

Quality of Life Performance Standards Construction and Environmental Remediation Projects

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Will Elcoate Air Practice Lead Alpha Analytical



Overview

Off sites emissions: Background
Conceptual Site Model
Field & Laboratory testing
Filling the need for Guidance

“Quality of life performance standards are designed to minimize the potential for impacts on the community.” Hudson ROD

https://www3.epa.gov/udson/quality_of_life_06_04/section6.pdf



Regulatory Considerations

- EPA: CERCLA, RCRA and CAA
- State or Local Off Site Requirements/Regulations
- Environmental and Ecological impacts
- OSHA Regulated worker exposure
- Health and Safety Plan for Site workers



- [Why is the cleanup of the upper Hudson River needed?](#)
- [What's being done to address the contamination?](#)
- [What comes next?](#)
- [Cleanup plans & technical documents](#)



<https://www3.epa.gov/hudson/>

Types of sites

Sites that may require Perimeter Air monitoring

- US EPA State Superfund National Priority List (NPL) sites
- Environmental Restoration Programs
- Former Manufactured Gas Plant (MGP) sites
- Legacy Hazardous Waste Disposal sites
- Industrial facilities and Landfills
- Brownfield Cleanup/Restoration Programs
- State Voluntary Clean up programs



Conceptual Site Model (CSM)

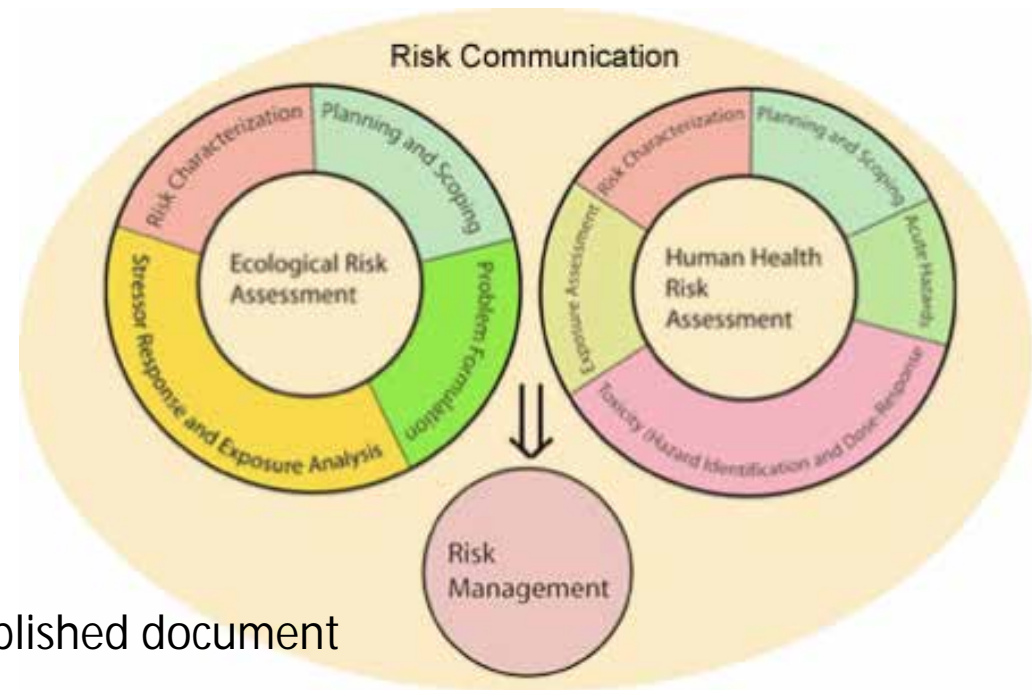
- Type of contamination: Chemicals of Concern (COCs)
- Airborne exposures Volatile, Semi-Volatiles, Metals & Inorganics
- Scope of project...How long will activities be required?
- Off site impacts sensitive receptors
- Health based trigger levels: Threshold Values
- Develop strategy for monitoring locations, test methods, real time and laboratory analysis.
- Data Quality Objectives



Remediation and Communication

Important considerations in the planning process

- On site workers (Health & Safety)
- Off site neighbors Sensitive Receptors
- Ecological impacts
- Communication plan



Evolution of Off site Monitoring Programs. EPA /State/Information published document

Perimeter Air Monitoring Plan

PAMP developed from the CSM

- Chemicals of Concern: What analytical methods?
 - Real time data verified by Laboratory Analysis
- Sample Locations
 - Historical data from Local Weather station
 - NCDC <https://www.ncdc.noaa.gov/data-access/land-based-station-data>
- Trigger level goals Target threshold health based
 - Real time monitoring
 - Indicator parameters
 - Quality Assurance/Quality control plan for all Data collected: SOPs
- Documentation and Data Management



Air Testing Methods

- Types of Chemical Data collected
- Real Time Data: Field meters, GCs and/or mobile laboratories
- Time weighted Average TWA Sampling . Typically 15 mins
- Used to monitor in real time excursions from the Threshold Values
- Data considered screening.

