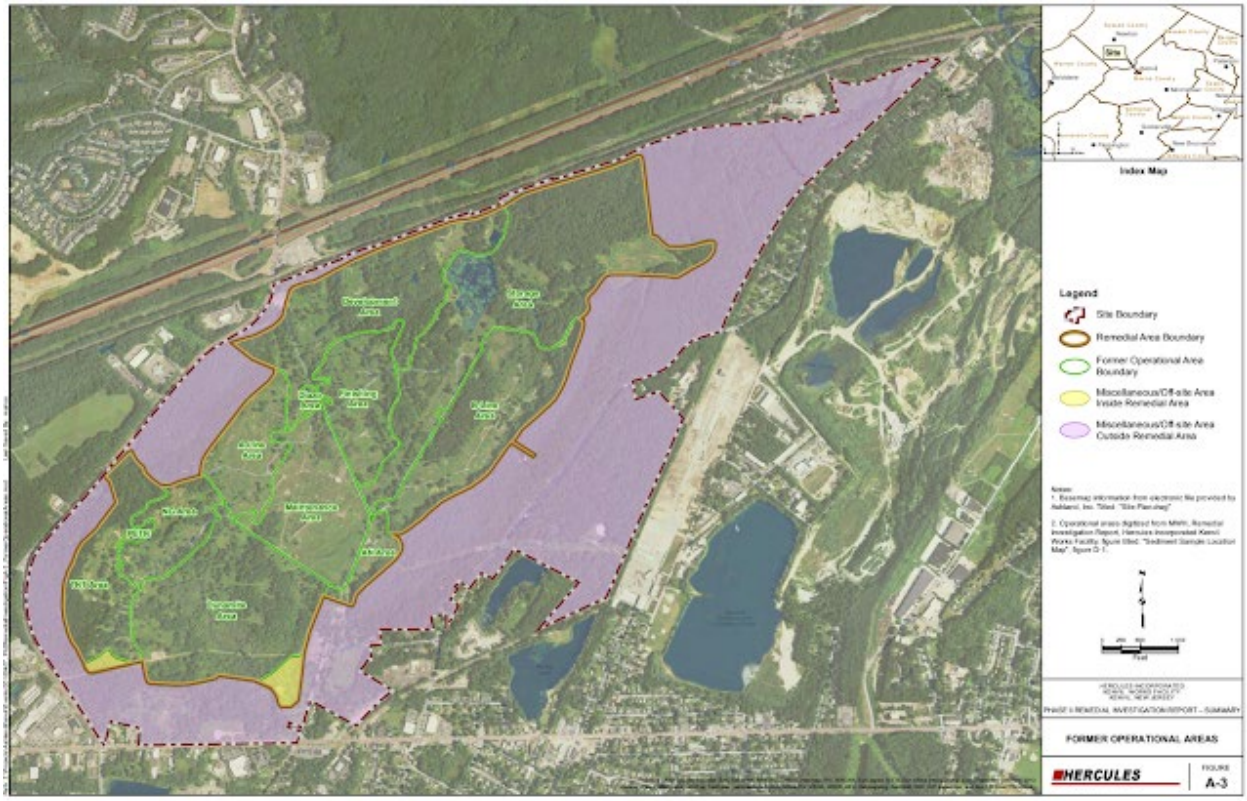
# HERCULES IN KENVIL REMAINS A POLLUTED HOTSPOT

HERCULES KENVIL, NJ, PHASE II REMEDIATION INVESTIGATION REPORT SUMMARY

by Brian T. Lynch, MSW




After decades of wondering, we can now be sure that the 900+ acre former Hercules Powder Company property in Kenvil, NJ, would still qualify as a superfund site if it was not being cleaned at Ashland Chemicals expense. After twenty years of study, the final Phase II Remedial Investigation Report was released six years ago to the N.J. Department of Environmental Protection (DEP) with little fanfare. The DEP decided years earlier not to list the abandoned Hercules Powder property as a State Superfund site. Instead, the agency chose to assign the investigation and cleanup of the property under a new law at the time that allowed Ashland Chemical, the corporation that purchased the property, to self-fund environmental studies and cleanup operations on land where explosives were manufactured for over 125 years.

