The City of New York

DEPARTMENT OF ENVIRONMENTAL PROTECTION

96-05 Horace Harding Expressway
Corona, New York 11368

Steven W. Lawitts
Acting Commissioner

James G. Mueller, P.E.
Deputy Commissioner

Bureau of Engineering
Design & Construction

Tel. (718) 595-5973
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jmueller@dep.nyc.gov

JUN 16 2009

Mr. Ronnie Lee, P.E.
Environmental Engineer II
New York State Department of
Environmental Conservation –
Division of Environmental Remediation
Remedial Bureau B
625 Broadway
Albany, NY 12233-3505

RE: Environmental Restoration Project
Barretto Point
Site No.: B00032-2
SPDES Equivalency Permit

Dear Mr. Lee:

As a supplement to our March 30, 2009 letter regarding groundwater treatment and the SPDES Equivalency Permit, enclosed for your review please find the contractor's water treatment system design calculations.

The enclosed design includes calculations covering four (4) treatment scenarios, which are:

1. An all activated carbon absorption water treatment system with no air stripper, treating the groundwater contamination concentrations identified in Section 11307-2.4B of the Specifications,

2. A water treatment system identical to Case 1 treating the specified contamination concentration without Methyl Chloride (which was not identified in the contractor's independent groundwater sampling),

3. A water treatment system with an air stripper conforming to the parameters provided in 11307-2.4B(2) for the specified groundwater contamination, and

4 A water treatment system with an air stripper identical to Case 3 treating the specified contamination concentration without Methyl Chloride.

Please note that the contaminate concentrations entering the carbon absorbers for cases 3 & 4 reflect the concentrations after treatment by the air stripper.

Each scenario provides adequate treatment of the effluent. Also, the use of the air stripper does little to increase the life of the activated carbon. Due to the anticipated low volume of groundwater, the contractor has requested the use of activated carbon absorbers only, without the air stripper (scenario 1 & 2). Based on the enclosed calculations, the NYCDEP has accepted this modification to the water treatment train. The contractor will sample the groundwater influent and effluent contamination levels daily and change the activated carbon prior to contaminant break-through.

I trust you will find the enclosed in order. Should you have any questions or need further information, please feel free to contact John Romano, P.E. at 718-595-6103.

Very truly yours,

Matthew Osit, PE
Chief, Division of Wastewater Treatment & Reservoirs

cc: Romano, Tong, Bodnar, Fahmy

MORETRENCH
....since 1931

SUBMITTAL

MORETRENCH
...since 1931

Hunts Point WPCP

Bronx, NY

Groundwater Treatment System
(With & Without Air Stripper)

March 31, 2009

Contractor:

Posillico Environmental Inc.
1600 New Highway
Farmingdale, NY 11735

MORETRENCH
....since 1931

Hunts Point WPCP

Bronx, NY

Groundwater Treatment System

(With & Without Air Stripper)

Contractor: Posillico

Prepared by

Moretrench American Corporation
51 Smart Avenue, Yonkers NY 10704

The submitted groundwater treatment plan is based upon sound engineering principles and accepted industry practices and is reasonable for the described application. Prior to full scale dewatering, operator will sample the system effluent to verify that the effluent quality is within acceptable governing quality standards. System operation, maintenance and on going periodic testing as required by the governing authorities are the responsibility of others.

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Appendices

March 31, 2009

MORETRENCH AMERICAN CORPORATION
51 Smart Avenue – Yonkers, NY 10704
(914) 423-1331

Scenario 1 - Without Air Stripper

Barreto Point
Bronx, NY
14-1547

Groundwater Treatment System

The proposed groundwater treatment system can treat a maximum of 30 gpm of water generated from a series of well points. The groundwater treatment system has been designed to remove low levels of VOCs such as Benzene, Toluene, Ethyl Benzene, Xylene (BTEX) and naphthalene, as well as Total Suspended Solids (TSS). The system will consist of the following major components:

- One (1) settling tank with a weir
- One (1) duplex pump skid
- One (1) multi-bag and one (1) single-bag filter housings, parallel operation
- Two (2) liquid phase granular activated carbon absorbers, series operation
- One (1) flow meter

Water from the well point dewatering system will be directed to the settling tank. The settling tank is constructed with an open top for ease of cleaning and will be equipped with one weir to facilitate the settling of solids.

Solids and/or sludge that have settled to the bottom of the settling/equalization tank will need to be periodically removed to prevent accumulated material from reducing the settling time thus reducing the efficiency of the unit. All material from the bottom of the tank must be disposed of in accordance with site and local regulations.

Water will flow over the weir plate within the settling/equalization tank. The water will then be pumped to the bag filter skid via a duplex pump skid. The duplex pump skid will contain a control system and two (2) full capacity centrifugal pumps each capable of producing 50 gpm @ approximately 75' TDH. The pumps will each be equipped with 2 Hp, 460 V, 3 phase electric motors. The control system will consist of two (2) pump motor starters and four (4) float controls - Pump 1 on, Pump 2 on, Pump 1/2 off, and a high level alarm which will activate an alarm light.