Laboratory Analysis to validate field data accuracy & precision



Air Testing Methods

Data Collection Setup

Field Data Monitoring site conditions

- Real time GC data
- Particulates

Laboratory

- NELAC accredited Definitive Data

Metrological

- Atmospheric conditions during sample collection



Laboratory Methods

Method	Type	Target Chemicals
EPA TO-4	Hi Flow	Pesticides & PCBs
EPA TO-10	Low Flow	Poly-Chlorinated Bi-Phenyls (PCBs) as Aroclors,
EPA TO-10 (Modified)	Low Flow	Polychlorinated Biphenyls (PCBs) - Homologs & Congeners via EPA 8270D(M)
EPA TO-13	Hi or Low Flow	Poly Aromatic Hydrocarbons (PAHs)
EPA TO-15	Passive	Volatile Organic Compounds (VOC's)
EPA TO-17 /Method 325	Active/Passive	Volatile Organic Compounds (VOC's)
EPA IO 3.1	High Flow	Suspended particulates & PM10
EPA SW 6010/6020		Particulate Metals Analysis
OSHA /NIOSH /ASTM	Various	Site specific Chemicals of concern



Air Testing Methods

Numbers in ug/M3	PID/FID 0.1 ppmv	Field GC / Mobile Lab	Fixed Lab	SIM	OSHA PELs	EPA*		EPA Worker	
						Indoor Air		Cancer	Health
Analyte						Cancer	Health	Cancer	Health
Benzene	319	1.6 / 16	0.64	0.319	319 / 3190	0.36	31	16	130
Naphthalene	524	2.6 / 26	1.05	0.262	524 / 5235	0.083	3.1	0.36	13
Trichloroethene (TCE)	537	2.7 / 27	1.07	0.1	54 / 134	0.48	2.1	3.0	8.8

Increasing cost per Data point
Screening to Definitive



SIM Selective Ion Monitoring OSHA

<https://www.osha.gov/dsg/annotated-pels/tablez-1.html>

*EPA Generic Risk screening tables May2019

<https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables>

Air Testing Methods

Dust Control, Particulates & Aerosols

- For Chemicals of concern that examples
- PCBs, PAHs Metals and Inorganics
- Real time particulate levels used as surrogate to control exposures
- Aerosol monitoring may also be needed for certain chemicals

Threshold levels based on known concentration in soils & GW

Laboratory data collected to confirm concentrations during remediation



<https://tsi.com/products/aerosol-and-dust-monitors/dust-monitors/dusttrak-drx-aerosol-monitor-8533/>

Air Monitoring Background

- Air Sampling and Exposure Assessment since 1986
- Perimeter Monitoring after 9-11-2001
- Court Ordered Cr₊₆ air sampling 2006
- 1000 air monitoring stations – 200 projects
- What makes 2020 interesting in PAM Program Development?



