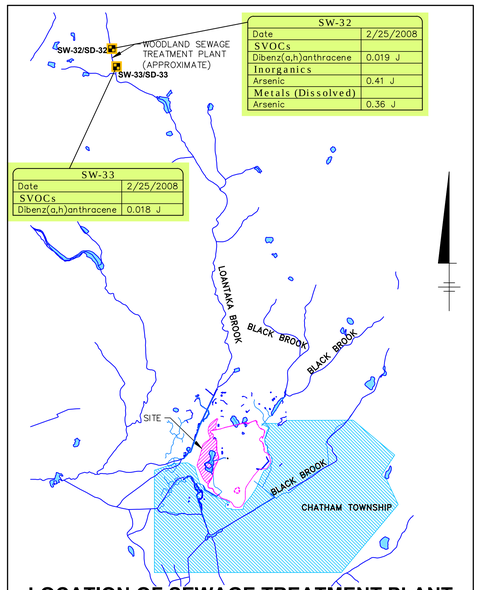


LOCATION OF SEWAGE TREATMENT PLANT RELATIVE TO THE SITE

SCALE: 1" = 2500'

SW-32	
Date	2/25/2008
SVOCs	
Dibenz(a,h)anthracene	0.019 J
Inorganics	
Arsenic	0.41 J
Metals (Dissolved)	
Arsenic	0.36 J

SW-33	
Date	2/25/2008
SVOCs	
Dibenz(a,h)anthracene	0.018 J

SW-43	
Date	12/8/2014
Pesticides	
4,4'-DDD	0.0016 J
Metals	
Lead	27.6
Mercury	0.13 J
Metals (Dissolved)	
Lead	6.0 J
Thallium	3.7 J

SW-34	
Date	2/27/2008
Metals	
Arsenic	0.78 J
Copper	5.5
Metals (Dissolved)	
Arsenic	0.53 J

SW-35	
Date	3/3/2008
Metals	
Copper	5.6
Metals (Dissolved)	
Copper	4

SW-36	
Date	2/27/2008
SVOCs	
Benzo(a)pyrene	0.067 J
Pesticides	
4,4'-DDT	0.0089 J
Metals	
Arsenic	0.66 J
Copper	4.9
Metals (Dissolved)	
Arsenic	0.44 J
Copper	5.1

SW-18	
Date	2/27/2008
Pesticides	
Aldrin	0.012 J
Metals	
Arsenic	1.3
Copper	5.6
Metals (Dissolved)	
Arsenic	0.67 J
Copper	4.5

SW-7	
Date	2/25/2008
SVOCs	
Dibenz(a,h)anthracene	0.026 J

SW-8	
Date	2/25/2008
SVOCs	
Dibenz(a,h)anthracene	0.019 J

SW-11	
Date	2/21/2008
Metals	
Arsenic	0.58 J
Metals (Dissolved)	
Arsenic	0.43 J

SW-12	
Date	2/21/2008
Metals	
Arsenic	0.54 J
Metals (Dissolved)	
Arsenic	0.51 J

SW-5	
Date	2/19/2008
SVOCs	
Dibenz(a,h)anthracene	0.018 J
Inorganics	
Arsenic	1.7
Lead	26.3
Metals (Dissolved)	
Arsenic	0.36 J
Copper	2.6

SW-13	
Date	2/21/2008
Metals	
Arsenic	0.45 J
Metals (Dissolved)	
Arsenic	0.42 J

SW-17	
Date	2/27/2008
VOCs	
Carbon Tetrachloride	1.2
SVOCs	
Benzo(b)fluoranthene	0.046 J
Pesticides	
4,4'-DDT	0.009 J
Aldrin	0.011 J
Heptachlor epoxide	0.0061 J
Metals	
Arsenic	0.51 J
Copper	6.2
Metals (Dissolved)	
Arsenic	0.58 J
Copper	5.9

SW-19	
Date	2/27/2008
Pesticides	
4,4'-DDT	0.0074 J
Aldrin	0.0099 J
Metals	
Arsenic	1
Copper	5.2
Metals (Dissolved)	
Arsenic	0.95 J
Copper	4.5

SW-20	
Date	3/3/2008
Pesticides	
4,4'-DDT	0.0068 J
Metals	
Copper	5.5

SW-21	
Date	3/3/2008
SVOCs	
2,4-Dinitrotoluene	7.1
Dibenz(a,h)anthracene	0.0048 J
Metals (Dissolved)	
Arsenic	2.4

