

**DECEMBER 12, 2017**

# **WELCOME**

**Public Availability Session  
to provide information and solicit input for**

**Final Remedy Selection at**

**Site 1 – Former Drum Marshalling Area**

**Naval Weapons Industrial Reserve Plant  
Bethpage  
(Former Grumman Plant)**



# NWIRP BETHPAGE HISTORY

The primary mission of the **Naval Weapons Industrial Reserve Plant (NWIRP Bethpage)** was to research, design, build and test military aircraft in support of our national defense



## 1941

Northrop Grumman (NG) purchased the property and started production of aircraft during WWII. Later, the Navy and NG exchanged properties, resulting in a 109-acre Government-Owned Contractor-Operated (GOCO) facility and a neighboring 550-acre NG-owned and operated facility

## 1986

Navy Environmental Restoration Program began - initial studies identified sites on NWIRP Bethpage requiring further investigation

## 1998

NG returned operational control of the NWIRP Bethpage to the Navy

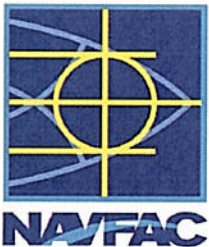
## 2008

Navy transferred 96 acres of NWIRP Bethpage property to Nassau County for economic redevelopment. Remaining 9 acres were retained by the Navy to complete Environmental Restoration Program requirements

## Present

Environmental Restoration Program work continues at two sites on former NWIRP Bethpage and for off-site groundwater contamination

# CLEANUP TEAM



- The Navy's Environmental Restoration Program is conducted to meet requirements of the ***Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)***
- The Navy is the lead agency for environmental restoration at NWIRP Bethpage under CERCLA
- ***Naval Facilities Engineering Command (NAVFAC)*** manages the program at NWIRP Bethpage



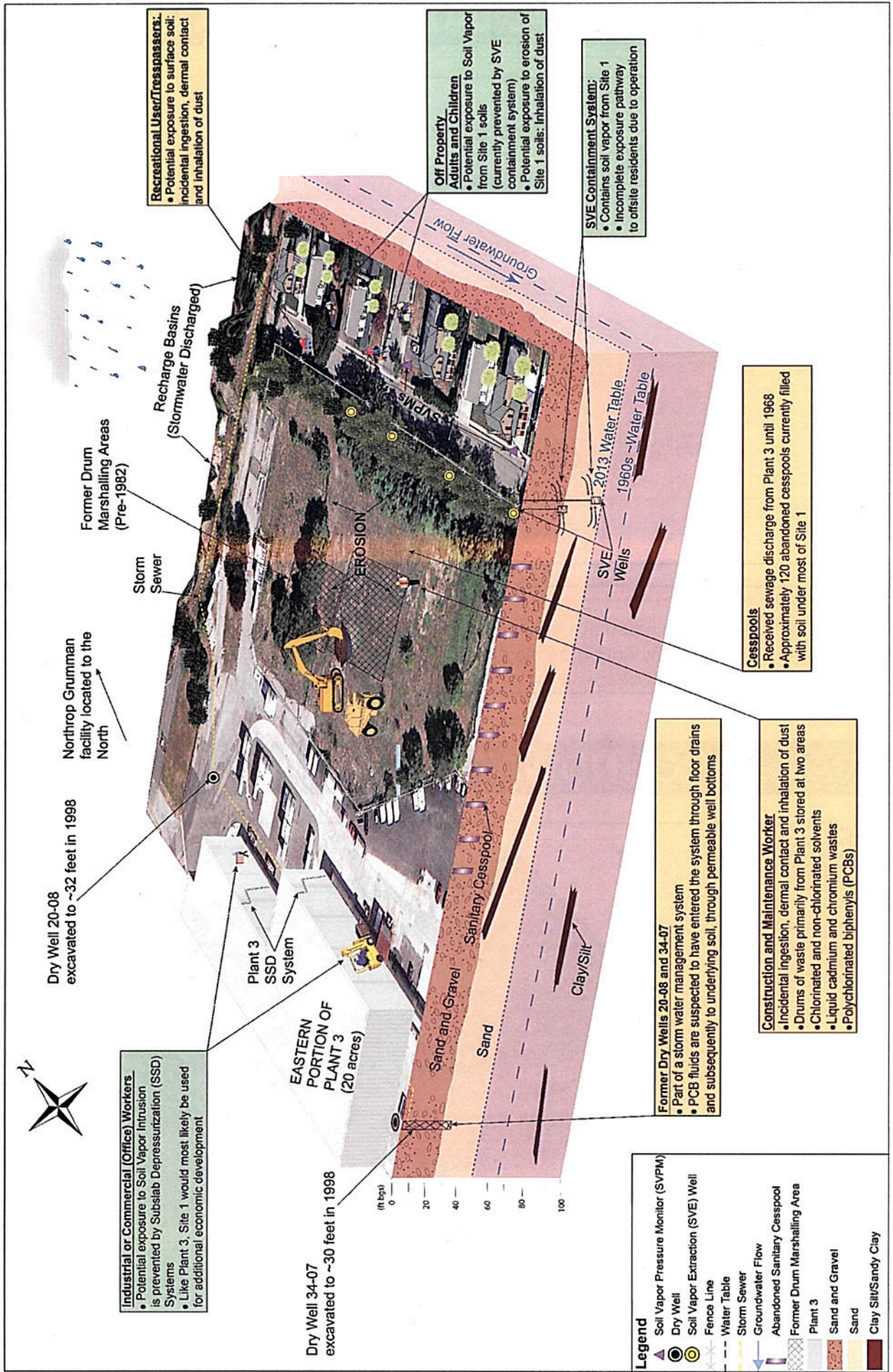
- The ***New York State Department of Environmental Conservation (NYSDEC)***, with assistance from the ***New York State Department of Health (NYSDOH)***, is the lead state agency providing regulatory support for NWIRP Bethpage



