US ARMY CORPS OF ENGINEERS
HUNTINGTON DISTRICT

Public Meeting Transcript
Presentation of the Proposed Plan
Waste Water Treatment Plants 1 and 3
Plum Brook Ordnance Works, Sandusky, Ohio
March 26, 2015

Good evening, my name is Tom Siard with CB&I, and I am presenting the Proposed Plan for Waste Water Treatment Plants 1 and 3 at the Plum Brook Ordnance Works located in Sandusky, Ohio.

The purpose of the WWTP1 and WWTP3 Proposed Plan is to present the Preferred Alternative proposed for cleanup of contaminated soils along TNTA/WWTP1 Sewer Lines. This preferred alternative is based on results of the remedial investigation/feasibility study (RI/FS).

When implemented, it will prevent human exposure to soil containing TNT at levels above the remediation goal of 39 parts per million (ppm). TNT is the only chemical of concern (CoC) at the TNTA Sewer Lines. Another purpose is to basically present that in 3 of these 4 areas; WWTP 1, WWTP 3 and the TNTB Sewer Lines; no remedial action is required and the third purpose is to provide for public comment.

Community Involvement

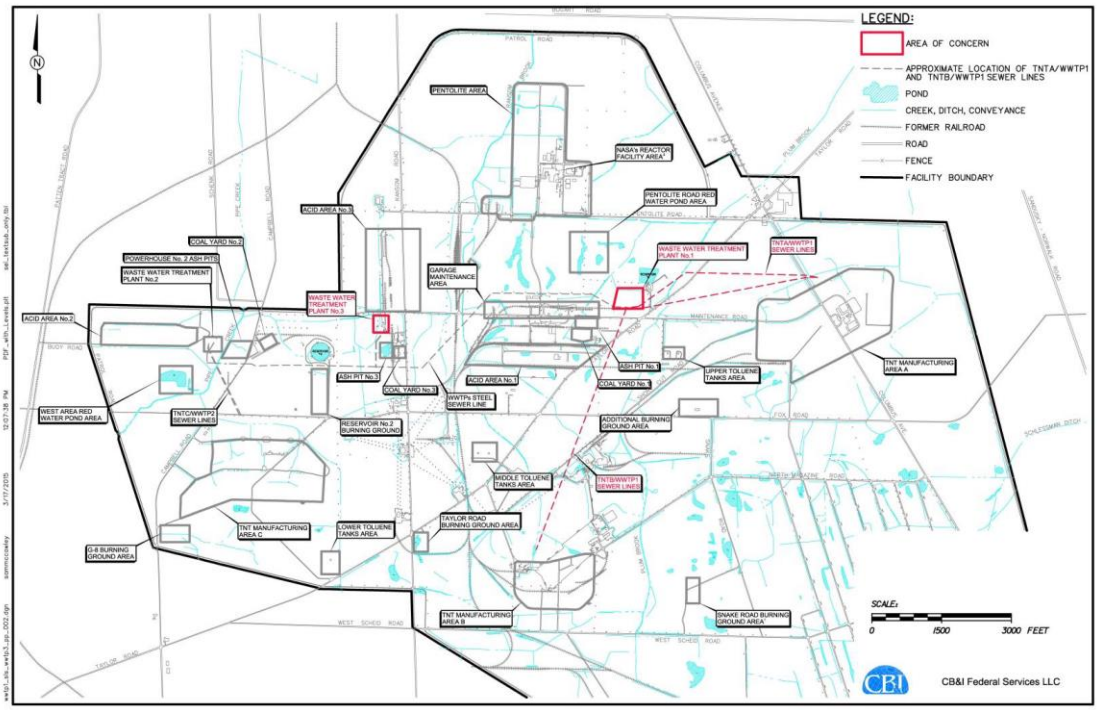
The Proposed Plan is made available to the public for a review and comment period as described in the NCP. At the end of the review and comment period which for this proposed plan ends April 30.All comments will be included in the Responsiveness Summary of the Decision Document, documented in the Administrative Record (AR), and evaluated for consideration in the final selection of the final remedy selected in the Decision Document.

As far as any comments that you might have, you can address them to Rick (Meadows) as written comments either sent in pen and paper or email. His contact information is in the proposed plan.

Required Remediation

Soil remediation is required because of TNT contamination in shallow soil (~ 0 to 2 ft) along the TNTA Sewer Lines. No action is required for deeper soil, or other media associated with the TNTA Sewer Lines. No action is required for the other three sites (WWTP1, WWTP3, or TNTB/WWTP1 Sewer Lines).

Just to orient you a bit where these sites are, this is the former Plum Brook boundary



WWTP1 and WWTP3 Locations *(The figure was inserted into the transcript. Mr. Siard pointed out the locations of WWTP1 and WWTP3)*

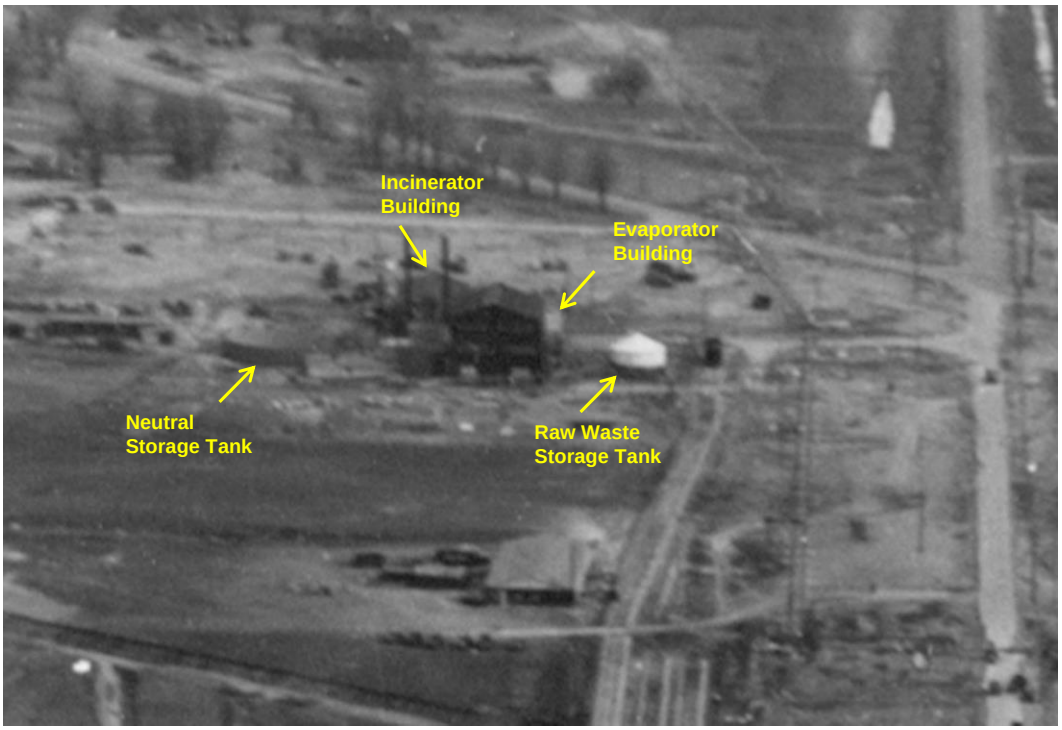
To summarize, the preferred remedial alternative for TNTA Sewer Lines, USACE proposes to complete the remedial action consisting of excavation of approximately 11 cubic yards (CY) of soil, off-site disposal of all excavated soil at an approved landfill (Erie County Landfill), and backfill of the excavation with imported, clean soil. The selected response action will be documented in the Decision Document.