The bag filter skid will consist of one (1) multi-bag filter housing and one (1) single-bag filter housing plumbed in parallel. The inlet and outlet of the bag filter skid will be equipped with manifolds complete with isolation valves. The multi-bag filter housing will contain six (6) 5-micron bag filters while the single-bag filter housing will contain one (1) 5-micron bag filter designed to remove sediment generated from the dewatering process prior to the inlet of the carbon filters. The inlet and outlet of each of the bag filter housings will also be equipped with pressure gauges to monitor the differential pressure across the filter housing. The bag filters should be changed once the differential pressure across the housing reaches 15 to 25 psi. The bag filter housings will be plumbed in parallel such that the bag(s) in one (1) filter housing can be changed while the remaining filter housing continues to process water at the design water flow rate of 30 gpm.

If the bag filters are not properly operated and maintained, the differential pressure across a filter housing can rise to the point that the transfer pumps cannot pump water from the settling tank faster than raw water is introduced into the settling tank. The water level in the settling tank will rise where it will eventually activate the high level alarm light. **If the bag filters are not changed, the water level in the settling tank will continue to rise and will eventually overflow.**

Duplex transfer pumps located on the bag filter skid will pump water to the two (2) carbon absorbers. These transfer pumps will be identical to the transfer pumps located on the effluent side of the settling tank.

From the bag filter skid, water will continue to flow under pressure to the carbon absorber battery. The carbon absorber will each contain 1,000 lbs. of reactivated, granular liquid phase carbon media designed to remove low levels of SVOCs and VOCs prior to discharge. If breakthrough of SVOCs or VOCs occurs on the lead carbon absorber, the water will temporarily be directed to the lag unit. The spent carbon will be removed from the lead unit and will be replaced with 1,000 lbs of reactivated carbon media. The spent carbon will be sampled to determine RCRA waste characteristics and will be disposed of in a lawful manner consistent with governing state and local regulations.

The inlet and outlet of each carbon absorber will be equipped with a pressure gauge to monitor the differential pressure across the carbon media. The differential pressure across each carbon absorber should be recorded in a log book on a daily basis. If the differential pressure across a particular carbon absorber rises to the point that water flow is restricted (as measured by the effluent flow meter), that carbon absorber should be taken off line temporarily to backwash the media. The inlet and outlet of each carbon absorber is equipped with tees and valves to facilitate backwashing. Backwash water should be obtained from a clean water source such as a hydrant or a water truck. The waste water from the backwash process can be directed to the settling/equalization tanks and will be processed through the treatment system.

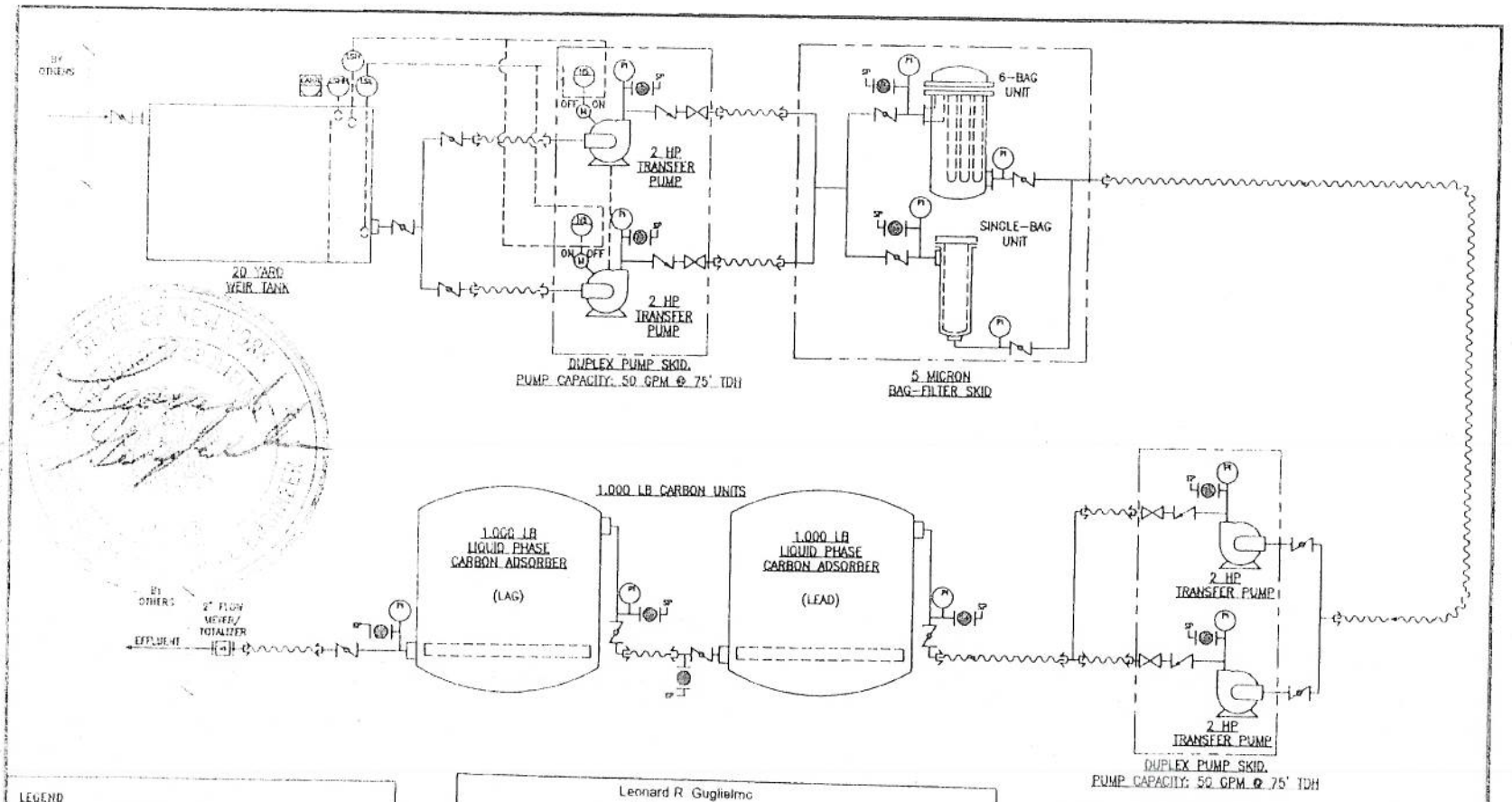
A 2" diameter mechanical flow meter with a totalizer will be provided at the end of the treatment system to indicate the flow rate and to record the total gallons of water treated. The flow meter has an acceptable flow range of 8 to 160 gpm. Flow readings should be recorded daily in a log book.