**Department  
of Health**

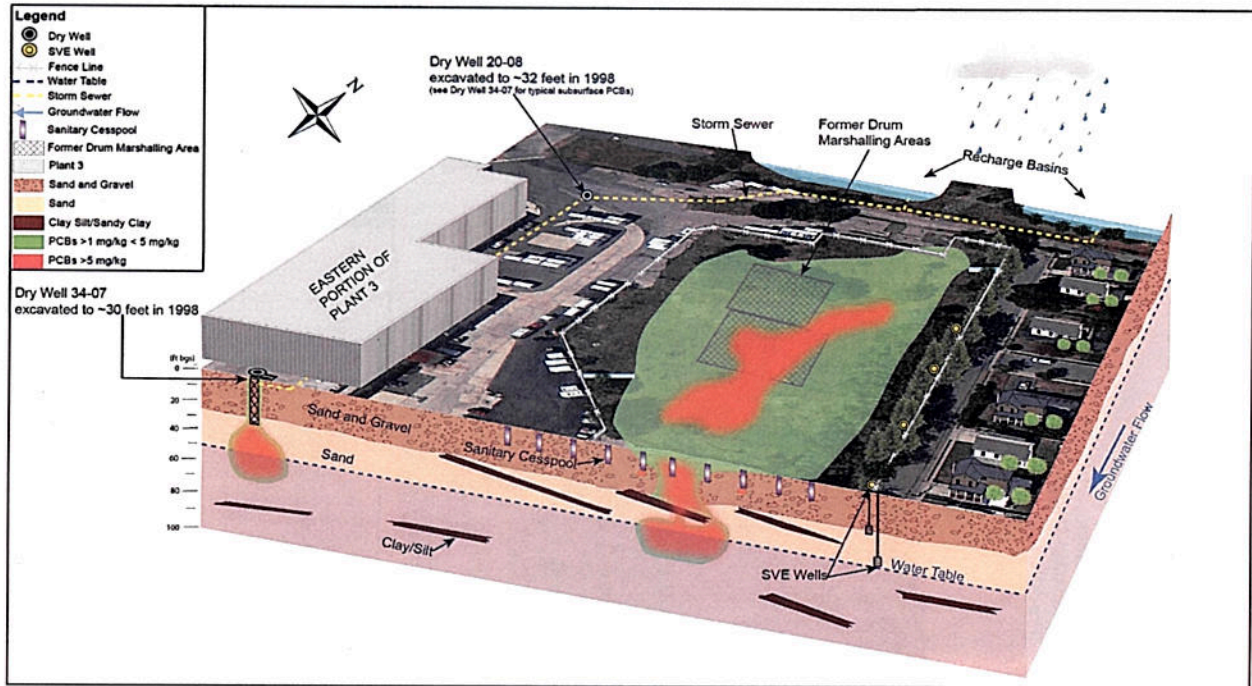


# SITE 1 - FORMER DRUM MARSHALLING AREA





# SOIL AND SOIL VAPOR CONTAMINANTS



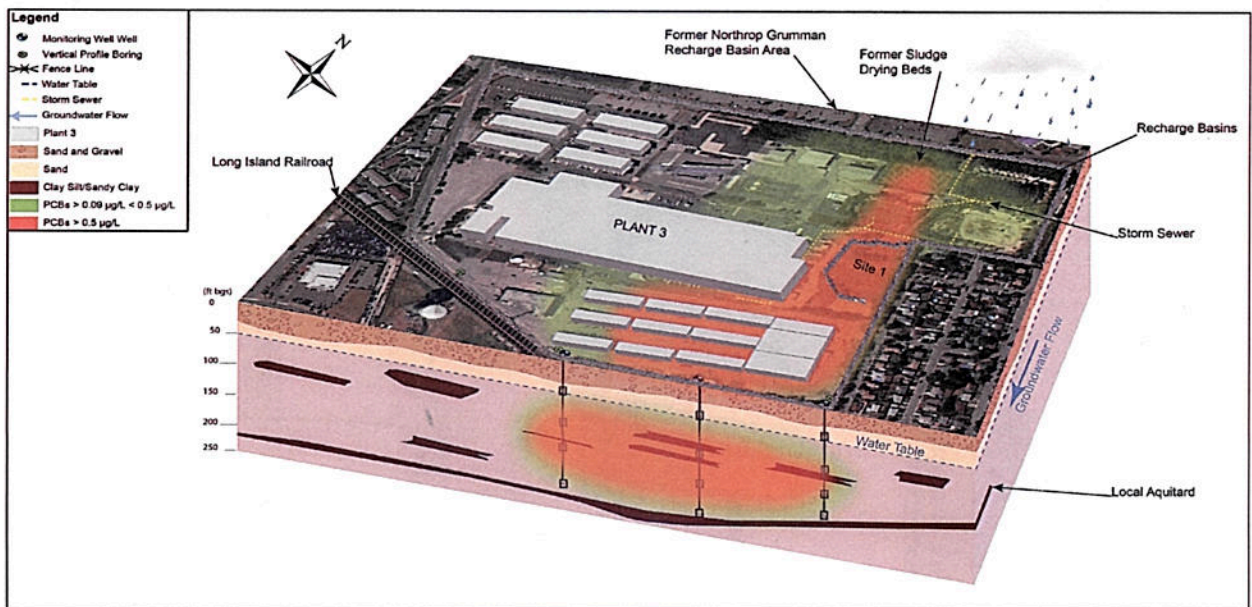
## Soil

- PCB- and TCE- contaminated soil on property
- Metals and other contaminants are also present
- 4.5 acres down to 65 feet deep

## Soil Vapor

- TCE- contaminated soil vapor on property
- Off property areas are protected by the SVE Containment System

# GROUNDWATER CONTAMINANTS



## Groundwater

- PCB- and metal- contaminated groundwater on property
- 60 acres down to 300 feet deep

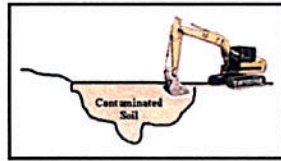


# SUMMARY OF ALTERNATIVES - SOIL

**Soil:** Evaluated nine alternatives, which included permeable cover, excavation, vertical barrier, and solidification

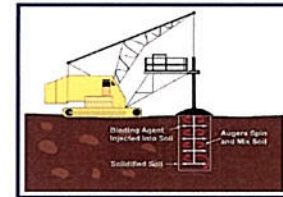
## Excavation

Removal of soil using construction equipment



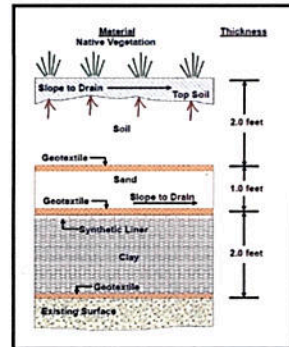