History

Description of WWTP1

Each of these four areas are described here, starting with WWTP1 which included waste and chemical storage tanks, evaporator building, and incinerator. WWTP 1 received TNT production waste from TNTA and TNTB settling basins via sewer lines, underground sewer lines. The waste consisted of spent sulfuric and nitric acids, and red water from TNT purification process. The TNT production waste from TNTA and TNTB was chemically treated (neutralized) and incinerated at WWTP1. Residual ash was disposed in Ash Pit No. 1, or it was sent to WWTP3 for treatment/disposal, or during periods of high production, it was disposed in the Pentolite Road Red Water Pond, untreated.

The facility covered approximately 2 acres. All aboveground structures were dismantled and removed between approximately 1958 and 1964. Fill was brought in to cover remnants of building foundations and tank pads. The area is essentially flat, mostly covered in dense scrubby thicket and old field weedy vegetation. There are a couple of drainage ditches which are typically dry.



Aerial View of WWTP1 (looking east, January 1942)
(The figure was inserted into the transcript. Mr. Siard pointed out some of the features in WWTP1)

Description of WWTP3

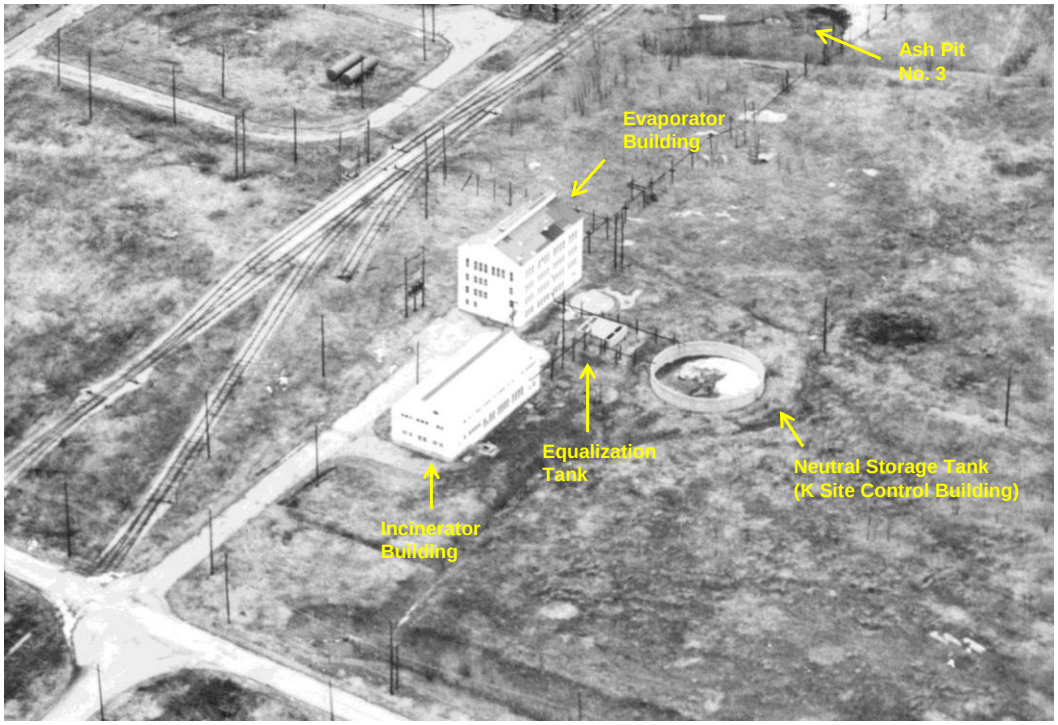
WWTP3 received "overflow" TNT production waste water from WWTP1 and WWTP2 via steel sewer lines. It was used when capacity of WWTP1 or WWTP2 was maxed out.

The neutralized waste water was thickened by evaporation and incinerated and residual ash disposed in Ash Pit No. 3. The site was similar to WWTP1 with various tanks, storage buildings, evaporator buildings, and an incinerator. The facility covered approximately 2 acres.

Post-Production

The aboveground structures were dismantled and removed between 1958 and 1964, with the exception of the neutralization tank which NASA converted and used as the K-Site Control Building. The K-Site Control Building was removed by NASA in late 2012 along with some soil that was found to be impacted by polycyclic aromatic hydrocarbons (PAHs).

No foundations were encountered at WWTP3. The area is flat, mostly covered in upland old field vegetation. There is a drainage ditch present to the west and has a few inches of standing water in it.



Aerial View of WWTP3 (looking southeast, circa 1960)
(The figure was inserted into the transcript. Mr. Siard pointed out some of the features in WWTP3)

Description of TNTA/TNTB Sewer Lines
TNTA Sewer Lines

I've sort of described these sewer lines already. In TNTA there was a northern line that went about 2,700 ft. due west then headed southwest about 1,500 ft. The more southern of these was about 3,800 ft. It was more direct from TNTA to WWTP1. TNTB sewer lines extended 5,500 feet, two parallel lines about 10 feet apart. These were underground typically about 3 to 5 feet. They were wood stave construction, constructed like barrels. The wood-stave construction was used in the late 1800s until approximately 1950s. The wood was fairly chemical-resistant

and when it got wet it swelled and it made a tighter seal. The waste material when it was pumped, was under pressure, the wood-stave lines were able to hold the seal, and it was probably cheaper than some other materials, too. We did an investigation at each of these four sites

There was a site investigation in WWTP1 back in 1999. An RI was recommended because of a detection of TNT in soil in one location.

The Remedial Investigation (RI) looked at surface soil, subsurface soil, surface water, sediment, overburden/shale groundwater, and deeper limestone groundwater are evaluated in these reports here:

- Site Characterization Report – 2011
- Baseline Human Health Risk Assessment – 2011
- Screening Level Ecological Risk Assessment – 2011

In WWTP3 we did the same thing, same history except that the RI was recommended to evaluate detections of PAHs and PCBs in soil.

