Wetland Boundary (Dashed Where Inferred)
Edge of Landfilled Wetlands Observed Strong Test Pit Activities (Dashed Where Approximate)
Open Water
Bog Turtle Habitat Area A (35.11 Acres)
Bog Turtle Habitat Area B (19.68 Acres)
Wetlands and Debris Observed on Ground Surface But Not Anticipated to be Below Ground Surface
Calculated Flood Hazard Area
Wetland Transition Area (150 ft)
Proposed Wetlands
500 250 0 500 Feet

Baseline Human Health Risk Assessment

For the reasonably anticipated future use:

- Cancer Risks posed by the site contamination do not exceed the acceptable risk range
- Noncancer Health Hazards slightly exceed the target value of 1:
  - Adolescent trespasser/limited recreational user - HI = 3
  - Adult trespasser/limited recreational user - HI = 2
  - Primarily driven by PCBs
- Lead concentrations are at levels that require remedial action

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Baseline Ecological Risk Assessment Conclusions

- Site Chemicals of Potential Ecological Concern (COPECs) do not pose ecological concern for most receptors
  - COPEC concentrations generally higher in the terrestrial portion than in the wetland
  - No significant differences in biota tissue COPEC concentrations between terrestrial and wetland
  - Some Lines of Evidence (LOEs) showed slight risk to benthic invertebrates, herbivorous mammals, insectivorous mammals, piscivorous mammals, but other LOEs indicated no risk
  - Loantaka Brook has not been impacted by the Site, and COPECs in Black Brook are higher upgradient of the Site than downgradient
- Low potential risk was noted for vermivorous receptors (shrew and robin) and benthic invertebrates
  - Risk drivers are PCBs and metals
  - Addressing risk to vermivorous birds/mammals should address any risk to other receptors.

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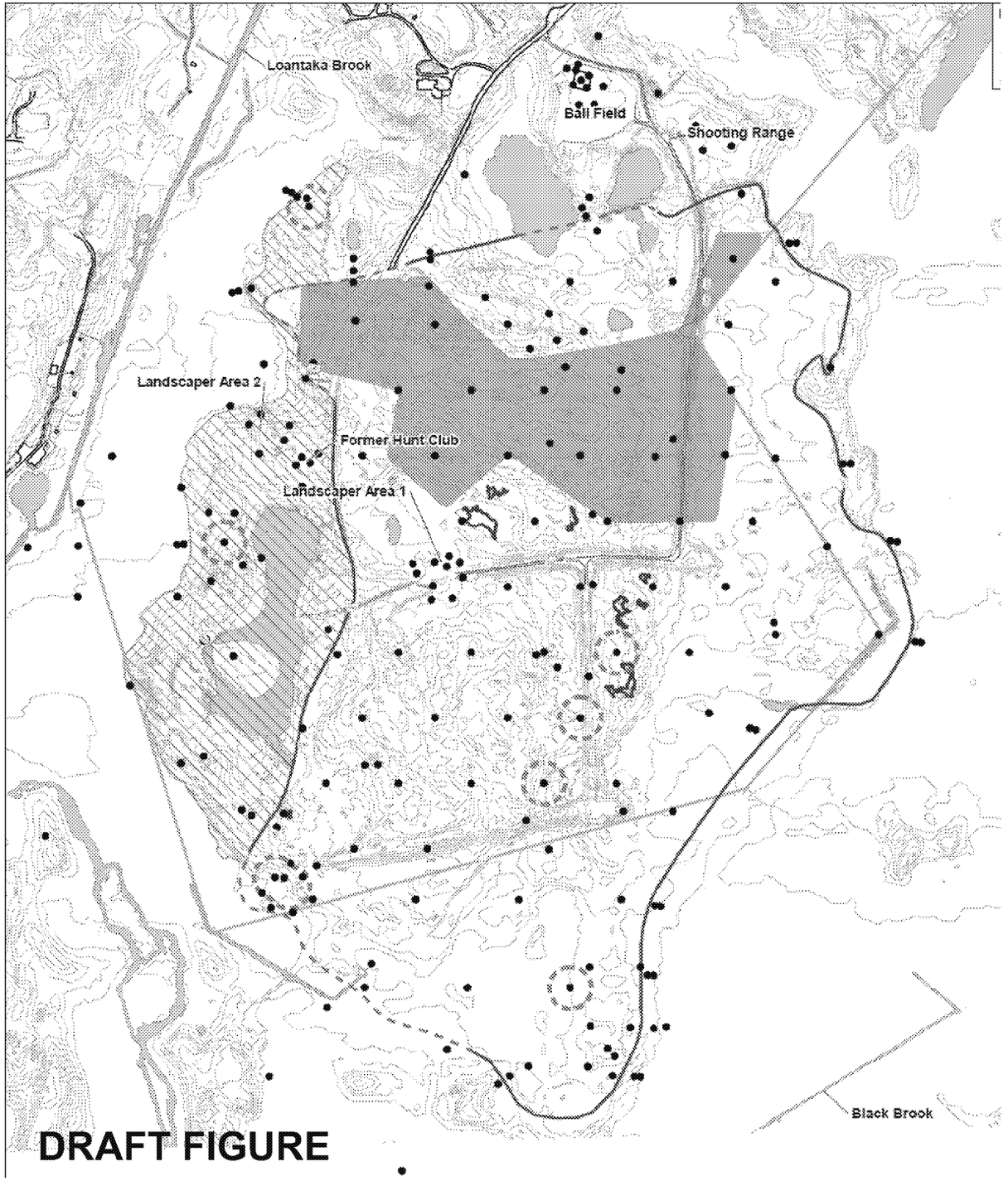
Intersection of Remedial Investigation Soil Results and Risk Assessments