The individual components of the system will be skid mounted to the greatest extent possible and will be interconnected using PVC piping and suction hose. Pressure gauges and sample taps will be located throughout the system to monitor system performance. Butterfly valves will be provided on the inlet and outlet of each of the major units to isolate them for maintenance.

Testing for VOC/SVOC Breakthrough will be done by the operator (MTA) at the midpoint of the carbon absorption system. Breakthrough estimates follow for different Methylene Chloride Loadings.

The Final effluent will be tested by the operator (MTA) periodically as required by regulatory authorities and contract specifications. Should effluent quality be found to be out of regulatory compliance the system shall be shut down and remedial action taken until effluent quality is within acceptable standards after which the system can be restored.

03127/09
14-1547
Rev 2



LEGEND

- PROCESS PIPING
- FLEXIBLE HOSE
- FLOW DIRECTION
- PIPE CROSS OVER
- BALL VALVE (NORMALLY CLOSE)
- BUTTERFLY VALVE
- CHECK VALVE
- GATE VALVE (OPEN)
- SP SAMPLE PORT
- CAM LOCK COUPLING
- PRESSURE GAGE
- LEVEL FLOAT
- (M) MOTOR
- FLOW METER
- LEVEL ALARM HIGH HIGH
- LEVEL SWITCH HIGH
- LEVEL SWITCH HIGH HIGH
- LEVEL SWITCH LOW
- HAND OPERATED SWITCH

Leonard R. Guglielmo
51 Smart Avenue
Yonkers, NY 10704

The attached treatment system design appears reasonable for the application. Prior to full-scale dewatering, operator will sample the system effluent to verify that the effluent quality is within acceptable governing quality standards. System operation, maintenance and ongoing periodic testing as required by the governing authorities are the responsibility of others.

NO.	REVISIONS	DATE
D	ADDED AIR STRIPPING SYSTEM AND BLOWER	03/27/09

MTA BARRETO POINT
BRONX, NY

30 GPM PROPOSED TEMPORARY WATER TREATMENT SYSTEM

NOTES:
1) MAXIMUM FLOWRATE = 30 GPM
2) SYSTEM FOOTPRINT APPROX. 10' X 50'
3) NOT ALL VALVES, INSTRUMENTATION AND PIPING, ETC. SHOWN FOR CLARITY.
4) GENERATOR BY OTHERS - 460V, 3 PHASE, 50 AMPS.
5) TREATMENT SYSTEM HAS NO PROVISIONS TO TREAT DISSOLVED METALS.