For the TNTA sewer lines investigations, this was during the RI. We saw this as a potential data gap and wanted to make sure we addressed potential contamination. We collected surface soil, subsurface soil, overburden/shale groundwater, and limestone groundwater samples along the sewer line traces using a combination of test pits, soil borings, and field screening samples.

During RI, we identified two potential "hot spots." One was at Test Pit Nos. 27 and 33 (i.e., TP-27 and TP-33) where we had elevated TNT concentrations at both locations. We went back and sampled these areas more intensely. What we found at TP-27 was additional TNT contamination and we were able to delineate that. That's really what the remedial action is to address, this area. Test pit 33, we went back and collected soil from the exact same location we collected from the first time and from around there and we found no more TNT contamination. We came to the conclusion that the one elevated hit was not representative of the soil there in general.

TNTB Sewer Lines Investigation

For the TNTB sewer line, again we looked at surface soil, subsurface soil, and overburden/shale, groundwater and essentially we found no contamination in the soil and nothing in the overburden/shale and groundwater. The decision was made not to sample deeper limestone groundwater.

Human Health Risk Assessment

We did a human health risk assessment separately for each of these four sites. I am going to lump the results for WWTP1, WWTP3 and TNTB sewer lines

together and essentially, exposure to surface soil, subsurface soil, surface water and sediment presents no unacceptable risks for any of the receptors.

In the case of WWTP3, this reflects the soil removal done by NASA to remove the PAH-contaminated soil. As a matter of course, we evaluated each of these areas assuming that in each of these areas groundwater would be used as a tap water source. So what we found was household use of groundwater would result in unacceptable risks and hazards, but the groundwater is not potable. The risk driving chemicals in the groundwater are not DOD-related and appear to be naturally occurring in the overburden shale. The limestone bedrock groundwater is of naturally poor quality with petroleum hydrocarbons and hydrogen sulfide. The overburden/shale and limestone units have insufficient yield, making exposure to groundwater implausible.

Now for the TNTA sewer line, we'll subdivide the soil evaluation into two areas:

- Outside the TP-27 area, basically exposure to surface soil, and other media except groundwater presents no unacceptable risk for any receptor and meets Plum Brook risk goals.

- Inside the TP-27 area exposure to TNT in surface soil results in the exceedance of Plum Brook cancer and noncancer risk goals. Household use of groundwater would result in unacceptable risks and/or hazards, but the groundwater is not potable, the risk-driving chemicals are not DOD-related, it has insufficient yield, and so forth.

Ecological Risk Assessment

We did an ecological risk assessment for each of these areas and in each case, we found no stressed vegetation or other signs of environmental stress. The potential for adverse ecological effects at any of the four areas is considered low.

Feasibility Study

Again, I've already said this, no DOD action is required for any environmental media, and there are no unacceptable human health or environmental risks or hazards. Risk-drivers in groundwater are not DOD-related and appear to be naturally occurring, and potable use of groundwater is implausible due to insufficient yield and naturally poor quality.

TNTA sewer lines remediation of shallow soil (0 to 2 ft) contaminated with TNT is required in the vicinity of the TP-27 hot spot. No action is required elsewhere for soil. No action is required for any other TNTA sewer line media.

In the Feasibility Study, we developed four remedial alternatives and did a detailed analysis of these. I am just going to go through these quickly. The first

alternative is No Action. It's required by NCP to have a no action alternative as a baseline comparison. Alternative 2, and this is the preferred alternative, consists of excavation and off-site disposal. Alternative 3 consists of excavation, windrow composting and on-site disposal and alternative 4 consists of excavation, alkaline hydrolysis and on-site disposal.

Looking at the costs and duration in comparing these alternatives, doing nothing doesn't cost anything; the least expensive is excavation and off-site disposal. It's a fair amount less than the other alternatives in a relative sense and it's also shortest in duration.

Summary of Evaluated Alternatives: Costs and Durations

Alternative No.	Description	Cost	Duration (Months)
1	No Further Action	$0	0
2	Excavation and Off-Site Disposal	$279,000	12
3	Excavation, Windrow Composting, and On-Site Disposal	$409,000	14
4	Excavation, Alkaline Hydrolysis, and On-Site Disposal	$643,000	17

I'll go through each one of these (alternatives) here. *(The figure was inserted into the transcript. Mr. Siard reviewed the costs.)*

Alternative 1, No Action, is required by NCP, it does not reduce human health risks to levels considered acceptable, it does not employ removal, containment, or treatment actions that mitigate impact of source areas on receptors or other media, and therefore it is not recommended.

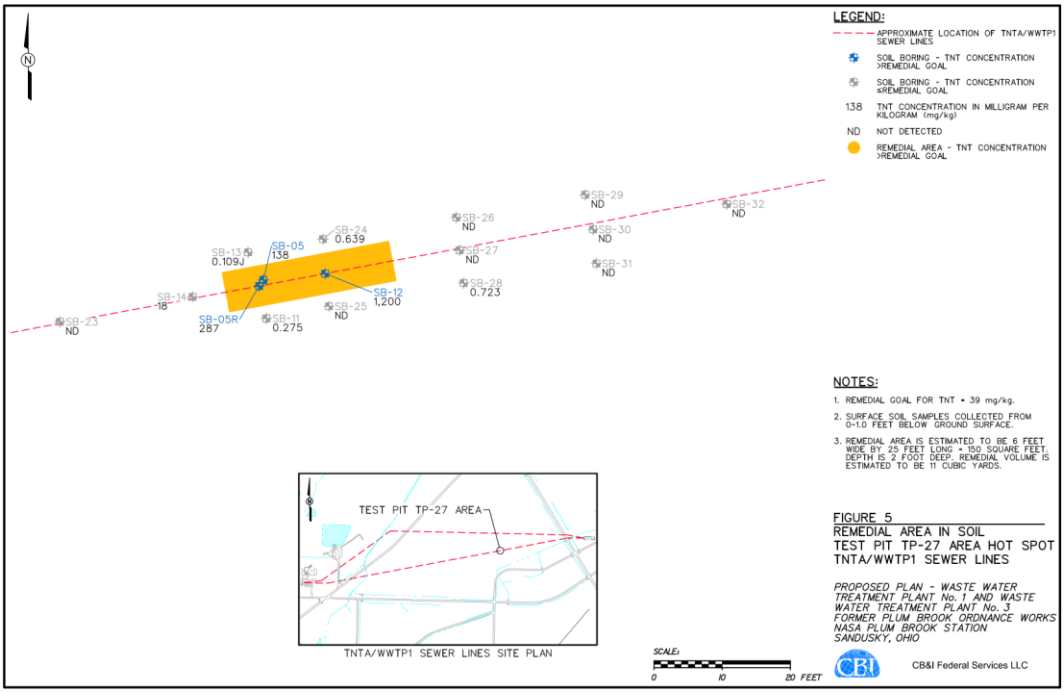
Alternative 2, the preferred alternative, consists of excavation of 11 cy of TNT contaminated soil, disposal off-site at a non-hazardous waste landfill (Erie County Landfill) and backfill with clean soil.

