Steven Scharf - NG OU3 Site Area FFS Alternative - additional information

From: "Wittek, William" <William.Wittek@arcadis-us.com>
To: jay.tolle@ngc.com; john.cofman@ngc.com; kent.smith@ngc.com; sxscharf@gw....
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Subject: NG OU3 Site Area FFS Alternative - additional information
CC: chenry@emagin-inc.com; Carlo.SanGiovanni@arcadis-us.com; Mike.Wolfert@ar...
Attachments: Fig05 GW TVOCs.pdf; Fig01 lpz_gws_voc areas.pdf; Fig02 0-2ftbgs.pdf; Fig03 2-6 10ftbgs.pdf; Fig04 pcb distribution.pdf; Table 1.pdf; FFS Park Alternatives_Jan 2009.pdf

Steve,
As a follow-up to our recent conversations, we are providing you the following information on the four (4) NG OU3 FFS Alternatives for the Park:

- The description of the four preliminary remedial alternatives from our January Teleconference Agenda (attached).
- Table 1 (attached) provides additional information about what is included in each of the four FFS Park Alternatives.
- Figures 1 thru 5 (attached) depicts the extent of areas that will be addressed by the FFS Park Alternatives, as well as the types of remedial technologies being considered.

In addition, during our last call you specifically inquired about four types of soils/materials and whether they would be addressed in the FFS. A brief response to your questions regarding the four soils/materials is provided below:

1. Oil Coated Soils:
    a. Based on field observations and boring logs; the majority of the soils noted to have a “sheen” or “coated in oil” are within the vadose zone VOC spots which will be addressed in the FFS. The remainder are located in small, isolated areas and do not pose an unacceptable risk to human health, per the HHRA.

2. Metals-Impacted Soils:
    b. Based on the HHRA, no metals-impacted soils below 2 feet pose an unacceptable risk to human health.
    c. Any potential impacts to the groundwater can be managed via the GW IRM, and when the GW IRM is shut-off, by monitored natural attenuation.

3. Blue or Blue-green Sludge-like Material:
    d. Is not a listed waste,
    e. Is not characteristically hazardous, and
    f. Based on the HHRA, does not pose an unacceptable risk to human health.

4. Debris:
    g. Debris, as defined by what the TOWN was removing in their excavations (i.e. construction debris, etc.), does not pose an unacceptable risk.

NG and their representatives look forward to meeting with you, once you’ve had a chance to review this information, to discuss your thoughts on the preliminary Park FFS remediation alternatives.

Feel free to contact me if you have questions on any of the information contained in this email.

William S. Wittek
Senior Engineer
ARCADIS

ARCADIS of New York, Inc.
Two Huntington Quadrangle

Suite 1S10
Melville, New York 11747
Phone: 631.391.5270
Cell: 516.315.6226
Fax: 631.249.7610
email: William.Wittek@ARCADIS-us.com

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Preliminary Remedial Alternatives

Alternative 1: No further action

- Operate the soil gas IRM and groundwater IRM to prevent migration of groundwater with total VOC (TVOC) concentrations >50 ug/L from migrating off-site.
- Develop and implement institutional controls, e.g. environmental easement, to prevent access to contaminated soil or groundwater.

Alternative 2: No unacceptable exposure, with VOC hot-spot (source) treatment

- Operate the soil gas IRM and groundwater IRM to prevent migration of groundwater with TVOC concentrations >50 ug/L from migrating off-site.
- Excavate soil 0-2 ft bls where PCBs, metals, or VOCs exceed NYSDEC restricted residential criteria.
- No soil treatment 2-6 ft bls (or 10 ft bls, where subsurface utilities are deeper) necessary, based on conclusions of site-specific human health risk assessment for construction and utility workers. Human health risk assessment assumes no exposure below utility depths.
- Treat the vadose zone, low permeability zone, and groundwater hot spots (source), where total VOC (TVOC) concentrations exceed 10 mg/kg (soil) or 10 mg/L (groundwater). Treatment options under consideration are in-situ thermal desorption (ISTD), soil mixing with zero valent iron / clay (ZVI/clay), and soil vapor extraction / multi-phase extraction (SVE/MPE).
- Develop and implement institutional controls, e.g. environmental easement to prevent access to contaminated soil or groundwater.