## In-Situ Solidification

Contaminated soil is mixed with cement or clay in the ground to immobilize contaminants



## RCRA Cap

A leak proof barrier over contaminated soil to prevent rain water from contacting the contaminants

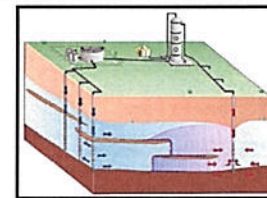


## Permeable Cover

Soil or gravel is used to prevent exposure to contaminated soil, while allowing rain water to infiltrate

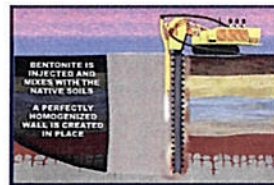
## In-situ Solvent Extraction

- Contaminated soil is mixed with a solvent in the ground to initially mobilize the contaminants
- The mixture is then removed for treatment



## Vertical Barrier

A leak proof wall around contaminated soil

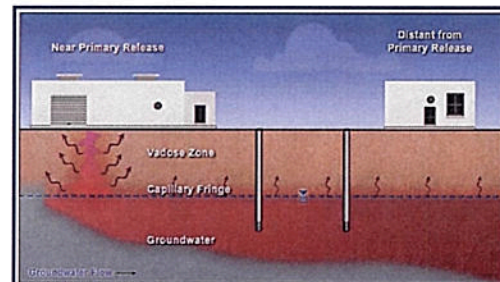


# SUMMARY OF ALTERNATIVES - SOIL VAPOR

**Soil Vapor:** Evaluated three alternatives which included continued operation of the Soil Vapor Extraction Containment System (SVECS) and enhancing the SVECS