SCALE: NTS	APPROVED BY: JB	DRAWN BY: AAV	
DATE: 11/11/08			

GROUND/WATER TREATMENT & TECHNOLOGY
P.O. BOX 1174
DENVILLE, NJ 07834

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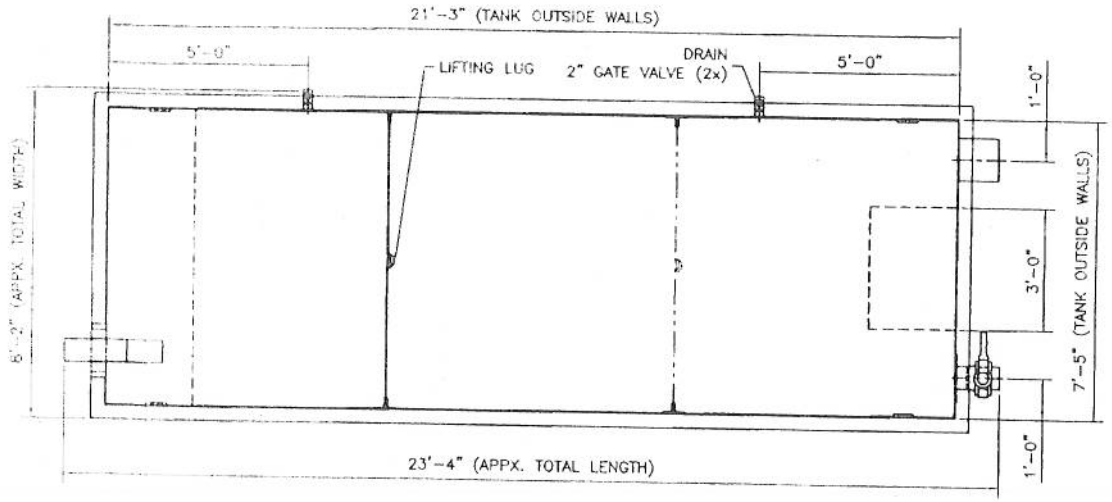

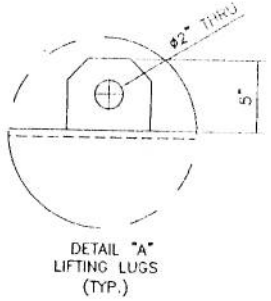

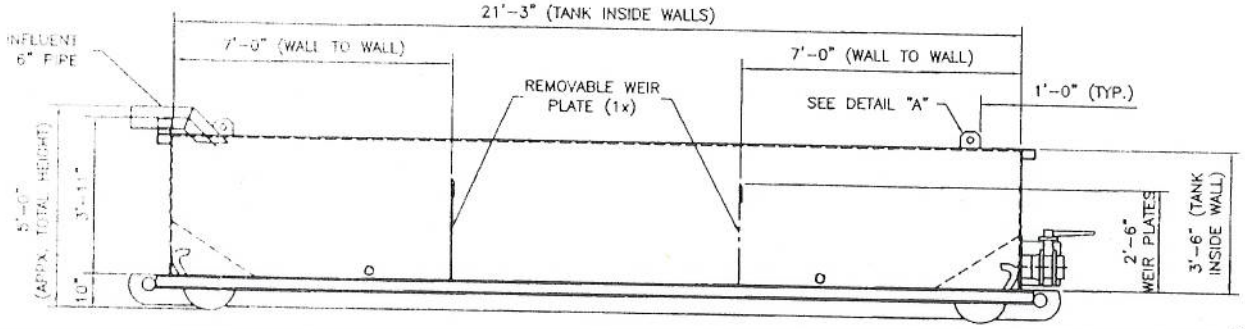

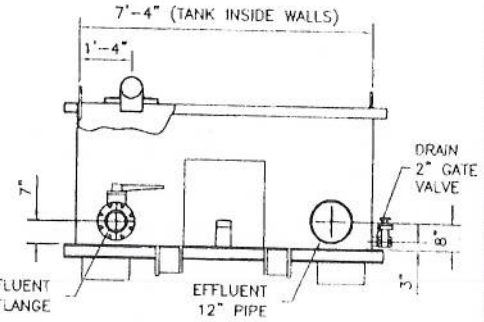

20 YARD ROLL-OFF SETTLING/CLARIFIER SPECIFICATIONS

NOMINAL VOLUME:	4,000 GALLONS
OPERATING VOLUME:	3,000 GALLONS
DESIGN FLOW RATE:	200 GPM
TANK CONSTRUCTION:	A-36 CARBON STEEL
INLET CONNECTION:	6" PIPE (1x)
OUTLET CONNECTIONS:	6" FLANGE (1x)/ 12" PIPE (1x)
DRAINS:	2" GATE VALVES (2x)
APPX. TANK WEIGHT (EMPTY):	10,000 Lbs.
APPX. TANK WEIGHT (OPERATING):	60,000 Lbs.

NO.	REVISIONS	DATE
B	TYPICAL	02/12/09

20 YARD ROLL-OFF SETTLING TANK STANDARD EQUIPMENT SPECIFICATION

SCALE: NTS	APPROVED BY: JB	DRAWN BY: AAV	
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DWG SIZE: A	SHEET: 1 OF 1	DRAWING NUMBER: ST-0038-SPC	B

Scenario 2 - With Air Stripper

Barreto Point
Bronx, NY
14-1547

Groundwater Treatment System

The proposed groundwater treatment system can treat a maximum of 30 gpm of water generated from a series of well points. The groundwater treatment system has been designed to remove low levels of VOCs such as Benzene, Toluene, Ethyl Benzene, Xylene (BTEX) and naphthalene, as well as Total Suspended Solids (TSS). The system will consist of the following major components:

- One (1) settling tank with a weir
- One (1) duplex pump skid
- One (1) multi-bag and one (1) single-bag filter housings, parallel operation
- One (1) low profile air stripping system
- Two (2) liquid phase granular activated carbon absorbers, series operation
- One (1) flow meter

Water from the well point dewatering system will be directed to the settling tank. The settling tank is constructed with an open top for ease of cleaning and will be equipped with one weir to facilitate the settling of solids.