Alternative 3: No unacceptable exposure, with VOC hot-spot (source) treatment and PCB hot-spot treatment to 6 or 10-ft depth, depending on depth of utilities

- Operate the soil gas IRM and groundwater IRM to prevent migration of groundwater with TVOC concentrations >50 ug/L from migrating off-site.
- Excavate soil 0-2 ft bls where PCBs, VOCs, or metals exceed the restricted residential criteria.
- No soil treatment 2-6 ft bls (or 10 ft bls, where utilities are deeper) necessary, based on conclusions of site-specific human health risk assessment, except where PCBs >/= 50 ppm. Human health risk assessment assumes no exposure below utility depths.
- Treat the vadose zone, low permeability zone, and groundwater where TVOC concentrations >10 mg/kg (soil) or 10 mg/L (groundwater). Treatment options under consideration are ISTD and ZVI/clay. *Why did we exclude soil vapor extraction / multi-phase extraction (SVE/MPE) from this alternative?*
- Develop and implement institutional controls, e.g. environmental easement to prevent access to contaminated soil or groundwater.

Alternative 4: Remediate to Unrestricted Use Criteria

- Operate the soil gas IRM and groundwater IRM to prevent migration of groundwater with total VOC (TVOC) concentrations >50 ug/L from migrating off-site.
- Excavate soils from 0-55 ft where PCBs, VOCs, or metals exceed unrestricted use criteria.
- Implement in-situ chemical oxidation for all groundwater with TVOCs >5 ug/L.

NG Access Road

- NYSDEC indicated that restricted residential applies

Residential Properties

- Excavate soil 0-2 ft bls where PCBs exceed the NYSDEC residential criteria.

Table 1: Summary of Remedial Alternatives - Park Soils, Site Area Soil Gas, and Site Area Groundwater, Site Area Focused Feasibility Study, OU3 (Former Grumman Settling Ponds), Bethpage, New York

	1 **No further action**	**2** **No unacceptable exposure, with VOC hot spot (source) treatment**	**3** **No unacceptable exposure, with VOC hot spot (source) treatment and PCB hot spot treatment to depth of utilities**	**4** **Unrestricted Use**
Depth Interval (feet)	• Operate groundwater IRM • Operate soil gas IRM • Institutional controls • Long term monitoring	• Operate SG and GW IRMs • Excavate soil 0-2 ft for all parameters > Restricted-Residential SCOs [1/] • No soil treatment necessary below 2 ft based on HHRA[2/] • Treat soil & groundwater below 2 ft for VOCs >10ppm • Institutional controls • Once GW IRM is shut-off, monitored natural attenuation for metals and VOCs	• Same as Alternative 2, with the addition of soil treatment 2-6 ft (or 10 ft, where utilities are deeper) for PCBs >50 ppm	• Operate SG and GW IRMs • Excavate soil from 0-55 ft where PCBs, VOCs, or metals exceed unrestricted use SCOs [1/] • Treat groundwater for TVOCs > 5 ppb
PCB Concentrations Triggering Cleanup				
0-2	N/A	1 ppm Restricted-Residential	1 ppm Restricted-Residential	0.1 ppm Unrestricted Use
2-6 [3/]		None based on Site-specific HHRA[2/]	50 ppm[4/] Hazardous Waste Criterion	
6-55		N/A	N/A	
>55 (groundwater)				
Metals Concentrations Triggering Cleanup				
0-2	N/A	Restricted-Residential SCOs [1/]	Restricted-Residential SCOs [1/]	Unrestricted Use SCOs [1/]
2-6 [3/]		None based on Site-specific HHRA[2/]	None based on Site-specific HHRA[2/]	
6-55		N/A	N/A	
>55 (groundwater)				
VOC Concentrations Triggering Cleanup				
0-2	Assumes 30-yr operation of IRMs	Restricted-Residential SCOs	Restricted-Residential SCOs	Unrestricted Use SCOs for soil, 5 ppb for groundwater [6/]
2-62 (soil and groundwater)		10 ppm[5/] for hot spots	10 ppm[5/] for hot spots	