## Soil Vapor Extraction Containment System

- Soil vapor extraction, or "SVE" removes contaminant vapors from below ground by applying a vacuum

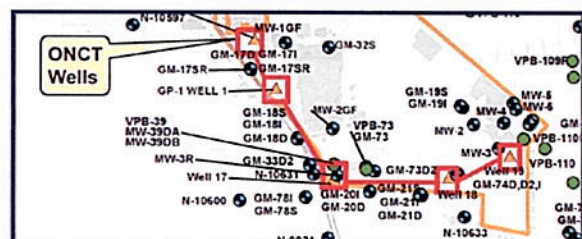


# SUMMARY OF ALTERNATIVES - GROUNDWATER

**Groundwater:** Evaluated four alternatives which included monitoring and modifications to the Northrop Grumman Onsite Containment (ONCT) System

## Northrop Grumman ONCT System

- System consists of five (5) extraction wells
- Extracted water is treated on-site and discharged to the on-site recharge basins



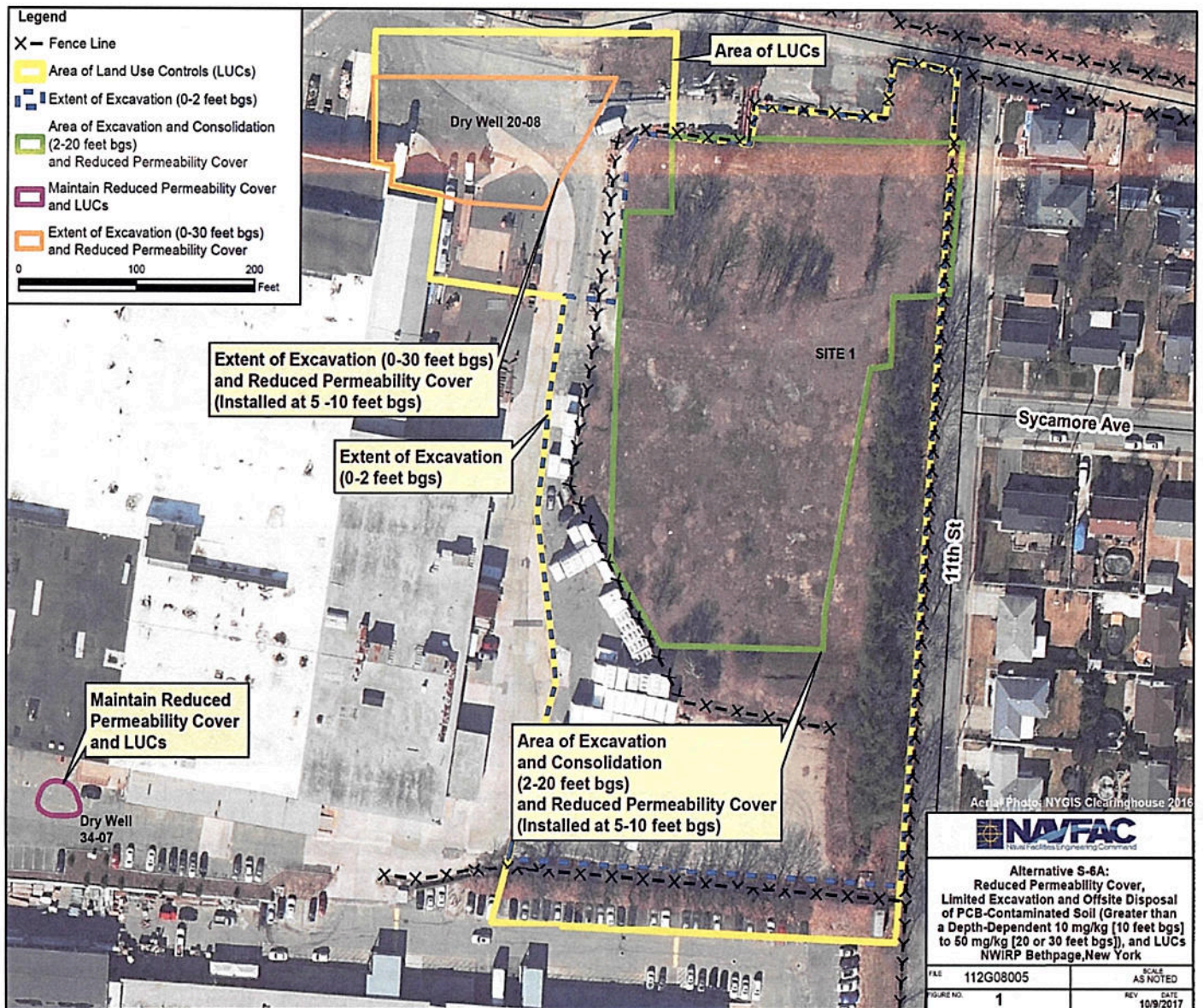


# PREFERRED ALTERNATIVE FOR SITE 1 SOIL

## Alternative S-6A:

- Excavation and Offsite Disposal of PCB-Contaminated Soil (Greater than a Depth-Dependent 10 parts per million (ppm) - Maximum of 10 feet below ground surface [bgs] to 50 ppm Maximum of 20 or 30 feet bgs)
- Reduced Permeability Cover
- Land Use Controls