Alternative 3 consists of excavation, windrow composting and on-site disposal. We excavate the TNT-contaminated soil, treat it using windrow composting until

it meets the TNT remediation goal of 39 ppm and backfill the excavation with the composted material.

Alternative 4 consists of excavation, alkaline hydrolysis, and on-site disposal. This is the same as using composting only we're using an alkaline agent instead of composting technology.

This is to show the area of TNT contamination, here is an area of the sewer line, this right here is the TNTA settling basin, this is WWTP1. It's along the southern sewer line trace and this is the area that we delineated and requires remediation to a depth of about 2 feet. This is an area of about 25 x 10 feet, pretty small area.



Extent of TNT Soil Contamination at TNTA/WWTP1 Sewer Lines (TP-27 Hot Spot) *(The figure was inserted into the transcript. Mr. Siard pointed out the contamination area at TNTA sewer lines)*

Remedial performance of the Proposed Action, Alternative 2 is protective of human health and the environment, it complies with Applicable or Relevant and Appropriate Requirements (ARARs), it permanently removes COCs at concentrations above remediation goals, it limits risk to the community or environment during implementation through best management practices and it is technically and administratively implementable.

Alternative 2 can be implemented in approximately 12 months, including work plan development, mobilization and excavation, off-site disposal, backfill with clean soil, site restoration, demobilization, and all the reporting that is necessary.

This is a breakdown of the costs for the proposed action (Mr. Siard referred to the table below)

Item		
	1. Work plans and procurement	$95,000
	2. Mobilize/demobilize equipment and personnel	$5,000
	3. Site Preparation	$18,774
	4. Excavation of contaminated soil	$7,707
	5. Off-site disposal	$72,607
	6. Site restoration	$7,808
	Subtotal	**$206,896**
	Contingency (30%)	$62,068.80
	Contractor Oversight (5%)	$10,344.80
Total Cost		$279,000.00

With that, this is the conclusion. If there are any questions, I'd be glad to try to answer them, if you have any comments, remember we kick-off the comment period today (March 26, 2015) and it ends April 30, 2015. Those comments should be addressed to Rick Meadows, and his contact information is in the Proposed Plan.

Any questions at all?

Question 1 *- Sharon Barnes – You're excavating 11 yards, how can the off-site disposal be $72,000 dollars? You keep saying that's 11 yards, but that's one big dump truck.*

Response to Question 1 - Tom Siard – I'd have to look at the calculations and the assumptions that went into that. I'm sorry I can't answer that question at this point.

Response to Question 1 - Lisa Humphreys - I can add that even if that number is a tad off, the bulk of the price really isn't for the soil, it's the timing, the work plans, it's the reporting, it takes us 4-5 months just to get work plans prepared and approved and the same goes on the other end for construction reporting. They'll be out there digging, they'll be done in the morning, but you have to stockpile the soil, you have to sample it, you have to do confirmation sampling. That could be done in a couple of weeks, but it's the lag time for the equipment that is still going to be on-site while the confirmation sampling being done, may have to dig some more. There are a lot of built-in contingencies because we didn't want to pull the equipment off, it's such a small project, but you never can tell what you're going to need longer. So that off-site disposal number could also include stockpiling, confirmation sampling and different things would increase the price. Maybe not $72,000, but with the contingencies and stuff on there, that

$279,000 was high enough to make sure we had everything we need to award the contract to get it done. We thought that was a pretty good number. And that off-site disposal is probably not just the disposal and a truck, it has other costs included.

Response to Question 1 - Tom Siard – Also, you bring up about costs, I meant to mention the relative costs. As you said, this was such a small amount of soil and in this case, the dig and haul off-site is the least expensive. If there were a larger amount of soil, perhaps a treatment alternative maybe less expensive where there is a larger amount of soil.

Sharon Barnes – That absolutely makes sense.

Comment on Question 1– Rick Meadows – I haven't seen the costs for the construction completion report, so I don't know where that gets factored in. But I think this raises a valid point and I think we need to take that back and look at that estimate in more detail and get you a response back.

Response – Sharon Barnes – I understand. It's just that the average person looking at it……

Response – Rick Meadows – It jumps out.

***Question 2** - John Blakeman – I consult with NASA and advise NASA on planting appropriate of species. There is mention of $7,800 for site restoration. Does that include the vegetation? Importantly, it would be appropriate to use the right grasses that are native, is that in the plan yet or is that in the future?*

Response to Question 2 – Tom Siard – I don't remember if we assumed that native species….that would be something that would be part of the remedial design.

Response to Question 2 – Rick Meadows – When the contract is awarded it will include the restoration of the site.

Response – John Blakeman – Thank you.

Tom Siard asked for any other questions and there were none.

Rick Meadows concluded the public meeting and reminded attendees that the public comment period ends on April 30. Any additional comments please feel free to get them to us, mail them in or email.

Proposed Plan Waste Water Treatment Plant No. 1 and Waste Water Treatment Plant No. 3 Former Plum Brook Ordnance Works Sandusky, Ohio

Public Meeting
26 March 2015

Presented by

Tom Siard
Risk Assessor
CB&I Federal Services LLC
Knoxville, TN

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Purpose of the WWTP1 and WWTP3 Proposed Plan

- Present the Preferred Alternative proposed for cleanup of contaminated soils along TNTA/WWTP1 Sewer Lines
  - Based on results of remedial investigation/feasibility study (RI/FS) completed for WWTP1 and WWTP3
  - Prevents human exposure to soil containing TNT, identified as the chemical of concern (COC), at levels above the remediation goal (39 mg/kg)
- Provide for public comment

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Community Involvement

- The Proposed Plan is made available to the public for a review and comment period
- At the end of the review and comment period (30 April 2015), all comments will be:
  - Included in the Responsiveness Summary of the WWTP1 and WWTP3 Decision Document
  - Documented in the Administrative Record (AR)
  - Evaluated for consideration in final selection of remedial alternative presented in the Decision Document

WWTP1/WWTP3 Required Remediation

- Soil remediation is required because of TNT contamination in shallow soil (~ 0 to 2 ft) along the TNTA/WWTP1 Sewer Lines
- No action is required for deeper soil, sediment, surface water or groundwater associated with TNTA/WWTP1 Sewer Lines
- No action is required for WWTP1, WWTP3, or TNTB/WWTP1 Sewer Lines