Table 1: Summary of Remedial Alternatives - Park Soils, Site Area Soil Gas, and Site Area Groundwater, Site Area Focused Feasibility Study, OU3 (Former Grumman Settling Ponds), Bethpage, New York

Notes:

[1/] Soil Cleanup Objectives (SCOs) provided in 6NYCRR Subpart 375-6 Remedial Program Soil Cleanup Objectives:
Restricted-Residential & Industrial Use SCOs provided in Table 375-6.8(b)
Unrestricted Use SCOs provided in Table 375-6.8(a)
[2/] HHRA = Human health risk assessment.
[3/] Excavation to 10 feet required in selected locations because of deeper utilities.
[4/] Target cleanup goal for PCBs is 10 mg/kg.
[5/] Target cleanup goals for VOCs are 1 mg/kg soil and 1 mg/L groundwater.
[6/] Depth is not constrained to 62' below grade surface.

LEGEND:

- NORTHROP GRUMMAN PROPERTY LINE
- FENCE
- APPROXIMATE LIMITS OF TOWN OF OYSTER BAY IRM PROGRAM
- bit. BITUMINOUS PAVEMENT
- AREAL EXTENT OF LPZ (45'-55' BGS) VOC HOT SPOT (>10 mg/kg TVOCs)
- AREAL EXTENT OF DEEP (20' -45' BGS) VADOSE ZONE VOC HOT SPOTS (>10 mg/kg TVOCs)
- AREAL EXTENT OF GROUNDWATER (55'-62' BGS) VOC HOT SPOT (>10 mg/L TVOCs)
- AREAL EXTENT OF OVER LAPPING LPZ & VADOSE ZONE HOT SPOTS
- AREAL EXTENT OF OVER LAPPING GROUNDWATER & LPZ VOC HOT SPOTS
- AREAL EXTENT OF OVER LAPPING GROUNDWATER, LPZ, & VADOSE ZONE VOC HOT SPOTS
- TVOCs TOTAL VOLATILE ORGANIC COMPOUNDS
- BGS BELOW GROUND SURFACE

NOTES:

1. PARK FEATURES SHOWN WERE PRESENT PRIOR TO TOWN OF OYSTER BAY REDEVELOPMENT IN 2005.
2. VADOSE ZONE VOC HOT SPOTS SHOWN ARE FROM 20 TO 45 FEET DEEP. SHALLOW (0 TO 20 FEET) NOT SHOWN FOR CLARITY. SHALLOW HOT SPOT AREAS ARE SMALLER AND ARE LOCATED WITHIN THE DEEPER HOT SPOTS.

ALTERNATIVES 2 & 3 ONLY

- Treatment of VOC Hot Spots (2' - 62' bgs) for soils in Groundwater with TVOC impacts >10 ppm

- Technologies being considered:

- Combination of SVE (vadose zone soils)/ MPE (LPZ and perched water)/ISCO (Groundwater)
- In-situ Thermal Remediation
- Stabilization and Treatment (Zero-valent Iron and Bentonite Clay (ZVI/Clay))

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VOC HOT SPOT AREAS

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FIGURE 1

LEGEND:

- NORTHROP GRUMMAN PROPERTY LINE
- FENCE
- bit. — BITUMINOUS PAVEMENT
- EXTENT OF METALS IN SOIL (ABOVE RESTRICTED-RESIDENTIAL CLEANUP OBJECTIVE)
- EXTENT OF PCBs IN SOIL (ABOVE RESTRICTED-RESIDENTIAL CLEANUP OBJECTIVE)
- EXTENT OF VOCs IN SOIL (ABOVE RESTRICTED-RESIDENTIAL CLEANUP OBJECTIVE)
- MP MP — EXTENT OF METALS AND PCBs IN SOIL
- PV PV — EXTENT OF PCBs AND VOCs IN SOIL
- EXTENT OF METALS, PCBs AND VOCs IN SOIL
- APPROXIMATE LIMITS OF TOWN OF OYSTER BAY IRM PROGRAM
- PCB — POLYCHLORINATED BIPHENYL
- VOC — VOLATILE ORGANIC COMPOUND
- BGS — BELOW GROUND SURFACE

NOTES:

1. PARK FEATURES SHOWN WERE PRESENT PRIOR TO TOWN OF OYSTER BAY REDEVELOPMENT IN 2005.

ALTERNATIVES 2 & 3 ONLY

- Excavation of soils (0 - 2' bgs) with COC impacts
  > Restricted Residential Clean-up Objectives

0 60' 120'
SCALE IN FEET

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THE APPROXIMATE EXTENT OF SOILS THAT WILL BE REMEDIATED 0-2 FEET BELOW GROUND SURFACE

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FIGURE
2

CHERRY AVENUE EXTENSION/AEROSPACE BOULEVARD

BALL FIELDS

grass

TENNIS COURTS

PADDLEBALL COURTS

grass

PLAYGROUND

stones

COVERED PICNIC AREA

gravel

grass

SWALE

RECHARGE BASIN

McKAY FIELD

ACCESS ROAD

SHUFFLE-BOARD

bit.

BASKETBALL

HORSE-SHOES

grass

bit.

GATE

bit.

grass

BASEBALL FIELD

bit.

ACCESS ROAD

bit.

PARKING LOT

bit.

10' EXCAVATION

10' EXCAVATION

PLAYGROUND

grass

grass

grass

FORMER GRUMMAN PLANT 24 ACCESS ROAD PROPERTY

EIGHTH ST.

SEVENTH ST.

SIXTH ST.

FTH ST.

H ST.

PARK MAIN ENTRANCE

BICYCLE RACKS

bit.

grass

STEWART AVE.

CHERRY AVEN.

BETHPAGE HIGH SCHOOL PROPERTY

grass

conc.

ICE RINK

OFFICE

monument

conc.

grass

POOL HOUSE

POOL AREA

grass

grass

STEWART AVE.

N

LEGEND:

- NORTHROP GRUMMAN PROPERTY LINE
- FENCE
- bit. BITUMINOUS PAVEMENT
- AREAS TO BE REMEDIATED TO 6 FT
- AREAS TO BE REMEDIATED TO 10 FT DUE TO DEEPER UTILITIES
- APPROXIMATE LIMITS OF TOWN OF OYSTER BAY IRM PROGRAM
- PCB POLYCHLORINATED BIPHENYL
- ppm PARTS PER MILLION
- FT FEET
- BGS BELOW GROUND SURFACE

NOTES:

1. PARK FEATURES SHOWN WERE PRESENT PRIOR TO TOWN OF OYSTER BAY REDEVELOPMENT IN 2005.

ALTERNATIVE 3 ONLY

- Treatments of soils (0' - 6' or 10' bgs) with PCB impacts >50 ppm
- **Technologies being considered:**
  - Excavation
  - Stabilization and Treatment (ZVI/Clay)

0 60' 120'
SCALE IN FEET

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THE APPROXIMATE EXTENT OF SOILS THAT WILL BE REMEDIATED 2 - 6 or 10 FEET BELOW GROUND SURFACE DUE TO PCBs >50ppm