- Capital Cost: \$25,600,000
- Annual Cost: \$12,800 to \$43,000
- 30-Year Total Cost: \$26,000,000



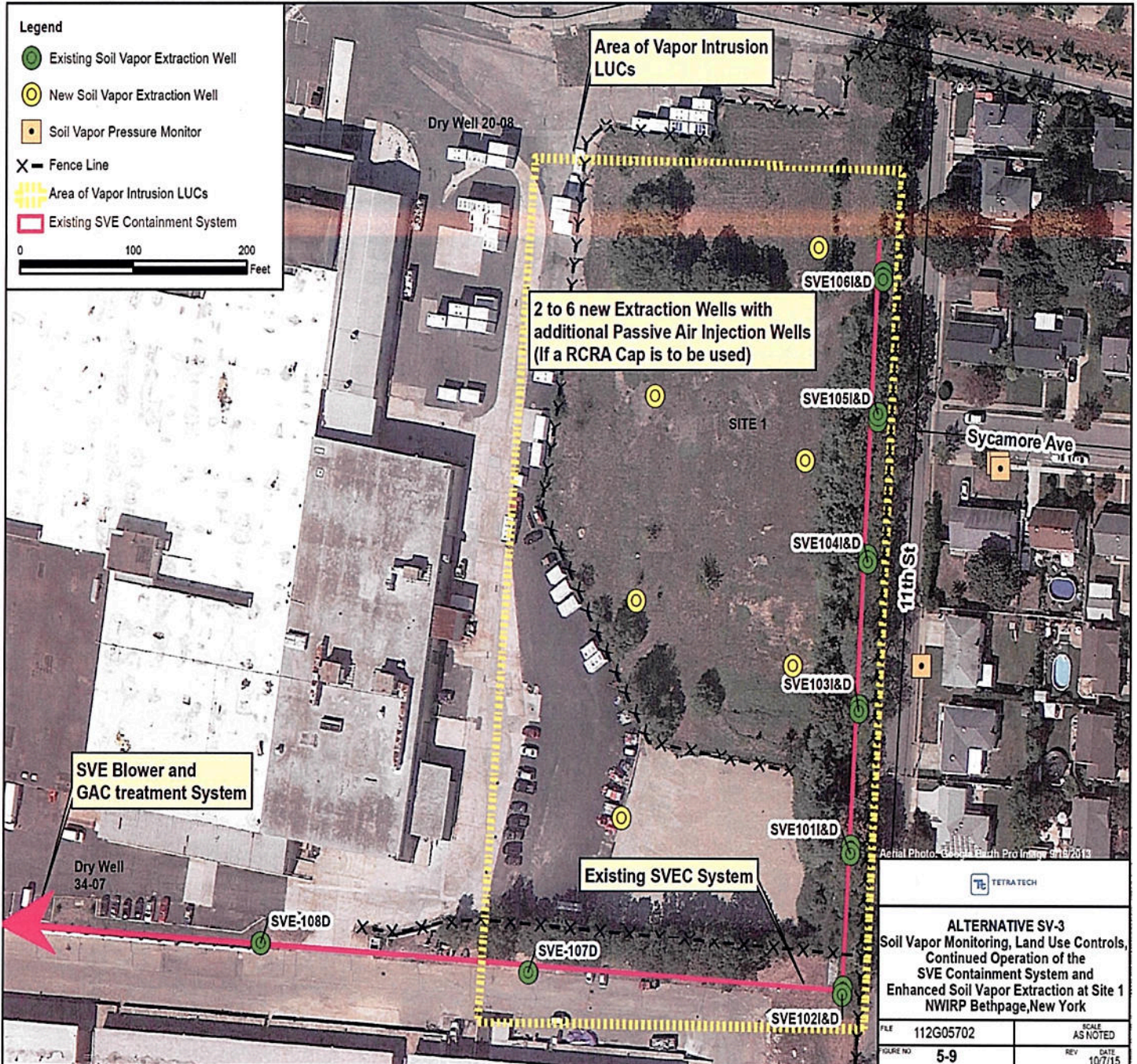


# PREFERRED ALTERNATIVE FOR SITE 1 SOIL VAPOR

## Alternative SV-3:

- Soil Vapor Monitoring
- Land Use Controls
- Continued Operation of the Soil Vapor Extraction Containment System
- Enhanced Soil Vapor Extraction at Site 1