Solids and/or sludge that have settled to the bottom of the settling/equalization tank will need to be periodically removed to prevent accumulated material from reducing the settling time thus reducing the efficiency of the unit. All material from the bottom of the tank must be disposed of in accordance with site and local regulations.

Water will flow over the weir plate within the settling/equalization tank. The water will then be pumped to the bag filter skid via a duplex pump skid. The duplex pump skid will contain a control system and two (2) full capacity centrifugal pumps each capable of producing 50 gpm @ approximately 75' TOH. The pumps will each be equipped with 2 Hp, 460 V, 3 phase electric motors. The control system will consist of two (2) pump motor starters and four (4) float controls - Pump 1 on, Pump 2 on, Pump 1/2 off, and a high level alarm which will activate an alarm light.

The bag filter skid will consist of one (1) multi-bag filter housing and one (1) single-bag filter housing plumbed in parallel. The inlet and outlet of the bag filter skid will be equipped with manifolds complete with isolation valves. The multi-bag filter housing will contain six (6) 5-micron bag filters while the single-bag filter housing will contain one (1) 5-micron bag filter designed to remove sediment generated from the dewatering process prior to the inlet of the carbon filters. The inlet and outlet of each of the bag filter housings will also be equipped with pressure gauges to monitor the differential pressure across the filter housing. The bag filters should be changed once the differential pressure across the housing reaches 15 to 25 psi. The bag filter housings will be plumbed in parallel such that the bag(s) in one (1) filter housing can be changed while the remaining filter housing continues to process water at the design water flow rate of 30 gpm.

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From the bag filter skid, water will continue to flow to the skid mounted air stripping system. The air stripping unit is designed for a maximum flow rate of 115 gpm and is a sieve tray system that does not contain packing media. In this technology, the water and air are contacted in stepwise fashion through multiple trays. The water enters near the top and flows horizontally across each tray and through a downcomer to the tray below. A pressure blower provides air for the aerating process. The air enters the bottom of each unit and is forced through openings in the trays, bubbling through the water to form an "air/water froth", which provides extreme turbulence and excellent volatilization. The overall effect is a multiple counter-current contact of water and air, with each tray having a cross-flow of water opposing a vertical flow of air.

Duplex transfer pumps located on the air stripping skid will pump water to the two (2) carbon absorbers. These transfer pumps will be identical to the transfer pumps located on the effluent side of the settling tank.

From the bag filter skid, water will continue to flow under pressure to the carbon absorber battery. The carbon absorber will each contain 1,000 lbs. of reactivated, granular liquid phase carbon media designed to remove low levels of SVOCs and VOCs prior to discharge. If breakthrough of SVOCs or VOCs occurs on the lead carbon absorber, the water will temporarily be directed to the lag unit. The spent carbon will be removed from the lead unit and will be replaced with 1,000 lbs of reactivated carbon media. The spent carbon will be sampled to determine RCRA waste characteristics and will be disposed of in a lawful manner consistent with governing state and local regulations.

The inlet and outlet of each carbon absorber will be equipped with a pressure gauge to monitor the differential pressure across the carbon media. The differential pressure across each carbon absorber should be recorded in a log book on a daily basis. If the differential pressure across a particular carbon absorber rises to the point that water flow is restricted (as measured by the effluent flow meter), that carbon absorber should be taken off line temporarily to backwash the media. The inlet and outlet of each carbon absorber is equipped with tees and valves to facilitate backwashing. Backwash water should be obtained from a clean water source such as a hydrant or a water truck. The waste water from the backwash process can be directed to the settling/equalization tanks and will be processed through the treatment system.

A 2" diameter mechanical flow meter with a totalizer will be provided at the end of the treatment system to indicate the flow rate and to record the total gallons of water treated. The flow meter has an acceptable flow range of 8 to 160 gpm. Flow readings should be recorded daily in a log book.

The individual components of the system will be skid mounted to the greatest extent possible and will be interconnected using PVC piping and suction hose. Pressure gauges and sample taps will be located throughout the system to monitor system performance. Butterfly valves will be provided on the inlet and outlet of each of the major units to isolate them for maintenance.