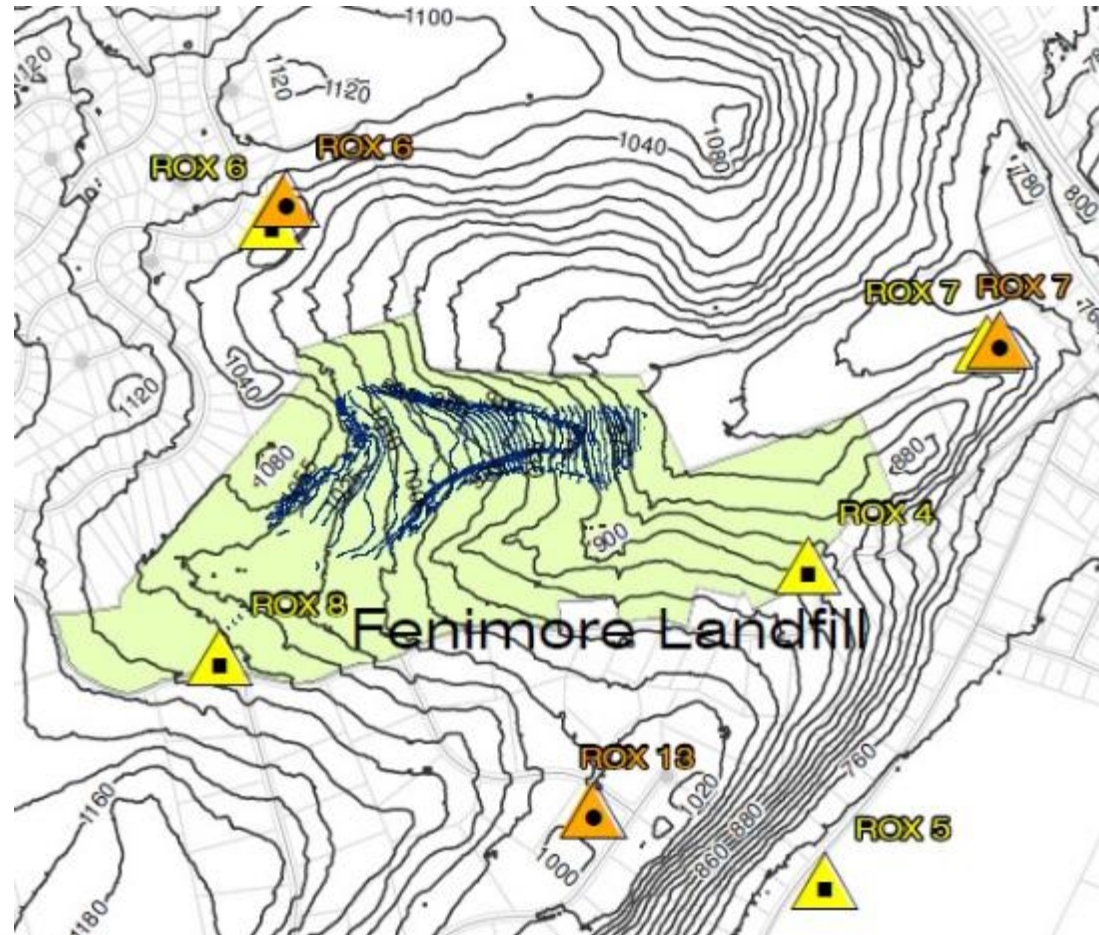
PAM Programs in 2020

- Public Policy is reacting strongly to local air pollution issues from local sources.
- Real-time air monitoring data is being legitimized by stakeholders as a reliable source for identifying and tracking air emissions and local air pollution effecting human health.
- A comprehensive guidance document is being published to standardize and institutionalize the use and deployment of air monitoring and air sampling at remediation sites.

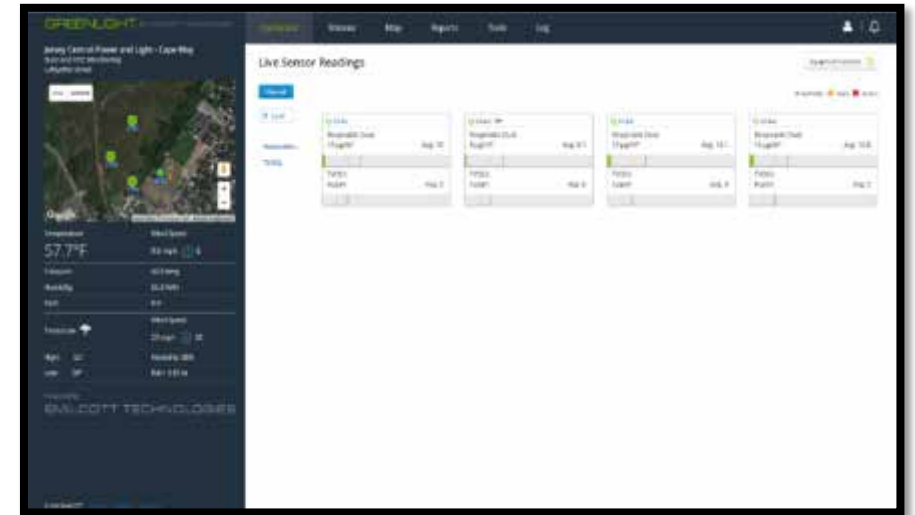
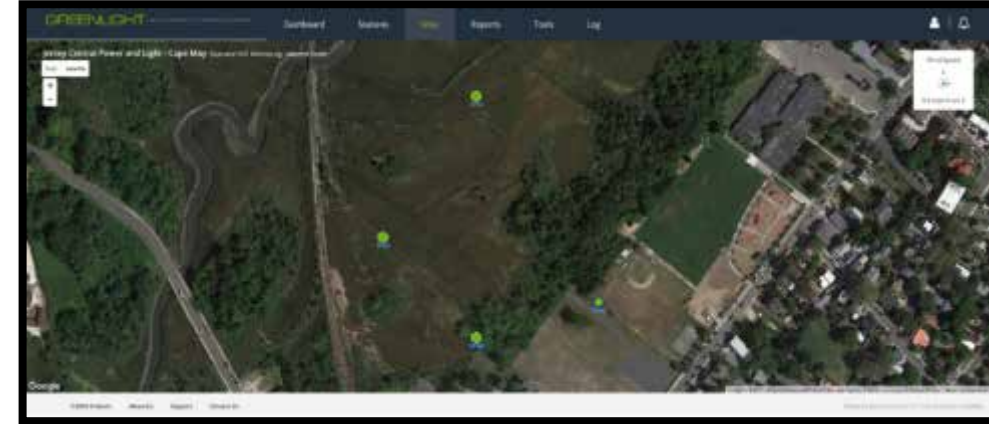