Under the supervision of a Licensed Site Remediation Specialist (LSRP) indirectly employed by Ashland Corporation, privately hired subcontractors specializing in environmental assessment and remediation services conducted an investigation of soil, sediment, groundwater, and surface water contamination. Concurrently, an LSRP has overseen the most critical remediation actions taken over the past 30 years, including

safely demolishing buildings on the site, removing and destroying stored chemicals, and implementing other measures necessary to limit the further release of toxic substances.

Under this legal arrangement with the State, an LSRP (of which there have been several over the years) prepares periodic reports and submits all study materials and documents to the DEP for review and approval. It is estimated that the number of documents submitted to the DEP over the years has exceeded thirty thousand pages.

While all documents submitted to the NJDEP by the LSRP are public records, accessing them is challenging. Many older documents are currently being digitized. Interested parties must request a review of older documents from the DEP, which requires a trip to the DEP's Trenton headquarters, where boxes of paper documents are brought into a review area from a nearby warehouse. Many reports are very technical and difficult for non-scientists to understand.

For most residents, the former Hercules property has been a black box of potential health risks for everyone downwind or downstream. The general public is unaware of the extent or severity of the pollution.

In 2022, the Raritan Headwaters Association obtained approximately 30,000 pages of more recent, digitally accessible records, including a complete copy of the Hercules Phase II Remedial Investigation Report summary (RIR). The RIR summary reveals that many significant contaminants persist in the site's soil, sediments, groundwater, and surface water. Some contaminants are at unsafe levels, necessitating the site remain off-limits to the public. The good news is that the natural, undisturbed conditions at the site have so far contained the most toxic substances within its boundaries. The summary report spans over 900 pages and is difficult to synthesize further. What follows are excerpts from the report (in bold) that support some of its general conclusions.

From the Report as regards just the surface waters and sediments at the facility:
»/ .SVOCs.were.detected.in.sediment?.but.not.in.surface.water.at.five.of.the.seven.co_
located
sample.points¡

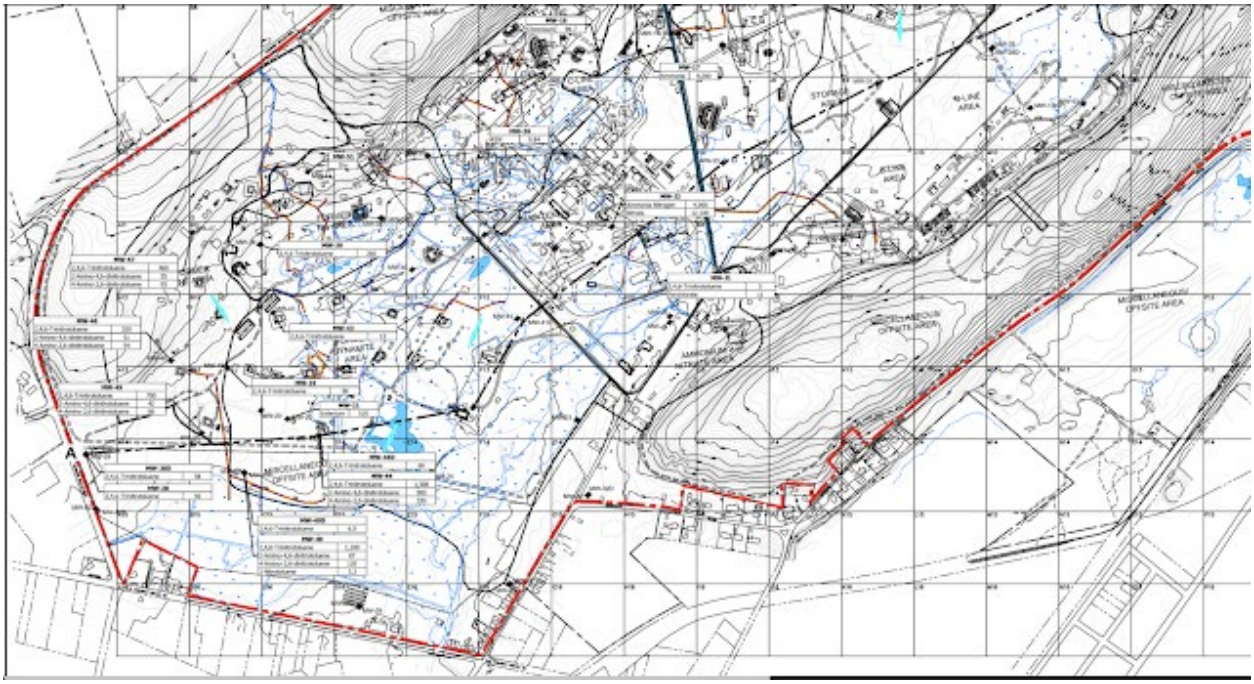
/ .Beryllium?.selenium?.and.silver.were.detected.in.sediment.and.not.in.surface.water?
indicating.these.constituents.are.not.partitioning.from.sediment.to.surface.water¡