- Capital Cost: \$220,000
- Annual Cost: \$110,000 to \$125,000
- 30-Year Total Cost: \$1,700,000





# PREFERRED ALTERNATIVE FOR SITE 1 GROUNDWATER

## Alternative G-2:

- Monitoring
- Land Use Controls

- Capital Cost: \$230,000
- Annual Cost: \$110,000 to \$125,000
- 30-Year Total Cost: \$2,600,000



**Legend**

- Monitoring Well
- Land Use Controls (LUCs) for PCBs
- LUCs Hexavalent Chromium

0 125 250 500  
Feet

**TETRA TECH**

**Alternative G-2  
Monitoring and Land Use Controls  
NWIRP Bethpage, New York**

FILE	112G02230	SCALE	AS NOTED
FIGURE NO.	5-10	DATE	10/7/15

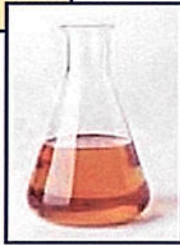


# WHAT ARE PCBs?

PCBs, or polychlorinated biphenyls, are man-made compounds that were used in many products world-wide until the late 1970s

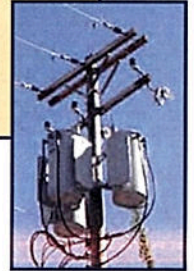
## Chemical Properties

- Oily liquids or solids that are colorless to light yellow
- Do not burn easily
- Do not dissolve easily in water



## History

- Invented in 1929
- Used all over the world in many products
  - Electrical transformers
  - Other electrical devices with PCB capacitors
  - Fluorescent light fixtures
  - Some paints
- Manufacture of PCBs stopped in U.S. in 1977



**United Nations Stockholm Convention** (May 2001) banned PCB production and mandated a phase-out of ongoing uses around the world by 2025. The treaty calls on countries to make determined efforts to remove from use all PCB-containing electrical transformers and other equipment

# PCBs ARE FOUND ALL OVER THE WORLD

- PCBs do not break down easily and remain in the environment for very long periods of time
- PCBs can cycle between air, water, and soil
- PCBs can be carried long distances in the air

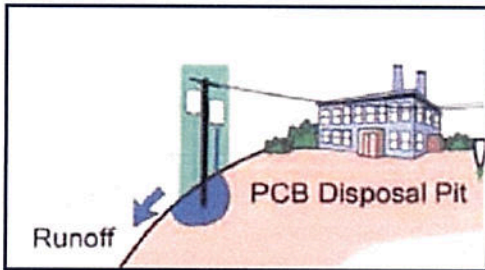


***PCBs have been found in snow and sea water in areas far away from where they were released, such as the Arctic***

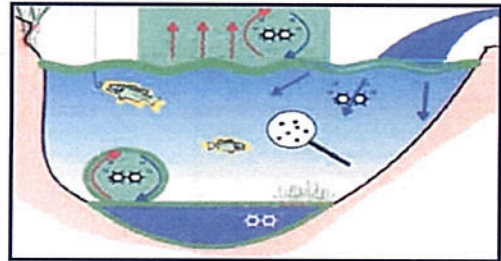


# PCBs IN THE ENVIRONMENT

PCBs stick strongly to soil



PCBs do not dissolve easily in the water



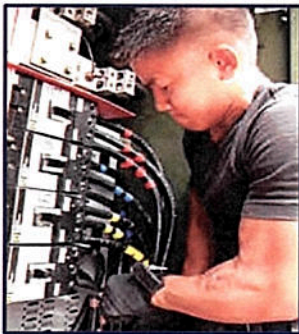
People are exposed to small amount of PCBs almost everywhere in the environment



## PCB HEALTH EFFECTS

### PCBs in Your Body

- A portion of PCBs taken into your body will be removed in feces in a few days
- The PCBs that remain in your body fat or liver can be there for months or years



### Potential Health Effects

- **Large exposures in workers** (before 1977)
  - Skin conditions such as severe acne (Chloracne) and rashes
  - Liver damage – possibly liver and biliary tract cancer
- **Children** – born to women exposed to high levels in the workplace or who ate large amounts of contaminated fish
  - Weighed slightly less than average at birth
  - Possibly slower motor skill development
- **Animal Studies** (typically very high exposures)
  - Liver, stomach, and thyroid damage
  - Liver cancer
  - Anemia
  - Acne-like skin conditions
  - Weakened immune systems
  - Reproductive effects
  - Neurological effects

US Environmental Protection Agency (EPA) stated that *PCBs are probably cancer causing for people*  
US Department of Health and Human Services stated that *PCBs may reasonably be anticipated to be cancer-causing for people*

More Information on PCBs available from: Agency for Toxic Substances and Disease Registry (ATSDR): <http://www.atsdr.cdc.gov>