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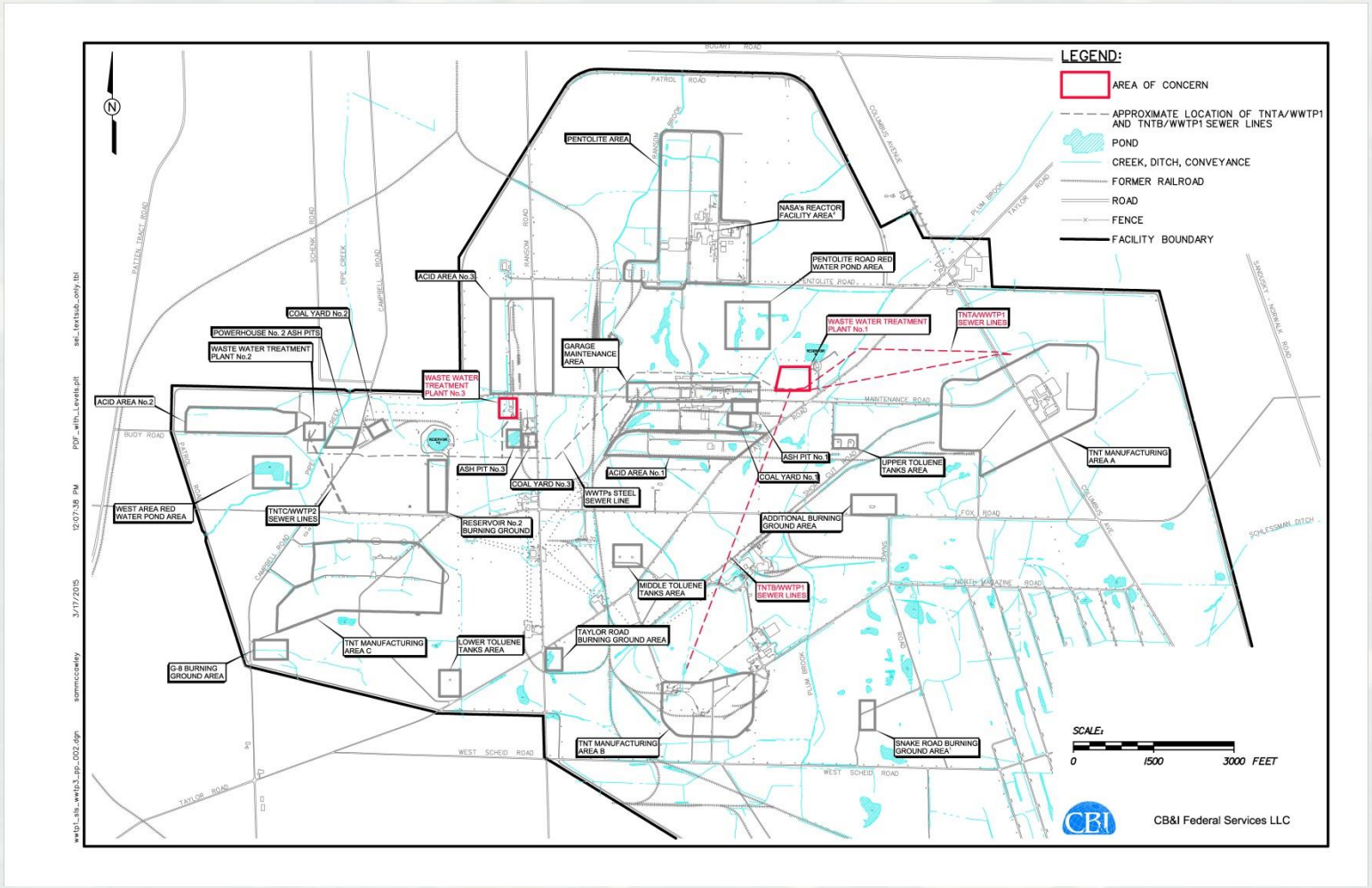
WWTP1 and WWTP3 Locations



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Summary of Preferred Remedial Alternative for TNTA/WWTP1 Sewer Lines

- USACE proposes to complete remedial action consisting of:
  - Excavation of approx. 11 CY of soil (0 to 2 feet)
  - Off-site disposal of all excavated soil at an approved solid waste landfill
  - Backfill excavation with imported clean fill
- The selected response action will be documented by the USACE in a Decision Document for WWTP1 and WWTP3

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History/Description of WWTP1

- Included waste and chemical storage tanks, evaporator building, and incinerator
- Received TNT production waste water
  - From TNTA and TNTB settling basins via sewer lines
  - Consisting of spent sulfuric and nitric acids, and red water from TNT purification
  - TNT production waste from TNTA and TNTB was:
    - Chemically treated (neutralized) and incinerated at WWTP1
      - Residual ash disposed in Ash Pit No. 1, or
    - Sent to WWTP3 for treatment/disposal, or
    - During periods of high production, was disposed untreated in the Pentolite Road Red Water Pond

History/Description of WWTP1 (cont'd)

- Facility covered approximately 2 acres
- Post-Production Description
  - All aboveground structures dismantled and removed between 1958 and 1964
  - Fill was brought in to cover remnants of building foundations and tank pads
  - Area is essentially flat, mostly covered in dense scrub thicket and old field vegetation
  - Two drainage ditches are present
    - Typically dry
    - Converge toward the north-northwest, and drain into an unnamed tributary to Plum Brook