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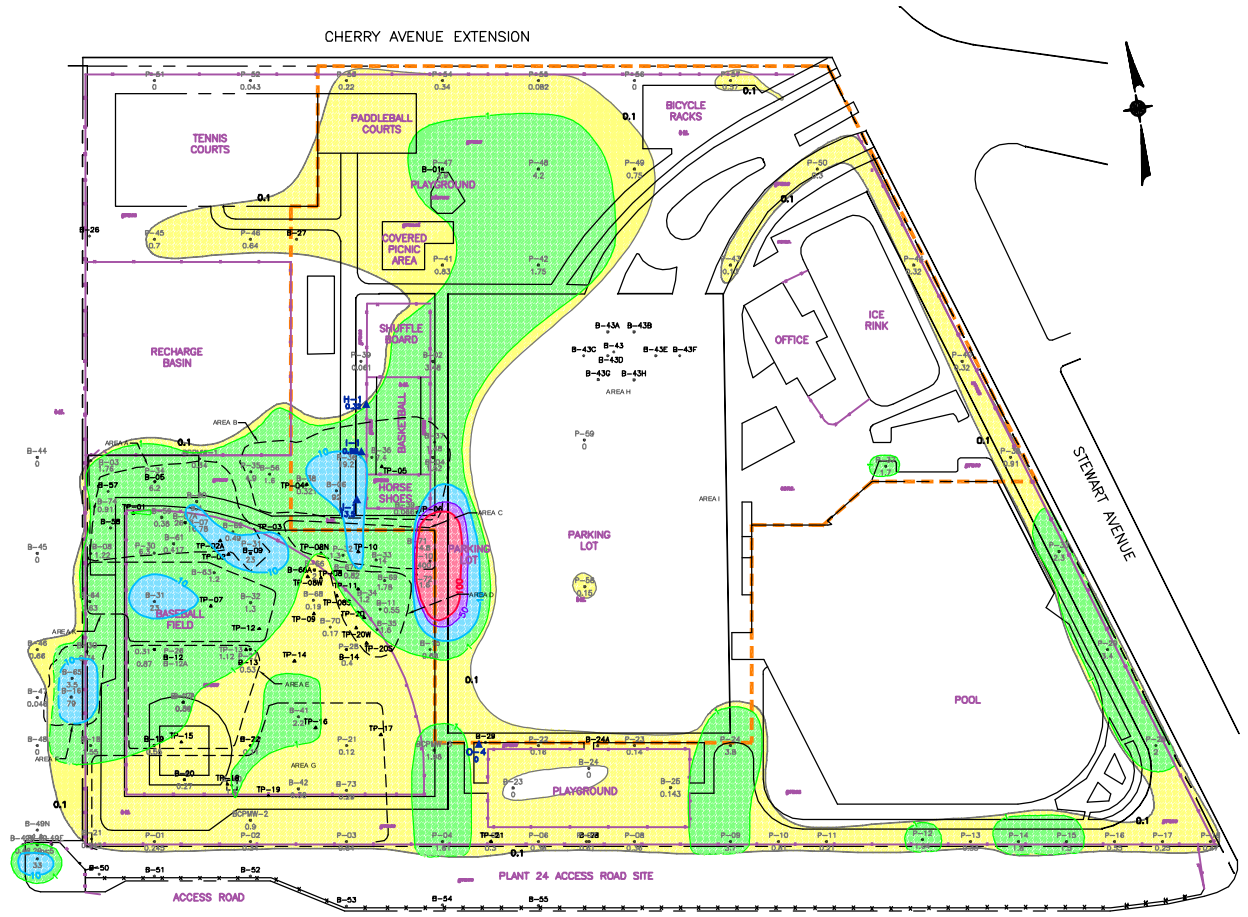