SW-42	
Date	12/3/2014
VOCs	
Bis(2-ethyl hexyl) phthalate	2.0 J B
Pesticides	
gamma-Chlordane	0.0039 J P
Heptachlor	0.0016 J P B
Metals	
Cadmium	1.3 J
Copper	10.7 J
Lead	6.0 J
Mercury	0.0678
Thallium	4.1 J
Zinc	150
Metals (Dissolved)	
Thallium	2.9 J

SW-22	
Date	3/3/2008
Metals	
Arsenic	7.9
Cadmium	0.61 J
Copper	14.6
Lead	19.8
Zinc	45.7

SW-23	
Date	2/29/2008
Metals	
Arsenic	5.2
Cadmium	1.8
Copper	40
Lead	61.3
Mercury	0.39
Zinc	83

SW-34	
Date	12/3/2014
SVOCs	
Benzo(a)pyrene	0.044 J
Benzo(b)fluoranthene	0.050 J
Dibenz(a,h)anthracene	0.011 J
Pesticides	
2,4'-DDE	0.0026 J P
alpha-Chlordane	0.0048 J P
Dieldrin	0.0027 J
gamma-Chlordane	0.0017 J P
Heptachlor	0.0016 J P B
Heptachlor epoxide	0.0035 J P
Metals	
Arsenic	5.1 J
Cadmium	0.74 J
Copper	15.5 J
Lead	16.6
Mercury	0.18 J
Zinc	543
Metals (Dissolved)	
Copper	6.6 J
Zinc	398

SW-40	
Date	12/3/2014
SVOCs	
Benzo(a)anthracene	0.15
Benzo(a)pyrene	0.26
Benzo(b)fluoranthene	0.26
Dibenz(a,h)anthracene	0.088 J
Indeno(1,2,3-cd)pyrene	0.25
Pesticides	
Heptachlor	0.0017 J P B
Metals	
Lead	14.6

SW-14	
Date	2/21/2008
Metals	
Arsenic	0.46 J
Metals (Dissolved)	
Arsenic	0.35 J

SW-15	
Date	2/21/2008
Metals	
Arsenic	0.64 J
Metals (Dissolved)	
Arsenic	0.51 J

SW-36	
Date	12/5/2014
Pesticides	
4,4'-DDT	0.0020 J P
Heptachlor	0.0011 J P B
Metals	
Cadmium	0.38 J

SW-29	
Date	2/28/2008
SVOCs	
Dibenz(a,h)anthracene	0.014 J

SW-30	
Date	2/28/2008
SVOCs	
Dibenz(a,h)anthracene	0.016 J
Metals (Dissolved)	
Cyanide	8.8 J

SW-31	
Date	2/28/2008
SVOCs	
Dibenz(a,h)anthracene	0.014 J

SW-27	
Date	2/29/2008
SVOCs	
Dibenz(a,h)anthracene	0.034 J [0.1 U]
Metals	
Cadmium	1 J [0.46 J]
Copper	4.9 J [10.1 J]
Cyanide	8.5 J [10 U]
Lead	6.1 J [16 J]
Metals (Dissolved)	
Cyanide	7 J [13.2]

SW-35	
Date	12/5/2014
SVOCs	
Benzo(a)pyrene	0.0071 J
Pesticides	
Heptachlor	0.0019 J B
Metals	
Cadmium	0.49 J
Lead	10.8
Zinc	109
Metals (Dissolved)	
Thallium	2.4 J

SW-26	
Date	2/28/2008
Metals	
Arsenic	0.5 J

SW-37	
Date	12/5/2014
Pesticides	
Heptachlor	0.058 U [0.0013 J P B]
Metals (Dissolved)	
Cyanide	5.3 J [10 U]
Thallium	2.7 J [25 U]

SW-3	
Date	2/19/2008
VOCs	
Benzene	0.33 J
Trichloroethene	2
Vinyl Chloride	0.19 J
Metals (Dissolved)	
Arsenic	0.47 J
Copper	6

SW-2	
Date	2/19/2008
SVOCs	
Bis(2-ethyl hexyl) phthalate	5 U [1.6 J]
Dibenz(a,h)anthracene	0.1 U [0.015 J]
Metals	
Arsenic	0.38 J [0.44 J]
metals (Dissolved)	
Arsenic	0.42 J [0.39 J]