/ .Arsenic?.cadmium?.chromium?.cobalt?.copper?.lead?.mercury?.nickel?.vanadium?.and.
zinc
were.detected.in.surface.water.and.sediment¡

/ .Aluminum?.barium?.calcium?.iron?.magnesium?.potassium?.and.manganese.were.
detected.in.both.surface.water.and.sediment.samples.from.each.co_location¡.Per.the.

United.States
Geological.Survey.(7❺❹0)?these.metals.are.commonly.found.in.surficial.geologic.
material.in the.vicinity.of.the.Facility¡‹

And this:
»In.certain.instances?constituents.were.present.at.concentrations.that.exceeded.
their.aqueous.solubility.limits.by.two.to.four.orders.of.magnitude?indicating.that.these.
constituents.were associated.with.suspended.sediment.entrained.in.the.surface.
water.sample¡‹



Different contaminants are found in various areas of the property, depending on the manufacturing activities in those locations. Additionally, many contaminants spread throughout the site due to a network of wastewater drainage ditches, building construction activities, burn pits for waste disposal, chemical spills, including accidents along the rail lines where railcars pulled by mules occasionally overturned, and significant explosions that cross-contaminated the land. This resulted in mixed layering and cross-contamination in several areas. For instance, soil samples from the TNT manufacturing area near the Great Spring wetland on the southern end of the property show the highest levels of toxic chemicals linked to TNT production while also containing lower levels of various contaminants from other manufacturing sites on the property.

From the Report: [4-13, pdf pg 35]
»TNT.in.soil.exceeds.its.IGWSSL.[Impact.to.Groundwater.Soil.Screening.Levels].in.the.
TNT.Area?the.PETN.[Pentaerythritol.Tetranitrate].Area?and.the.western.portion.of.the.
Dynamite.Area¡.TNT.and.related.breakdown.constituents.(0_Amino_8?❷_dinitrotoluene?.

8?0–8?❷_Dinitrotoluene?and.8_Amino_0?❷_Dinitrotoluene).exceed.their.respective.
GWQS[Groundwater.Quality.Standards].in• .[78]• .monitoring.wells• .located.
downgradient.of.soil.sample.results.exceeding.the.IGWSSL.for.TNTƒ

And this:
ƒRDX.[7?9?❶_Trinitroperhydro_7?9?❶_triazine?Hexahydro_7?9?❶_Trinitro_7?9?❶_Triazine].
exceeds.its.GWQS.in.a.monitoring.well.(MW_9❷.co_located.with.and–or.downgradient.
of.soil.samples.with.RDX.detections.that.exceed.its.IGWSL¡‹

Appendix H. AOC Tracking Table
Hercules Incorporated - Kenvil Works Facility
Kenvil, New Jersey