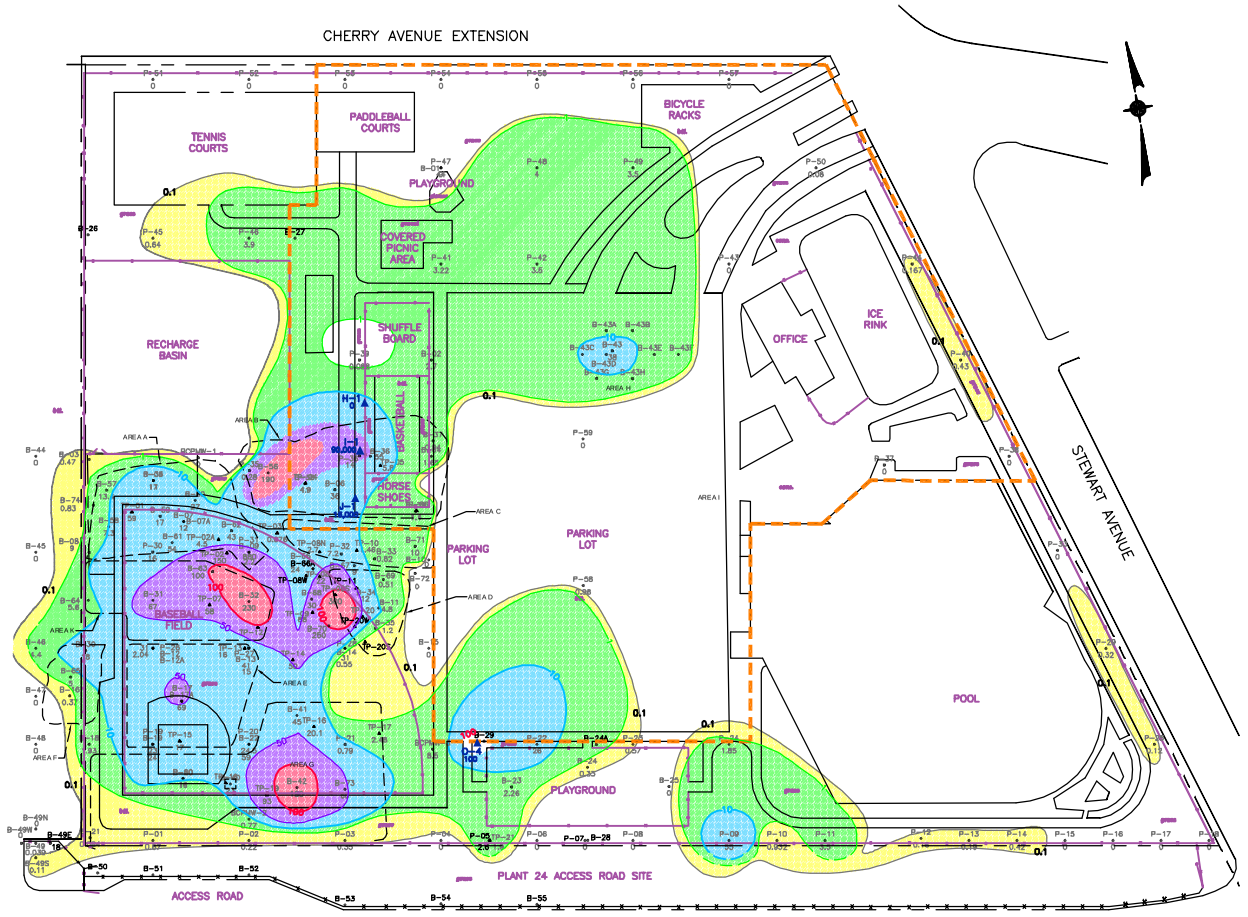
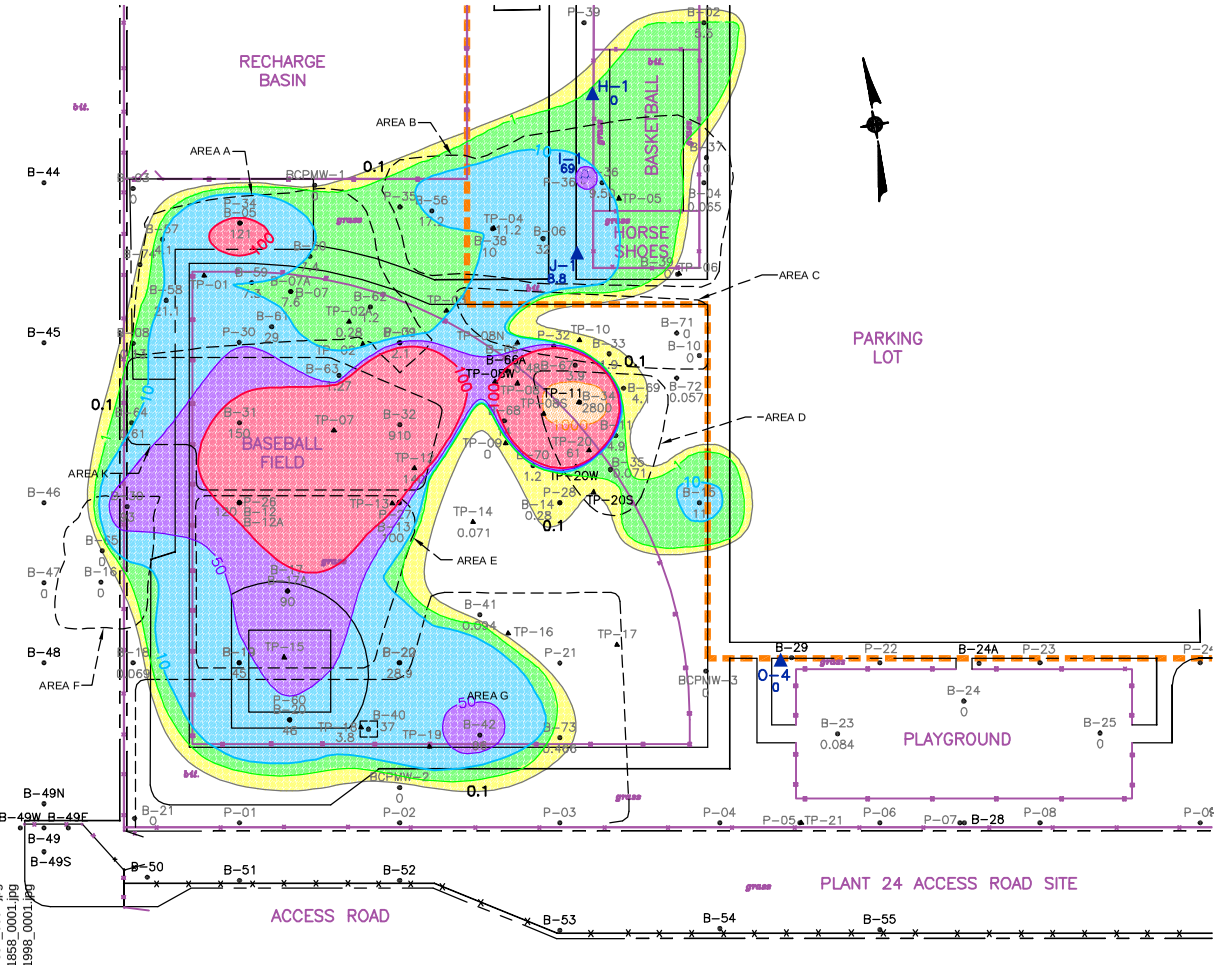
FIGURE
3