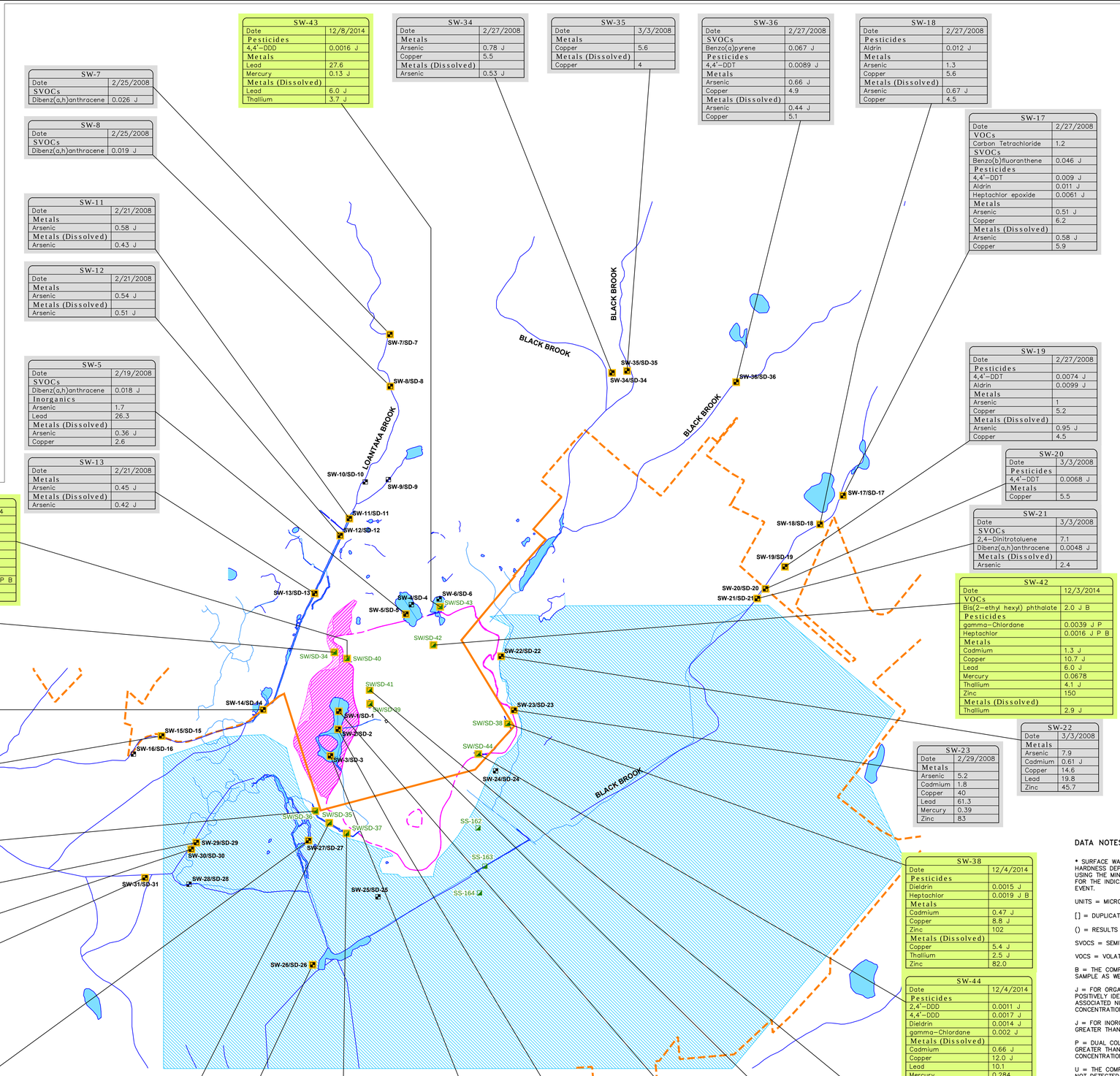
SW-1	
Date	12/18/2008
Metals	
Arsenic	0.51 J

SW-38	
Date	12/4/2014
Pesticides	
Dieldrin	0.0015 J
Heptachlor	0.0019 J B
Metals	
Cadmium	0.47 J
Copper	8.8 J
Zinc	102
Metals (Dissolved)	
Copper	5.4 J
Thallium	2.5 J
Zinc	82.0