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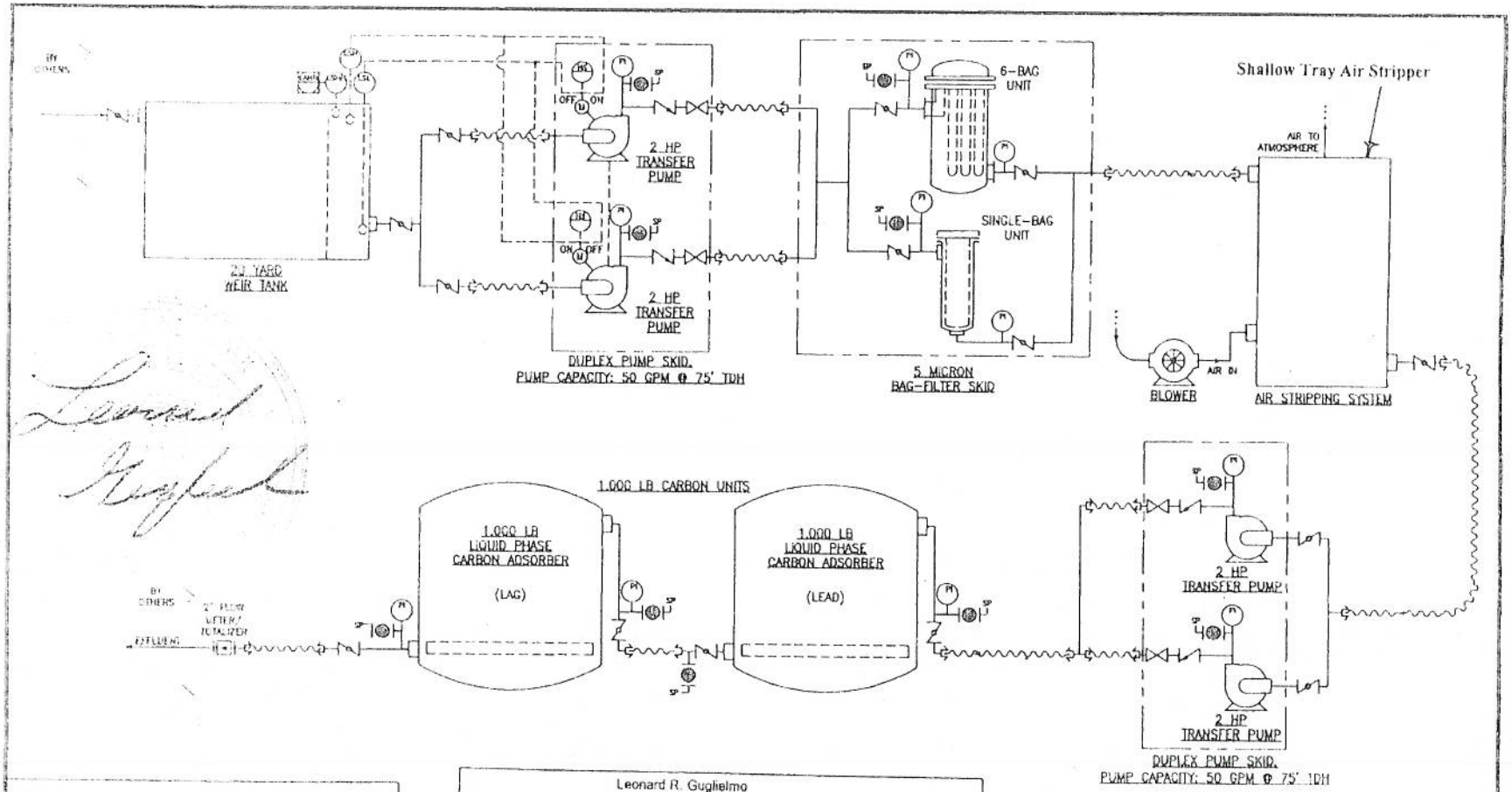

LEGEND:

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Leonard R. Guglielmo
51 Smart Avenue
Yonkers, NY 10704

The attached treatment system design appears reasonable for the application. Prior to full-scale dewatering, operator will sample the system effluent to verify that the effluent quality is within acceptable governing quality standards. System operation, maintenance and ongoing periodic testing as required by the governing authorities are the responsibility of others.

NO.	REVISIONS	DATE
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BRONX, NY

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5) TREATMENT SYSTEM HAS NO PROVISIONS TO TREAT DISSOLVED METALS.

SCALE: NTS	APPROVED BY: JB	DRAWN BY: AAV
DATE: 11/11/08		

GROUND/WATER TREATMENT & TECHNOLOGY
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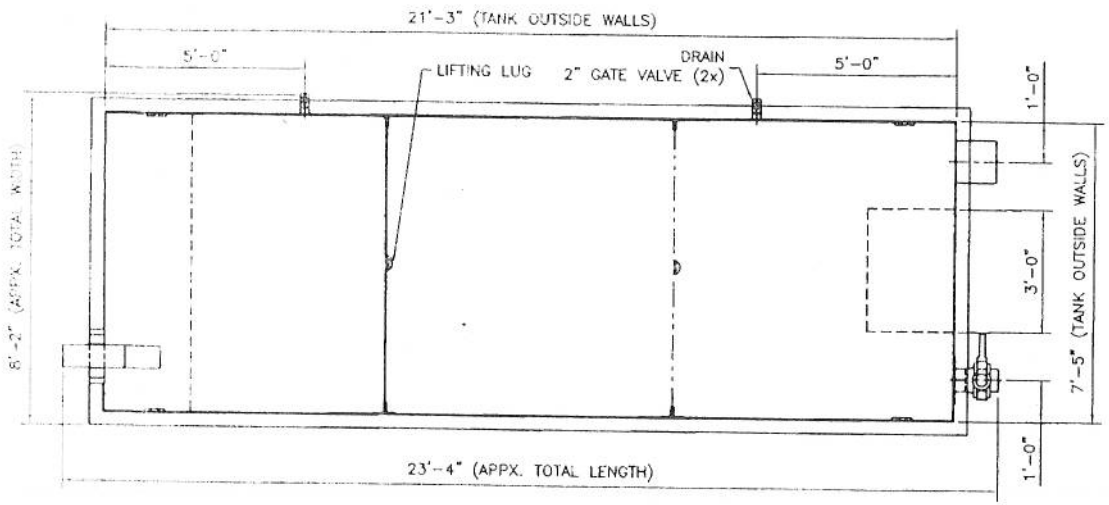