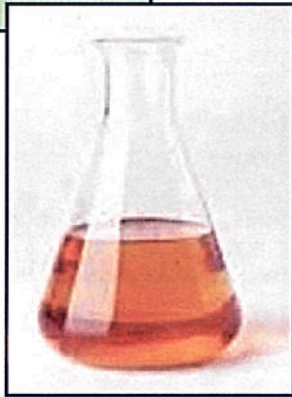


# WHAT IS TCE?

TCE (trichloroethylene) is a man-made, volatile organic chemical with industrial uses  
TCE is a common groundwater contaminant at environmental investigation sites

## Chemical Properties

- Colorless, volatile liquid
- Evaporates quickly
- Nonflammable



## History

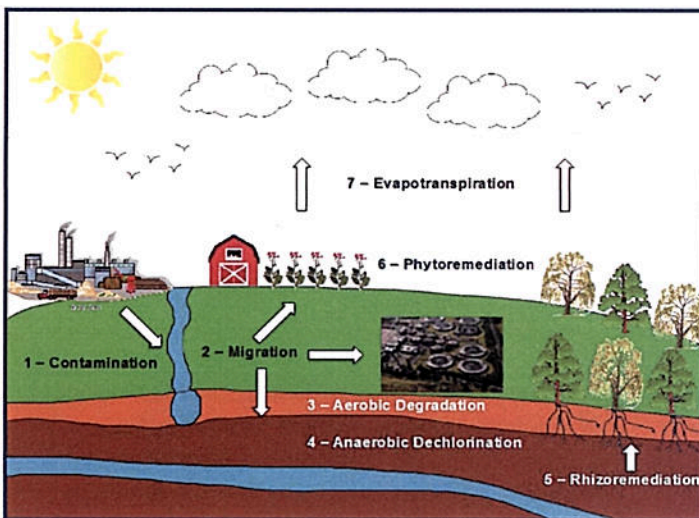
- Developed as a surgical anesthetic in early 1900's
- FDA stopped its use as an anesthetic and minor food additive in 1977
- Most significant historical use: vapor degreasing of metal parts (less common use today)
- Use as a degreaser in other operations (e.g., dry cleaning and textile industry)
- Most common use today – in the manufacture of other chemicals



# TCE IN THE ENVIRONMENT

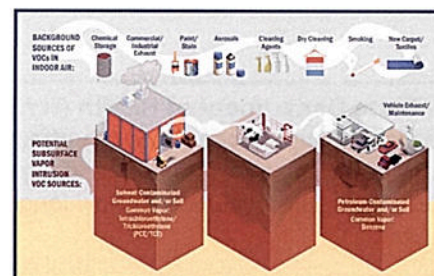
## Soil

- TCE can be released to soil through historical spills
- TCE in soil can migrate to groundwater
- TCE in soil can evaporate from soil and migrate to air



## Air

- TCE can evaporate from soil and migrate to outdoor air.
- TCE can evaporate from soil, migrate to the surface, and intrude into indoor air.
- TCE vapor migration and intrusion to indoor air depends on many things like:
  - How long has TCE been in subsurface?
  - How much TCE is in subsurface?
  - How deep in the ground is it?
  - What is the soil type? (Some soils are difficult for vapors to get through.)
  - Are there buildings directly over soil vapor areas?
  - What is the building construction type?
- There are technologies and construction practices that prevent vapors from intruding to indoor air





# TCE HEALTH EFFECTS

## TCE in Your Body

### How can TCE get in your body?

- Inhalation (if TCE is in the air)
- Ingestion (if TCE is in drinking water or food)
- Skin absorption (if TCE is in water – but lower amount because it's so volatile)

### How does TCE leave your body?

- TCE is removed from the body through exhaling and in urine
- TCE does not accumulate in the body