SW-44	
Date	12/4/2014
Pesticides	
2,4'-DDD	0.0011 J
4,4'-DDD	0.0017 J
Dieldrin	0.0014 J
gamma-Chlordane	0.002 J
Metals (Dissolved)	
Cadmium	0.66 J
Copper	12.0 J
Lead	10.1
Mercury	0.284
Thallium	2.7 J
Zinc	118

SW-41	
Date	12/4/2014
Pesticides	
Heptachlor	0.0016 J B
Metals	
Cadmium	1.1 J
Copper	6.0 J
Zinc	410
Metals (Dissolved)	
Cadmium	0.51 J
Copper	5.2 J
Zinc	349

SW-39	
Date	12/8/2014
Metals	
Cadmium	0.42 J
Copper	11.2 J
Cyanide	15.1
Lead	6.2 J
Mercury	0.19 J
Zinc	641
Metals (Dissolved)	
Copper	7.6 J
Thallium	2.2 J
Zinc	445



LEGEND:

- OPEN WATER
- EDGE OF LANDFILLED WASTES OBSERVED DURING TEST PIT ACTIVITIES (DASHED WHERE APPROXIMATE)
- GREAT SWAMP NATIONAL WILDLIFE REFUGE PROPERTY BOUNDARY (FROM CHATHAM TOWNSHIP TAX MAP)
- GREAT SWAMP NATIONAL WILDLIFE REFUGE PROPERTY BOUNDARY (APPROXIMATE)
- SURFACE-WATER/SEDIMENT SAMPLING LOCATION
- DATA GAP SURFACEWATER/SEDIMENT SAMPLING LOCATION
- WASTE AND DEBRIS OBSERVED ON GROUND SURFACE BUT NOT OBSERVED OR ANTICIPATED TO BE BELOW GROUND SURFACE
- AREAS WHERE SURFACE WATER FLOW DOES NOT EXHIBIT TYPICAL BED AND BANK MORPHOLOGY
- SAMPLING LOCATION WITH DETECTED CONCENTRATIONS GREATER THAN NJDEP SURFACE WATER QUALITY CRITERIA
- DATA GAP SAMPLING LOCATION
- SAMPLES COLLECTED PRIOR TO DATA GAP SAMPLING

NOTES:

1. ANALYTICAL RESULTS GIVEN IN MICROGRAMS PER LITER FOR SURFACE-WATER SAMPLES WITH DETECTED CONCENTRATIONS GREATER THAN NEW JERSEY SURFACE WATER QUALITY CRITERIA (SWQC) (DATED APRIL 2011). THE SWQC REFLECT THE MINIMUM FRESHWATER (FW2) CRITERIA FOR PROTECTION OF AQUATIC RECEPTORS OR HUMAN HEALTH.
2. THE EDGE OF LANDFILLED WASTES OBSERVED DURING TEST PIT ACTIVITIES IS DRAWN BASED ON OBSERVATIONS OF MATERIALS EXCAVATED DURING TEST PIT ACTIVITIES CONDUCTED FROM JULY 26, 2007 TO SEPTEMBER 6, 2007, AND MARCH 26, 2008. THE EDGE OF LANDFILL WAS REFINED BASED ON OBSERVATIONS PRESENTED IN THE FIELD CHANGE REQUEST (FCR-02) APPROVED BY USEPA ON DECEMBER 29, 2014.
3. THE EXTENT OF AREAS WHERE SURFACE WATER FLOW DOES NOT EXHIBIT TYPICAL BED AND BANK MORPHOLOGY IS BASED ON FIELD OBSERVATIONS MADE THROUGHOUT THE PERIOD OF INVESTIGATION ACTIVITIES. THE EXTENT OF THE AREA SHOWN IS APPROXIMATE.
4. ALTHOUGH BOTH NJ SWQC AND USEPA NAWQC ARE RELEVANT, THE AMOUNT OF INFORMATION PRESENTED IN THIS FIGURE IS LIMITED BY GRAPHIC LAYOUT CONSTRAINTS. AS SUCH, ONLY EXCEEDANCES OF THE NJ SURFACE WATER QUALITY CRITERIA ARE SHOWN.
5. DATA GAP ANALYTICAL RESULTS HAVE NOT BEEN VALIDATED.