*AOC Tracking - surface water and Sediment*

| *I. Area(s) of Concern, Receptor and Emergency Response Tracking* | *Impacted Media* | *Contaminants of Concern* | *Exposure Route* | *Receptors* | | *Current Status/Outcome* |
|---|---|---|---|---|---|---|
| | | | | *Existing* | *Potential* | |
| Eastern Drainage Area | Sediment | Metals, E&E, SVOCs | Direct Contact | sediment and surface water | sediment and surface water | Remedial investigations indicated SVOCs, Metals, and E&E materials exceeded the Lowest Effects Level (LEL) or Severe Effects Level (NPL). The extent of site-related constituents has been delineated within former process areas. |
| Western Drainage Area | Sediment | Metals, E&E, VOCs, SVOCs | Direct Contact | sediment and surface water | sediment and surface water | Remedial investigations indicated VOCs, SVOCs, Metals, and E&E materials exceeded the LEL or SEL. The extent of site-related constituents has been delineated within former process areas. |
| Central Drainage Area | Sediment | Metals, E&E, SVOCs | Direct Contact | sediment and surface water | sediment and surface water | Remedial investigations indicated SVOCs, Metals, and E&E materials exceeded the LEL or SEL. The extent of site-related constituents has been delineated within former process areas. |
| Duck Pond and Tributaries | Sediment | Metals, E&E, SVOCs | Direct Contact | sediment and surface water | sediment and surface water | Remedial investigations indicated SVOCs, Metals, and E&E materials exceeded the LEL or SEL. The extent of site-related constituents has been delineated within former process areas. |
| Miscellaneous Ponds | Sediment | Metals, E&E, SVOCs | Direct Contact | sediment and surface water | sediment and surface water | Remedial investigations indicated SVOCs, Metals, and E&E materials exceeded the LEL or SEL. The extent of site-related constituents has been delineated within former process areas. |
| Eastern Drainage Area | surface water | Metals | Ingestion | sediment and surface water | sediment and surface water | Remedial investigations indicated Metals exceeded the human health surface water quality criteria (SWQS). The extent of site-related constituents has been delineated within former process areas. |
| Western Drainage Area | surface water | Metals, E&E, VOCs, SVOCs | Ingestion | sediment and surface water | sediment and surface water | Remedial investigations indicated Metals, E&E, VOCs, and SVOCs, exceeded the human health and aquatic life surface water quality standards (SWQS). The extent of site-related constituents has been delineated within former process areas. |
| Central Drainage Area | surface water | Metals, E&E, SVOCs | Ingestion | sediment and surface water | sediment and surface water | Remedial investigations indicated Metals, E&E, and SVOCs, exceeded the human health and aquatic life SWQS. The extent of site-related constituents has been delineated within former process areas. |
| Duck Pond and Tributaries | surface water | Metals | Ingestion | sediment and surface water | sediment and surface water | Remedial investigations indicated Metals exceeded the human health and aquatic life SWQS. The extent of site-related constituents has been delineated within former process areas. |
| Miscellaneous Ponds | surface water | Metals | Ingestion | sediment and surface water | sediment and surface water | Remedial investigations indicated Metals exceeded the human health and aquatic life SWQS. The extent of site-related constituents has been delineated within former process areas. |

Due to varying contaminants with different toxicity levels present in various areas, anyone authorized to be on the property must first undergo special training. Please note that the term “receptor” is used throughout the report to refer to any living entity that could potentially be harmed by the contaminants, including “human receptors.”

From the Report:
»Facility_related.influences.in.environmental.media.result.in.unacceptable.levels.of.
[the].potential.risk.to.ecological.receptors.based.on.the.screening.and.conservative.
exposure.modeling.conducted.in.the.EE–ERA• .Current.Facility.use.precludes.human.
health.exposure.risks?as.personnel.permitted.to.access.the.Facility.are.trained.in.the.
identification.and.control–mitigation.of.potential.exposures¡‹

The report states that hunters are brought into the facility to hunt deer and wildlife that graze on potentially toxic vegetation, presumably so they don’t carry pollution off-site. It’s possible that deer contaminated from grazing on toxic plants could end up in another hunter's venison. Also, trappers are brought in to control the beaver population. Perhaps this is to keep the hydrology on the property from becoming dangerously altered by damn buildings or other bever activities. The report doesn’t specify why the need to control wildlife populations.