## Potential Health Effects

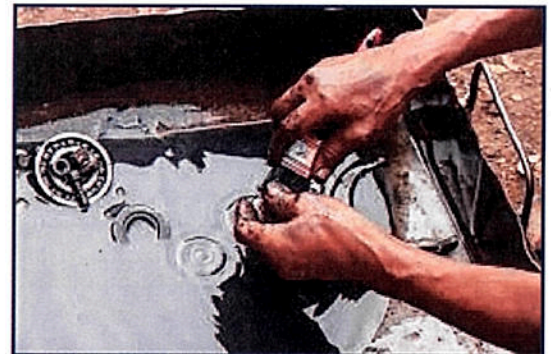
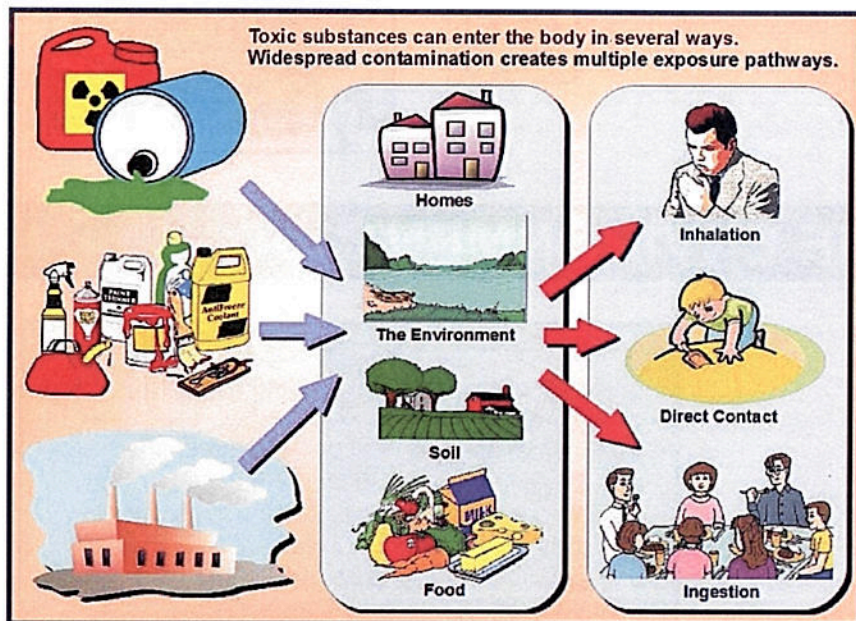
- Possible health effects are dependent on how much TCE exposure and for how long<sup>1</sup>

## Human studies

- Central nervous system effects (At high concentrations – not environmental levels)
- Kidney cancer in humans. (TCE exposures have been associated with this type of cancer)
- Possible reproductive effects (But, may be affected by other factors)

## Animal Studies

- Liver and kidney effects (including cancer) in rats and mice
- Developmental effects in rats and mice



**Regulatory Values Protect the Public from TCE Health Effects:**  
NYSDOH Indoor Air Guideline:  $2 \mu\text{g}/\text{m}^3$

US EPA classifies TCE as a “carcinogenic to humans.”

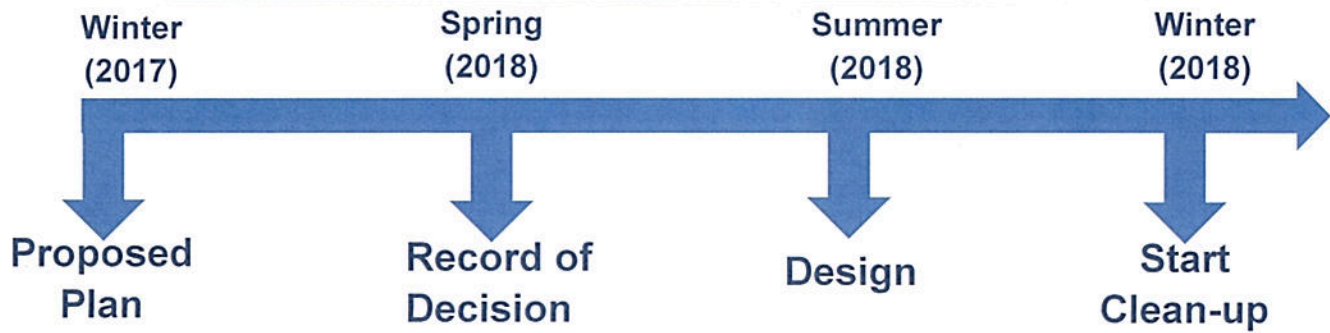
<sup>1</sup>New York State Department of Health (NYSDOH), “Whether a person experiences a health effect depends on how much of the chemical he or she is exposed to, how often the exposure occurs, and how long the exposures last.”

[https://www.health.ny.gov/environmental/investigations/soil\\_gas/svi\\_guidance/docs/fs\\_tce.pdf](https://www.health.ny.gov/environmental/investigations/soil_gas/svi_guidance/docs/fs_tce.pdf)

More Information on TCE available from:  
Agency for Toxic Substances and Disease  
Registry (ATSDR): <http://www.atsdr.cdc.gov>



# WHERE DO WE GO FROM HERE?



## COMMUNITY PARTICIPATION

### Public Comment Period

November 22, 2017 through January 22, 2018

### Submit Written Comments

The Navy will accept written comments on the Proposed Plan during the public comment period

### Submit Written Comments to:



Public Affairs Officer  
Code 09PA  
Naval Facilities Engineering Command,  
Mid-Atlantic  
9324 Virginia Ave, Rm. 302  
Norfolk, Virginia 23511



### Information Repository

The Navy has established an Information Repository, which contains the documents used to support the Navy's Preferred Alternatives, located at:

**Bethpage Public Library**  
47 Powell Road  
Bethpage, New York 11714  
(516) 931-3907

These documents can also be accessed at a public website at:

<http://go.usa.gov/DyXF>