NJDEP Surface Water Quality Criteria	
Constituent	Value
VOCs	
Benzene	0.15
Carbon Tetrachloride	0.33
Trichloroethene	1
Vinyl Chloride	0.082
SVOCs	
2,4-Dinitrotoluene	0.11
Benzo(a)pyrene	0.0038
Benzo(b)fluoranthene	0.038
Bis(2-ethyl hexyl) phthalate	1.2
Dibenz(a,h)anthracene	0.0038
Indeno(1,2,3-cd)pyrene	0.038
Pesticides	
2,4'-DDD	0.00031
2,4'-DDE	0.00022
4,4'-DDD	0.00031
4,4'-DDT	0.00022
Aldrin	0.000049
alpha-Chlordane	0.007
Dieldrin	0.000052
gamma-Chlordane	0.0001
Heptachlor	0.000079
Heptachlor epoxide	0.000039
Metals	
Arsenic	0.017
Cadmium* (Black Brook)	0.12
Cadmium* (Data Gap Sampling)	0.17
Copper* (Ponds)	2.9
Copper* (Black Brook)	3.5
Copper* (Data Gap Sampling)	5.4
Cyanide	5.2
Lead	5
Mercury	0.05
Thallium	0.24
Zinc* (Black Brook)	46
Zinc* (Data Gap Sampling)	70
Metals (Dissloved)	
Arsenic	0.017
Cadmium* (Data Gap Sampling)	0.11
Copper* (Ponds)	2.6
Copper* (Black Brook)	3.2
Copper* (Data Gap Sampling)	4.9
Cyanide	5.2
Lead	5
Zinc* (Data Gap Sampling)	66.5

DATA NOTES:

* SURFACE WATER QUALITY CRITERIA ARE HARDNESS DEPENDENT; VALUES CALCULATED USING THE MINIMUM DETECTED HARDNESS VALUE FOR THE INDICATED WATER BODY OR SAMPLING EVENT.

UNITS = MICROGRAMS PER LITER

[] = DUPLICATE SAMPLE

() = RESULTS OF SECONDARY ANALYSIS

SVOCS = SEMIVOLATILE ORGANIC COMPOUNDS

VOCS = VOLATILE ORGANIC COMPOUNDS

B = THE COMPOUND HAS BEEN FOUND IN THE SAMPLE AS WELL AS ITS ASSOCIATED BLANK.

J = FOR ORGANICS THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION ONLY.

J = FOR INORGANICS THE SAMPLE RESULT IS GREATER THAN THE MDL BUT BELOW THE CRDL.

P = DUAL COLUMN ANALYSIS RESULTED IN GREATER THAN 25% DIFFERENCE FOR DETECTED CONCENTRATIONS BETWEEN THE COLUMNS.

U = THE COMPOUND WAS ANALYZED FOR BUT NOT DETECTED. THE ASSOCIATED VALUE IS THE COMPOUND QUANTITATION LIMIT.

SOURCES:

1. BASEMAP FROM JAMES M. STEWART INC., LAND SURVEYORS, PHILADELPHIA, PA., (ELECTRONIC FILE: 292406.DWG DATED: 6/30/06)
2. AERIAL IMAGE COURTESY OF NJ IMAGE WAREHOUSE (HTTP://NJGIN.NJ.GOV/OIT_IW/INDEX.JSP)

0 600' 1200'
GRAPHIC SCALE

ROLLING KNOLLS LANDFILL SUPERFUND SITE
CHATHAM, NEW JERSEY

DATA GAP INTERIM REPORT

SURFACE WATER ANALYTICAL RESULTS GREATER THAN MINIMUM NEW JERSEY SURFACE WATER QUALITY CRITERIA

ARCADIS

FIGURE 2

CITY: CRANBURY-NJ DIV/GROUP: ENVCAD DB: TFATTO LDT: FATTO PIC: PM: LMARTINEAU TM: SWELLS LYR: ON=*;OFF=*REF*
C:\ENVCAD\CRANBURY\ACT\B0033203\00\0040\USEPA_REPORT\B0033203C04.DWG LAYOUT: 2 SAVED: 2/17/2015 10:16 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: CRAN-LE PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 2/17/2015 10:17 AM BY: FATTO, TRACEY
XREFS: 32203X01 B0033203X16 B0033203X15 B0033203X0E IMAGES: PROJECTNAME: ----