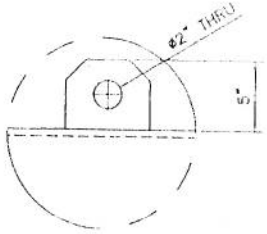

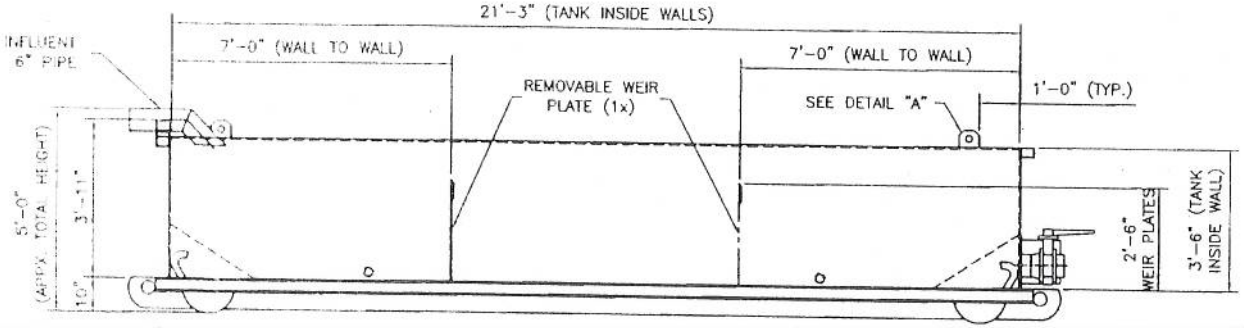

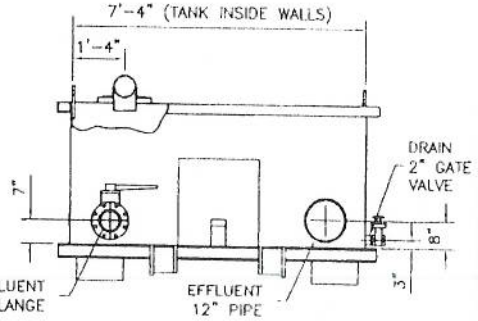

20 YARD ROLL-OFF SETTLING/CLARIFIER SPECIFICATIONS

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DRAINS:	2" GATE VALVES (2x)
APPX. TANK WEIGHT (EMPTY)	10,000 Lbs
APPX. TANK WEIGHT (OPERATING):	60,000 Lbs.

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20 YARD ROLL-OFF SETTLING TANK STANDARD EQUIPMENT SPECIFICATION

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DENVILLE, NJ 07834

DWG SIZE: A	SHEET: 1 OF 1	DRAWING NUMBER: ST-0038-SPC	B

LIQUID PHASE ISOTHERM DESIGN PARAMETERS

Water Flow Rate 30.00000 gpm

LIQUID PHASE DESIGN

Component Name	Concentration	#GAC/1000 gallons of water
ETHANE,1,1-DICHLORO-	2.0000 ppbw	0.2838
ETHENE,1,1-DICHLORO-	100.0000 ppbw	0.2928
BENZENE,1,2,4-TRICHLORO-	750.0000 ppbw	0.0585
BENZENE,1,3,5-TRICHLORO-	180.0000 ppbw	0.0076
BENZENE	83.0000 ppbw	0.0906
BENZENE,ETHYL-	4200.0000 ppbw	0.2858
METHYLENE CHLORIDE	60.0000 ppbw	5.2604
NAPHTHALENE	120.0000 ppbw	0.0323
STYRENE	84.0000 ppbw	0.0121
TOLUENE	68.0000 ppbw	0.0325
XYLENE,m-	12000.0000 ppbw	0.5683

Total Carbon Usage Estimated at Breakthrough

299.0466 #GAC/day

6.9224 #GAC/1000 gallons of water

CASE #1

No Air Stripper.

Methylene Chloride = 60 ppb

Pounds of Carbon Per Day = 299

Days to Breakthrough of Lead Carbon = 3

The above carbon usage estimates are based on both experimental data as well as predictive models. Actual carbon usage rates observed at various stages of breakthrough depend on many factors, and may therefore differ from the above estimates. Please contact Westates Carbon Products for further assistance.