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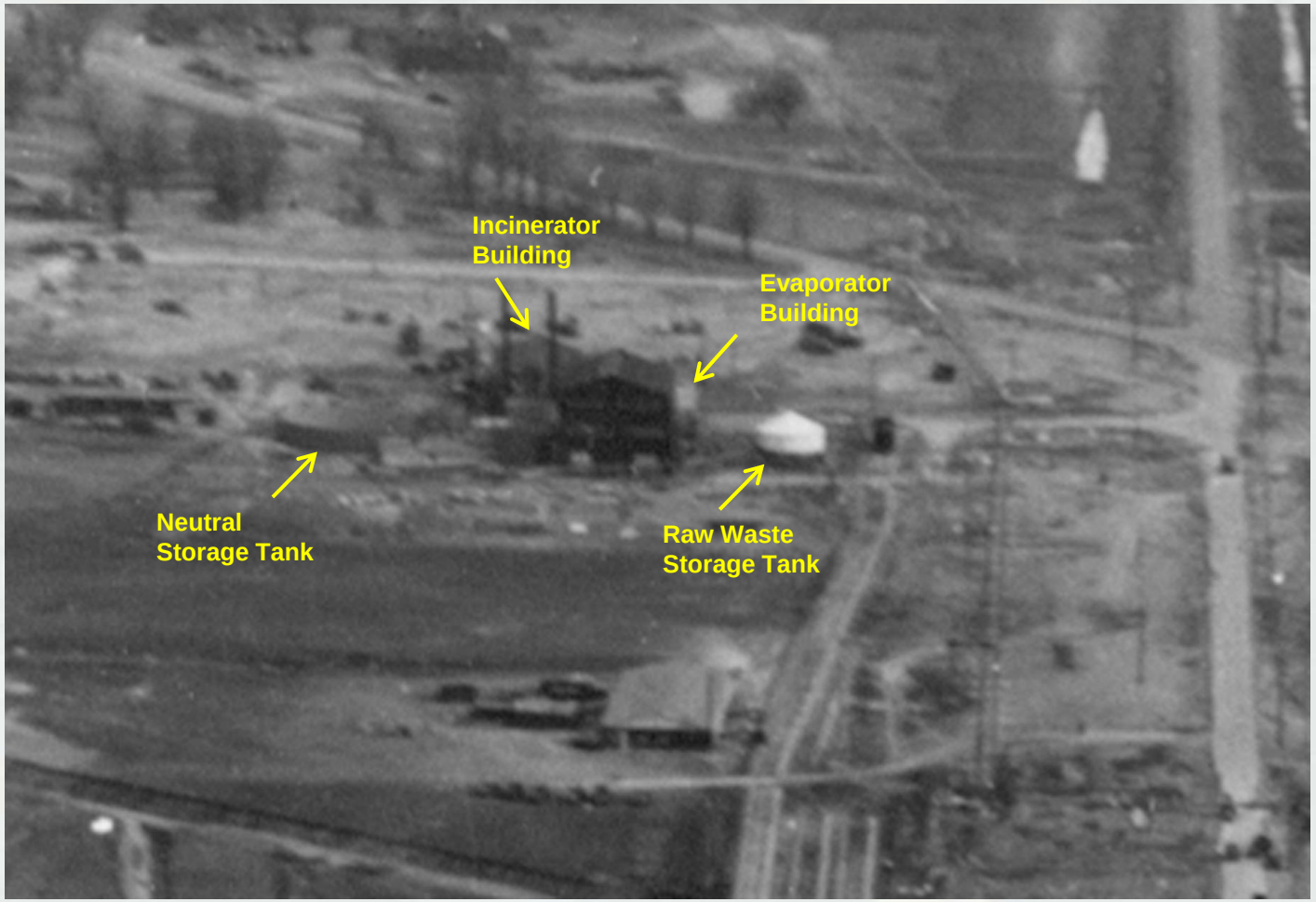
Aerial View of WWTP1
(looking east, January 1942)



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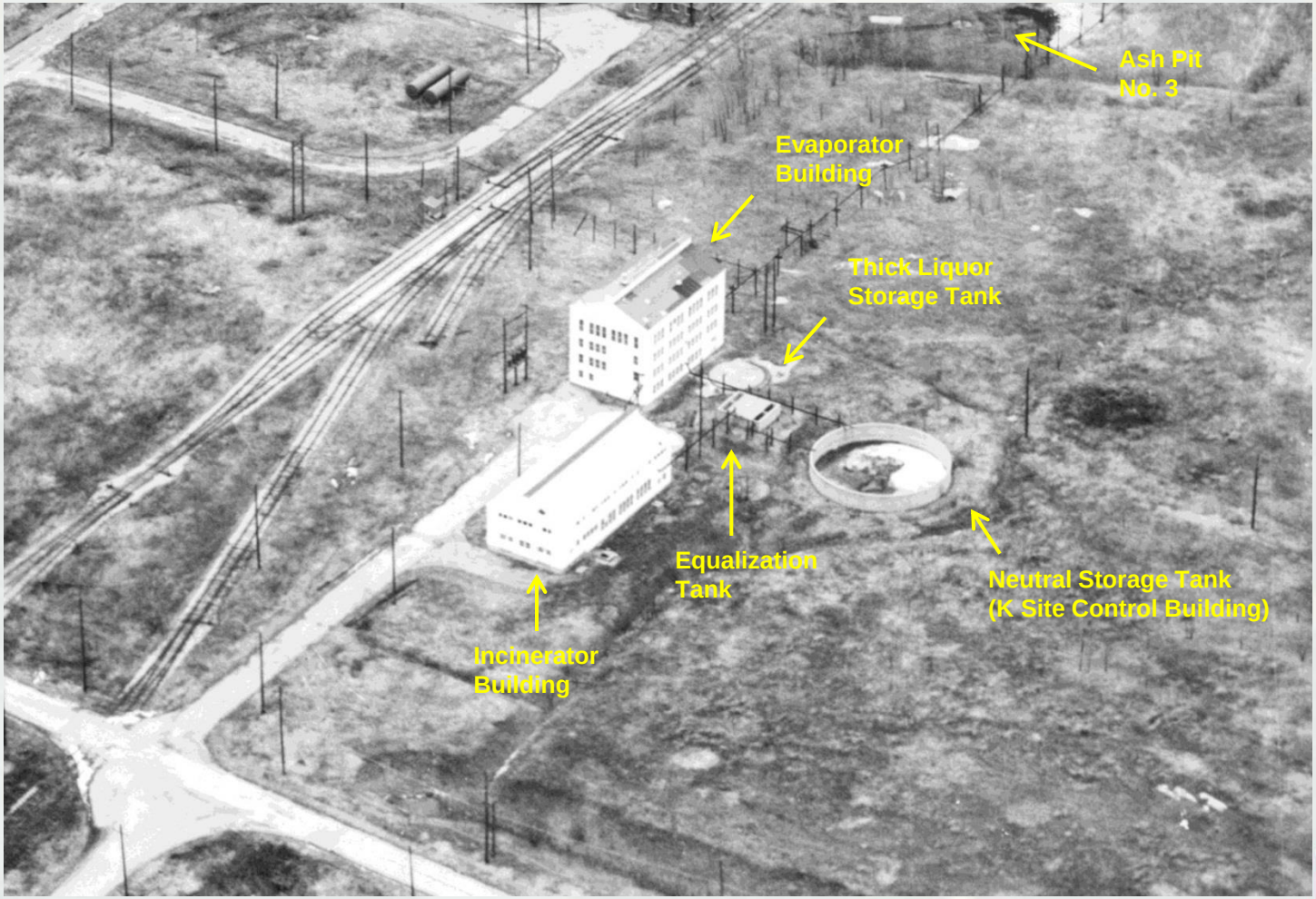
History/Description of WWTP3