Public Policy Driven by Real-time Air Data



Remote/Real-time Monitoring for H₂S



THE NEW
"COMMON SENSE"
SOLUTION
TO
ENVIRONMENTAL
PROTECTION



TOWNSHIP
OF
ROXBURY
1749



1434 CBS



SHIFT OUT
OF NEUTRAL

BE FAR
of the
SOLUTION
NO PART
of the
PROBLEM

CLEAN UP
NOT
COVER UP
THE PROBLEM

CHRISTIE
FOUN IS
EXPENSIVE
OUT
OF ROXBURY

What's that Smell

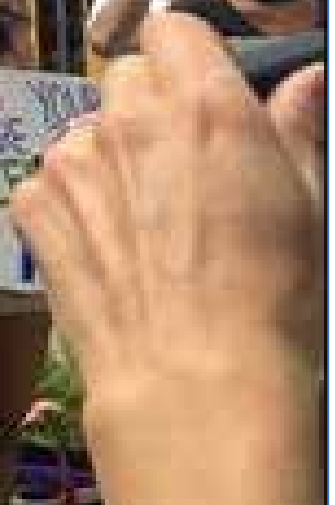
DAILY NEWS
CHRISTIE TO
ROXBURY:
DEAL WITH IT!
BEING ASK TO TRUCK FOR POCORR BEST

Environment
877-WARN

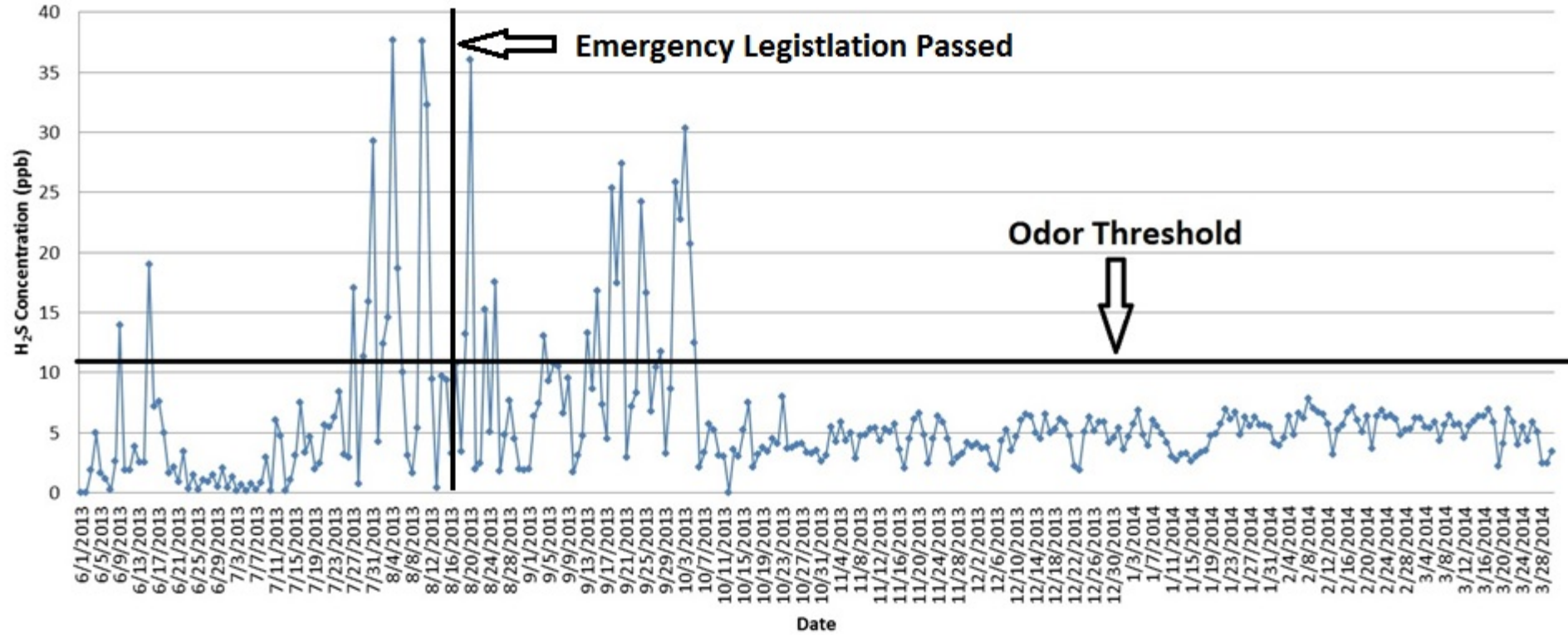
We need better answers
WHAT is the
DEEP HISTORY
truckitout.com