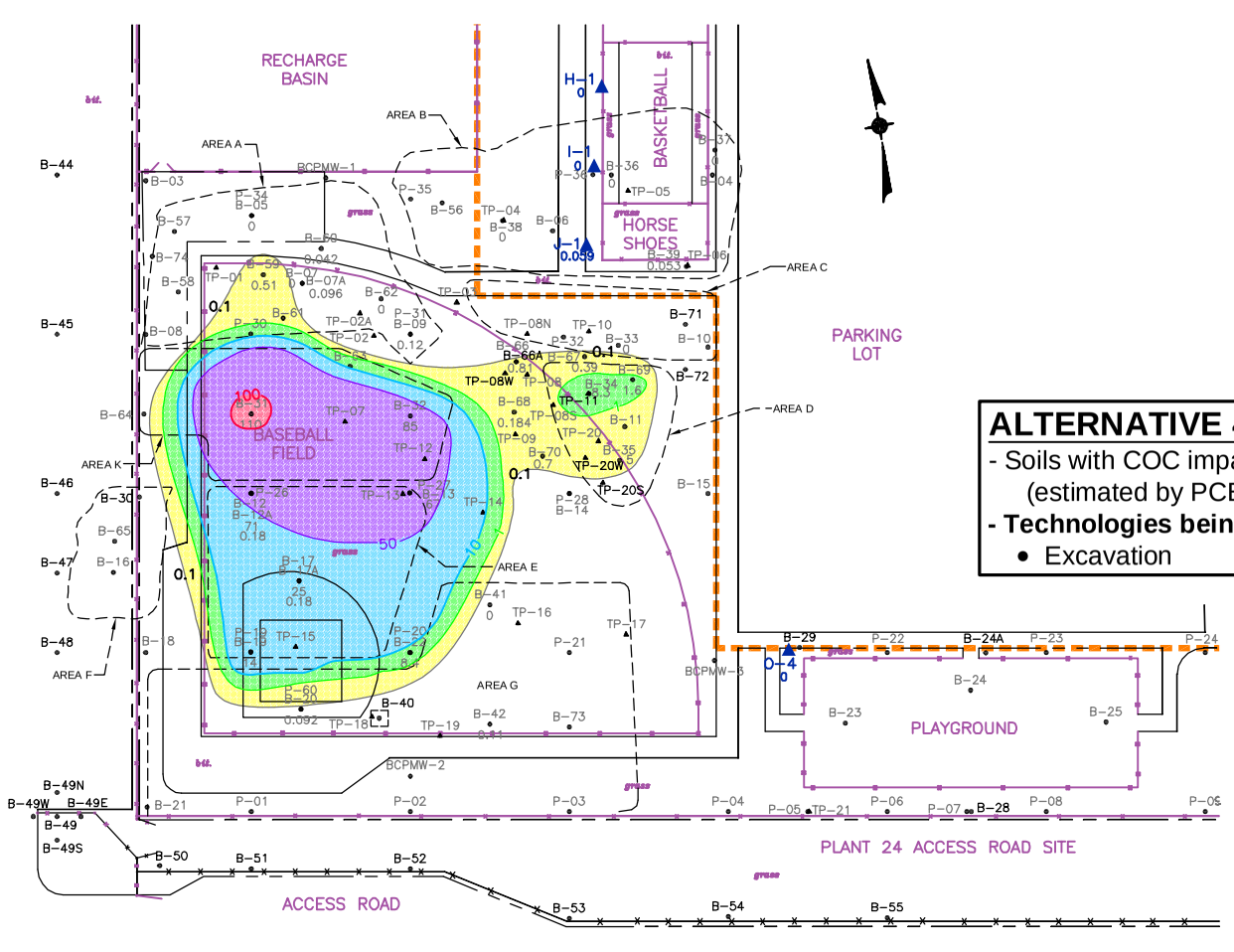
0 TO 2-FOOT HORIZON
0 100' 200'
SCALE IN FEET