- Received “overflow” TNT production waste water
  - From WWTP1 and WWTP2 via steel sewer lines
  - Used when capacity of WWTP1 or WWTP2 was maxed out
  - Neutralized waste water was thickened by evaporation and incinerated
    - Residual ash disposed in Ash Pit No. 3
    - Was not discharged to red water ponds
- Included waste and chemical storage tanks, evaporator building, and incinerator
- Facility covered approximately 2 acres

History/Description of WWTP3 (cont'd)

- Post-Production Description
  - All aboveground structures dismantled and removed between 1958 and 1964, except neutralization tank
    - Neutralization tank re-used by NASA as the K-Site Control Building
    - Tank/building removed by NASA in 2012 along with polycyclic aromatic hydrocarbon (PAH) impacted soil
  - No foundations were encountered
  - Area is essentially flat, mostly covered in upland old field vegetation
  - A drainage ditch is present to the west
    - Contains a few inches of standing water
    - Apparently flows north to Pipe Creek

Aerial View of WWTP3
(looking southeast, circa 1960)



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History/Description of TNTA/WWTP1 and TNTB/WWTP1 Sewer Lines

- TNTA/WWTP1 Sewer Lines
  - Northern line extended west ~2,700 ft. before angling southwest to WWTP1 for ~1,500 ft
  - Southern line extended west-southwest for ~3,800 ft
    - Added after northern line became clogged
- TNTB/WWTP1 Sewer Lines
  - Extended ~5,500 feet north from TNTB to WWTP1
  - Two parallel lines approximately 10 ft apart
- Wood-stave construction
- Typically 3 to 5 ft below the surface

Summary of WWTP1 Investigations

- Site Investigation
  - 9 surface soil and 4 sediment samples were collected in 1999
  - RI was recommended because of a detection of TNT in soil
- Remedial Investigation (RI)
  - Surface soil, subsurface soil, surface water, sediment, overburden/shale groundwater, and limestone groundwater samples were collected/analyzed
    - Site Characterization Report – 2011
    - Baseline Human Health Risk Assessment – 2011
    - Screening Level Ecological Risk Assessment – 2011

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Summary of WWTP3 Investigations

- Site Investigation
  - 9 surface soil and 2 sediment samples were collected in 1999
  - RI was recommended to further evaluate detections of PAHs and PCBs in soil
- Remedial Investigation (RI)
  - Surface soil, subsurface soil, surface water, overburden/ shale groundwater and limestone groundwater samples were collected/analyzed
    - Site Characterization Report – 2011
    - Baseline Human Health Risk Assessment – 2013
    - Screening Level Ecological Risk Assessment – 2013

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Summary of TNA/WWTP1 Sewer Lines Investigations

- Remedial Investigation (RI)
  - Surface soil, subsurface soil, overburden/shale groundwater, and limestone groundwater samples were collected/analyzed.
    - Site Characterization Report – 2012
    - Baseline Human Health Risk Assessment – 2012
    - Screening Level Ecological Risk Assessment – 2012
  - RI includes additional TNT "hot spot" delineation soil sampling near Test Pit Nos. 27 and 33 (i.e., TP-27 and TP-33)
    - Vicinity of TP-27 was found to be a TNT hot spot area; the delineation sampling confirmed additional surface soil contamination in the vicinity of TP-27
    - Vicinity of TP-33 was found not to be a hot spot area; the single elevated TNT concentration was not confirmed by delineation sampling

Summary of TNTB/WWTP1 Sewer Lines Investigations

- Remedial Investigation (RI)
  - Surface soil, subsurface soil, and overburden/shale groundwater samples were collected/analyzed
    - Site Characterization Report – 2012
    - Baseline Human Health Risk Assessment – 2011
    - Screening Level Ecological Risk Assessment – 2011
  - Decision was made not to sample limestone groundwater because no DOD-related contamination was found in the overlying overburden/shale groundwater

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Summary of Human Health Risk Assessment Results

- **WWTP1, WWTP3, and TNTB/WWTP1 Sewer Lines**
  - Exposure to surface soil, subsurface soil, surface water, and sediment presents no unacceptable risks for any receptor
    - The results for WWTP3 reflect the 2012 removal of PAH-contaminated soil performed by NASA as part of the K-Site control building removal
  - Household use of groundwater would result in unacceptable risks and hazards, but the groundwater is not potable:
    - Risk-driving chemicals in overburden/shale are not DOD-related
    - Limestone bedrock groundwater is of naturally poor quality
    - Overburden/shale and limestone units have insufficient yield, making exposure to groundwater implausible
    - Note: Limestone groundwater was not sampled at TNTB/WWTP1 because no overburden/shale groundwater contamination was observed

Summary of Human Health Risk Assessment Results (cont'd)

- **TNTA/WWTP1 Sewer Lines**
  - Outside the TP-27 Area – Exposure to surface soil, subsurface soil, surface water, and sediment presents no unacceptable risk for any receptor (meets PBOW goals)
  - Inside the TP-27 Area – Exposure to TNT in surface soil results in the exceedance of PBOW cancer and noncancer risk goals
  - Household use of groundwater would result in unacceptable risks and/or hazards, but the groundwater is not potable:
    - Risk-driving chemicals are not DOD-related
    - Limestone bedrock groundwater is of naturally poor quality
    - Overburden/shale and limestone units have insufficient yield, making exposure to groundwater implausible

Summary of Ecological Risk Assessment Results

- **WWTP1, WWTP3, TNTA/WWTP1 Sewer Lines and TNTB/WWTP1 Sewer Lines**
  - No stressed vegetation or other signs of environmental stress were observed
  - The potential for adverse ecological effects at any of the four site areas is regarded as low

Summary of Feasibility Studies

- **WWTP1, WWTP3, and TNTB/WWTP1 Sewer Lines**
  - No DOD action is required for any environmental media
    - No unacceptable human health or environmental risks/hazards
    - Risk-drivers in groundwater are not DOD-related and appear to be naturally occurring
    - Potable use of groundwater is implausible (insufficient yield, naturally poor quality)
- **TNTA/WWTP1 Sewer Lines**
  - Remediation of shallow soil (0 to 2 ft) contaminated with TNT is required in the vicinity of the TP-27 hot spot
  - No action is required elsewhere for soil
  - No action is required for groundwater, surface water, or sediment

Summary of Evaluated Alternatives

- Alternative 1 – No Action
- Alternative 2 – Excavation and Off-Site Disposal (*Preferred Alternative*)
- Alternative 3 – Excavation, Windrow Composting, and On-Site Disposal
- Alternative 4 – Excavation, Alkaline Hydrolysis, and On-Site Disposal

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Summary of Evaluated Alternatives: Costs and Durations