DO YOUR
SHARE
CLEAN

ROXBURY
STRONGER THAN
THE SMELL



Daily Average Concentration of Reduced Sulfur/H₂S



Perimeter Monitoring is Driving Policy

Hydrogen Sulfide

- 30 PPB TWA 30 Min TWA
- Landfill 1 – Taken over by State (60 days after sampling begun)
- Landfill 2 – Court order to cease operations - 2019

SUPERIOR COURT OF NEW JERSEY
HUDSON COUNTY
Chancery Division
Docket No. C-72-19

TOWN OF KEARNY,
Plaintiff,

Civil Action

v.

NEW JERSEY SPORTS AND EXPOSITION
AUTHORITY AND NEW JERSEY DEPARTMENT
OF ENVIRONMENTAL PROTECTION
Defendants.

FILED
SEP 30 2019
Jeffrey R. Jablonski, P.J.Ch.

ARGUED: July 25, 2019 through August 1, 2019.
DECIDED: September 30, 2019.

Gregory Castano, Jr, for the Town of Kearny (Castano Quigley, LLC, attorneys)

James Stewart, for the Defendant, New Jersey Sports and Exposition Authority (Lowenstein Sandler, LLP, attorneys).

PAM Guidance Document

- NJDEP Committee began in January 2018 ... scheduled for 6-12 months.. has taken 24 months.
- Draft Q1 2020

Version 2019-05-23

WORKING DRAFT - DO NOT CIRCULATE

PERIMETER AIR MONITORING TECHNICAL GUIDANCE FOR SITES UNDERGOING REMEDIAL ACTION

DRAFT – September 25, 2019 - DRAFT
DO NOT CIRCULATE

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Perimeter Air Monitoring Plan

- When to develop a Perimeter Air Monitoring Plan (PAMP)
 - Default is that a PAMP is required and effort is needed to get exemption
 - > 20 days and < 1 year



PAMPs Must Have:

- Conceptual Site Model to support the type, extent, and location of air monitoring and air sampling.
- Listing of CoCs used to target sampling
 - Specific Health based risk thresholds – cannot exceed on any day
 - Calculator to provide Health-based risk thresholds and real-time response levels.
 - Can focus on Limited CoCs when sampling



Air Monitoring

- Real-time Air Monitoring
 - Handheld monitoring is not acceptable
 - Surrogate sampling requires detailed rationale
 - Clear identification of DQOs and means to achieve QA
 - Can replace Analytical Air Sampling to get results quickly



Analytical Air Sampling

- Required to validate Air Monitoring and derived response levels
- Used to compare to Human Health Risk thresholds
- A variety of methods acceptable EPA, OSHA, NIOSH, Other – State approved methods and Labs certified.
- Reduced and full QA data packages required



Consumer and Worker Applications

Small sensors + Personal GPS + Apps = Personal and Professional Exposure Analytics



"I rely on my 'RunClear' app to take me on the cleanest, healthiest route"



"I feel more confident knowing that I can avoid 'hot-spots' on the worksite with my 'WorkClear' app"



"I'm lowering insurance costs, protecting my employees and helping our bottom line by deploying the 'WorkClear' app."

Americans check their smart phones 8 billion times per day: #1 App? Weather!

Questions

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