From the Report:
❶¡9¡9¡7¡8.Hunters–Trappers
»Hunters.and.trappers.occasionally.enter.the.Facility.under.Hercules.direction.to.

facilitate.control.wildlife.populations.using.the.Facility.(e¡g¡?.deer.and.beaver)¡.Access.
is.limited.to.weekends.during.approved.hunting–trapping.seasons?.and.their.activities.
are.non_intrusive.in.nature¡.These.individuals.receive.hazard.communication.training.
and.are.restricted.from.entering.areas.where.constituents.[i¡e¡.contaminants].are.
likely.to.be.present.on.the.surface¡‹

We also learned some positive news. So far, the most concerning contaminants on the property haven't migrated off-site to residential areas. For instance, toxic chemicals on the property have not been detected in nearby residential wells. The Black River flowing from the wetlands at the site's southern end isn't carrying the toxins found in the surrounding soils or sediments. Note that the report refers to the Black River as a "drainage ditch." However, that ditch is actually thousands of years old.

From the Report:
»Surface.water.leaves.the.Facility.in.a.single.location?.via.a.drainage.ditch.beneath.
Route.02.in.the.southeastern.corner.of.the.Facility¡.SI–RI.data.at.this.location.indicate.
that.constituents.are.not.leaving.the.Facility.via.surface.water.transport¡‹

There is a caveat that increases in the flow rate could cause contaminants embedded in the surrounding soil or sediments to become suspended in the water and carried downstream. This fact should be of immediate concern when evaluating the adequacy of safeguards to prevent this from occurring during the current bioremediation activity.

From the Report:
»Beyond.the.direct.transport.of.dissolved.phase.constituents.in.surface.water?.surface.
water.may.transport.constituents.adsorbed.to.suspended.sediment.offsite.during.high.
flow.conditions• .As.previously.discussed?.flowrates.influence.the.transport.of.
suspended.sediment¡‹

Trees and vegetation that have regrown over time appear to be preventing wind and rain from eroding potentially polluted soil. However, high levels of soil contamination in some areas have left those areas barren.

From the Report:
»It.is.believed.soil.erosion.was.much.more.prominent.historically.(estimated.to
be.from.the.late.7466s.until.approximately.7516).when.the.Facility.intentionally.
removed
vegetation.to.prevent.the.spread.of.fires¡.The.removal.of.vegetation.destabilizes.the.
surficial
soils.allowing.erosion.to.occur.more.freely¡.From.the.7516s.through.Facility.closure.in.
7552?.low_growing.groundcover.(e¡g¡?.turf).was.maintained?.reducing.the.potential.for.
erosion¡ Following.Facility.closure?.maintenance.activities.ceased.and.vegetation.now.
covers.much.of the.Facility¡

And this from the Report:
ƒAreas.devoid.of.vegetation.do.exist.and.are.attributed.to.constituent.concentrations.in.soil.(e¡g¡?.over_nitrification.of.soil.where.TNT.is.present)ƒƒ

However, there has been a recent change of status. Since 2023, soil remediation activity has begun for the first time. Trees have been cut down, and ground cover (plants) have been removed from polluted areas. Soil contaminated with PCB has been excavated for transport to a special landfill. Other polluted soil has been excavated and taken to a bioremediation facility that was built on the edge of the Great Spring wetlands.


Nevertheless, according to the investigation report, the surface water discharge to the Black River from the Great Spring is not carrying contaminants off-site. That's good news as long as the current excavations underway don't accidentally release dangerous chemicals that could turn the Black River into a conduit for pollution downstream. All is well as long as newly exposed soil doesn't get carried away by the wind or severe rainstorms. All is well as long as a stable plume of contaminated groundwater discovered under the property's southwest corner doesn't migrate into residential areas areas.

From the Report:
»A.small.well.defined.RDX.[groundwater].plume.exists.within.the.area.bounded.by.monitoring.wells.MWs.8❶?.99?.9❶?.9❸?.J8?.and.J9.located.immediately.southwest.of.the.Development.Area¡‹

We must trust that all conceivable safeguards are in place and that the stream flowing from that land is routinely and rigorously tested. We must rely on the NJDEP, the LSRP, and the Ashland Corporation, as we lack the comprehensive data and information required to verify the adequacy of the current remediation plans independently.  It has been the position of

the property owners and their contracted LSRP that this privately funded clean-up operation is are not directly accountable for sharing information with local residents. In contrast, the public is an essential participant at designated superfund sites.