Alternative No.	Description	Cost	Duration (Months)
1	No Further Action	$0	0
2	Excavation and Off-Site Disposal	$279,000	12
3	Excavation, Windrow Composting, and On-Site Disposal	$409,000	14
4	Excavation, Alkaline Hydrolysis, and On-Site Disposal	$643,000	17

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Alternative 1 Details

- No Action
  - Required for development by NCP
  - Does not reduce human health risks to levels considered acceptable by USEPA (threshold criterion)
  - Does not employ removal, containment, or treatment actions that mitigate impact of source areas on receptors or other media
  - Thus, No Action was not recommended

Alternative 2 Details
(Preferred Alternative)

- Excavation and Off-Site Disposal
  - Excavate approx. 11 CY of TNT-contaminated soil
  - Off-site disposal of approx. 11 CY of soil at nonhazardous waste landfill
  - Backfill with imported clean fill

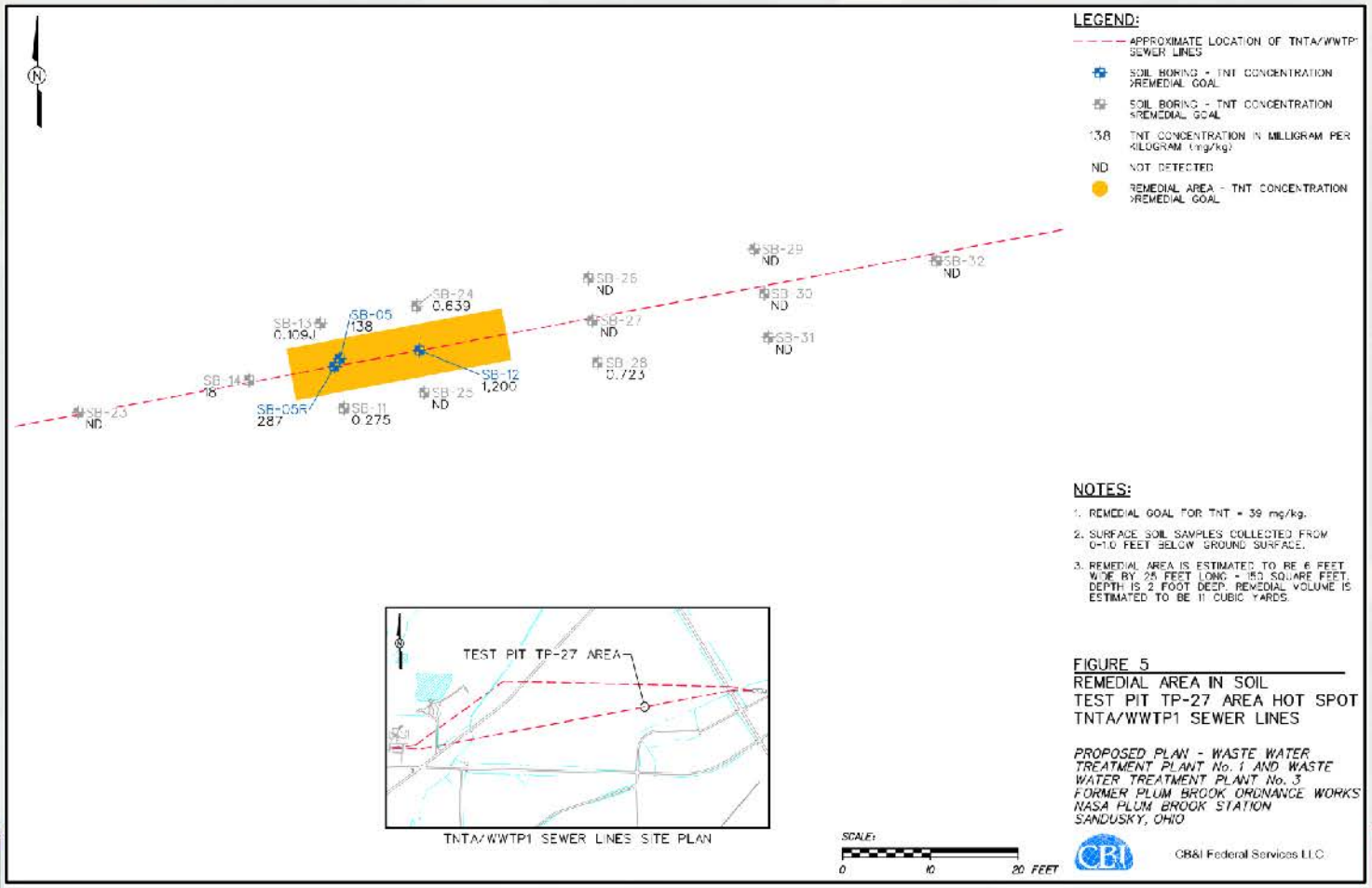
Alternative 3 Details

- Excavation, Windrow Composting, and On-Site Disposal
  - Excavate approx. 11 CY of TNT-contaminated soil
  - Windrow composting treatment of approx. 11 CY of contaminated soil until TNT remediation goal is met (39 mg/kg)
  - Backfill excavation with composted material that meets TNT remediation goal

Alternative 4 Details

- Excavation, Alkaline Hydrolysis, and On-Site Disposal
  - Excavate approx. 11 CY of TNT-contaminated soil
  - Alkaline hydrolysis treatment of approx. 11 CY of contaminated soil until remediation goal is met
  - Backfill excavation with alkaline-treated material that meets TNT remediation goal

Extent of TNT Soil Contamination at TNTA/WWTP1 Sewer Lines (TP-27 Hot Spot)



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Remedial Performance of Proposed Action

- Alternative 2 is protective of human health and the environment
- Complies with Applicable or Relevant and Appropriate Requirements (ARARs)
- Permanently removes COCs at concentrations above remediation goals from the TNTA/WWTP1 Sewer Lines
- Limits risk to the community or environment during implementation through best management practices
- Is technically & administratively implementable
  - ► No engineering or regulatory restrictions prevent implementation
  - ► Equipment required is readily available

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Proposed Action Schedule

- Alternative 2 can be implemented in approx. 12 months
  - Work plan development
  - Mobilization and excavation of 11 CY of soil
  - Off-site disposal of nonhazardous soil (11 CY)
  - Backfill with imported clean soil
  - Site restoration
  - Demobilization

Proposed Action Costs

Item		
	1. Work plans and procurement	$95,000
	2. Mobilize/demobilize equipment and personnel	$5,000
	3. Site Preparation	$18,774
	4. Excavation of contaminated soil	$7,707
	5. Off-site disposal	$72,607
	6. Site restoration	$7,808
	Subtotal	**$206,896**
	Contingency (30%)	$62,068.80
	Contractor Oversight (5%)	$10,344.80
Total Cost		$279,000.00

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