2 TO 10-FOOT HORIZON
0 100' 200'
SCALE IN FEET



10 TO 20-FOOT HORIZON
0 60' 120'
SCALE IN FEET



GREATER THAN 20 FEET
0 60' 120'
SCALE IN FEET

LEGEND:

- ISOCONCENTRATION LINE (mg/kg)
- APPROXIMATE LIMITS OF HISTORICAL SOIL DISTURBANCE
- APPROXIMATE LIMITS OF TOWN OF OYSTER BAY IRM PROGRAM
- PROPERTY LINE
- FENCE
- TEMPORARY FENCE
- TP-18 P-03 DIVIRKA & BARTILUCCI SOIL SAMPLE LOCATION
- J-1 TOWN OF OYSTER BAY SOIL SAMPLE LOCATION
- PCB POLYCHLORINATED BIPHENYL

ALTERNATIVE 4 ONLY

- Soils with COC impacts > Unrestricted use Clean-up Objectives (estimated by PCB impacts > 0.1 ppm)
- **Technologies being considered:**
  - Excavation

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TOTAL PCBs DISTRIBUTION IN SOIL (BETHPAGE COMMUNITY PARK)

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FIGURE 4

NOTES:

1. MONITORING WELLS AND VPBs VP-1 TO VP-20 SURVEYED TO NORTH AMERICAN DATUM (NAD) 83. ALL OTHER VP LOCATIONS ARE APPROXIMATE BASED ON FIELD MEASUREMENTS.
2. PARK FEATURES SHOWN WERE PRESENT PRIOR TO TOWN OF OYSTER BAY REDEVELOPMENT IN 2005.
3. MAXIMUM TVOC CONCENTRATION IS SHOWN FOR EACH VP (INCLUDES CO-LOCATED VPs). SAMPLE WAS COLLECTED AT THE WATER TABLE UNLESS OTHERWISE NOTED.
4. MOST RECENT TVOC CONCENTRATION IS SHOWN FOR EACH MONITORING WELL. AT CLUSTERED WELL LOCATIONS, THE HIGHEST TVOC CONCENTRATION IS SHOWN.
5. TVOC CONCENTRATIONS SHOWN ARE THE SUM OF THE TCL VOCs ANALYZED IN GROUNDWATER, BUT THE SUM DOES NOT INCLUDE VOC TICs (WHICH IN SOME CASES INCLUDES CHLORODIFLUOROMETHANE [FREON 22]).

ALTERNATIVE 4 ONLY

- Treatment of Groundwater with TVOC impacts > 5 µg/L
- **Technologies being considered:**
  - ISCO, and
  - Expand Groundwater IRM

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TVOC CONCENTRATIONS IN SHALLOW GROUNDWATER

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FIGURE 5