LIQUID PHASE ISOTHERM DESIGN PARAMETERS

Water Flow Rate 30.00000 gpm

LIQUID PHASE DESIGN

Component Name	Concentration	#GAC/1000 gallons of water
ETHANE,1,1-DICHLORO-	2.0000 ppbw	0.2838
ETHENE,1,1-DICHLORO-	100.0000 ppbw	0.2928
BENZENE,1,2,4-TRICHLORO-	750.0000 ppbw	0.0565
BENZENE,1,3,5-TRICHLORO-	180.0000 ppbw	0.0076
BENZENE	83.0000 ppbw	0.0908
BENZENE,ETHYL-	4200.0000 ppbw	0.2856
NAPHTHALENE	120.0000 ppbw	0.0323
STYRENE	84.0000 ppbw	0.0121
TOLUENE	68.0000 ppbw	0.0325
XYLENE,m-	12000.0000 ppbw	0.5683

Total Carbon Usage Estimated at Breakthrough

71.7960 #GAC/day

1.6619 #GAC/1000 gallons of water

Case # 2

No Air Stripper

Methylene Chloride = 0

Pound of Carbon per Day = 72

Days to Breakthrough of Lead Carbon = 14

The above carbon usage estimates are based on both experimental data as well as predictive models. Actual carbon usage rates observed at various stages of breakthrough depend on many factors, and may therefore differ from the above estimates. Please contact Westates Carbon Products for further assistance.

LIQUID PHASE ISOTHERM DESIGN PARAMETERS

Water Flow Rate 30.00000 gpm

LIQUID PHASE DESIGN

Component Name	Concentration	#GAC/1000 gallons of water
ETHANE,1,2-DICHLORO-	1.0000 ppbw	0.1109
ETHENE,1,1-DICHLORO-	5.0000 ppbw	0.0695
BENZENE,1,2,4-TRICHLORO-	50.0000 ppbw	0.1208
BENZENE,1,3,5-TRICHLORO-	5.0000 ppbw	6.6451e-04
BENZENE	5.0000 ppbw	0.0242
BENZENE,ETHYL-	50.0000 ppbw	0.0153
METHYLENE CHLORIDE	5.0000 ppbw	3.2003
NAPHTHALENE	75.0000 ppbw	0.0246
STYRENE	50.0000 ppbw	0.0092
TOLUENE	5.0000 ppbw	0.0073
XYLENE,m-	150.0000 ppbw	0.0388

Total Carbon Usage Estimated at Breakthrough

156.4392 #GAC/day

3.6213 #GAC/1000 gallons of water

Case # 3

With Air Stripper

Methylene Chloride = 5 ppb

Pounds of Carbon per Day = 156

Days to Breakthrough of Lead Carbon = 6

The above carbon usage estimates are based on both experimental data as well as predictive models. Actual carbon usage rates observed at various stages of breakthrough depend on many factors, and may therefore differ from the above estimates. Please contact Westates Carbon Products for further assistance.

LIQUID PHASE ISOTHERM DESIGN PARAMETERS

Water Flow Rate 30.00000 gpm

LIQUID PHASE DESIGN

Component Name	Concentration	#GAC/1000 gallons of water
ETHANE,1,2-DICHLORO-	1.0000 ppbw	0.1109
ETHENE,1,1-DICHLORO-	5.0000 ppbw	0.0895
BENZENE,1,2,4-TRICHLORO-	50.0000 ppbw	0.1206
BENZENE,1,3,5-TRICHLORO-	5.0000 ppbw	6.6451e-04
BENZENE	5.0000 ppbw	0.0242
BENZENE,ETHYL-	50.0000 ppbw	0.0153
NAPHTHALENE	75.0000 ppbw	0.0246
STYRENE	50.0000 ppbw	0.0092
TOLUENE	5.0000 ppbw	0.0073
XYLENE,m-	150.0000 ppbw	0.0388

Total Carbon Usage Estimated at Breakthrough

18.1881 #GAC/day

0.4210 #GAC/1000 gallons of water

Case # 4

With Air Stripper

Methylene Chloride = 0

Pounds of Carbon per Day = 18

Days to Breakthrough of Lead Carbon = 55

The above carbon usage estimates are based on both experimental data as well as predictive models. Actual carbon usage rates observed at various stages of breakthrough depend on many factors, and may therefore differ from the above estimates. Please contact Westates Carbon Products for further assisitance.

PE - DEP

March 28, 2009

Posillico Environmental
1600 New Highway
Farmingdale, NY 11735

James Luke
NYCDEP – Bureau of Water and Sewer Operations
Chief, Permitting and Connections
59-17 Junction Boulevard
Flushing, New York 11373
Tel: (718) 595-5430
Fax: (718) 595-5573

Reference: Request for NYCDEP Connections Approval
Huntspoint WPCP – Bronx, NY

Dear Mr. Luke,

On behalf of Posillico Environmental we are applying for a NYCDEP Connections approval for the installation of a dewatering system to facilitate soil remediation at the Huntspoint WPCP in the Bronx, NY for the NYCDEP.

- The groundwater will be sumped at a maximum discharge rate of 30 GPM for 12 hours per day = 21, 600 GPD = 2,888 cubic feet per day over a period of 4 months.

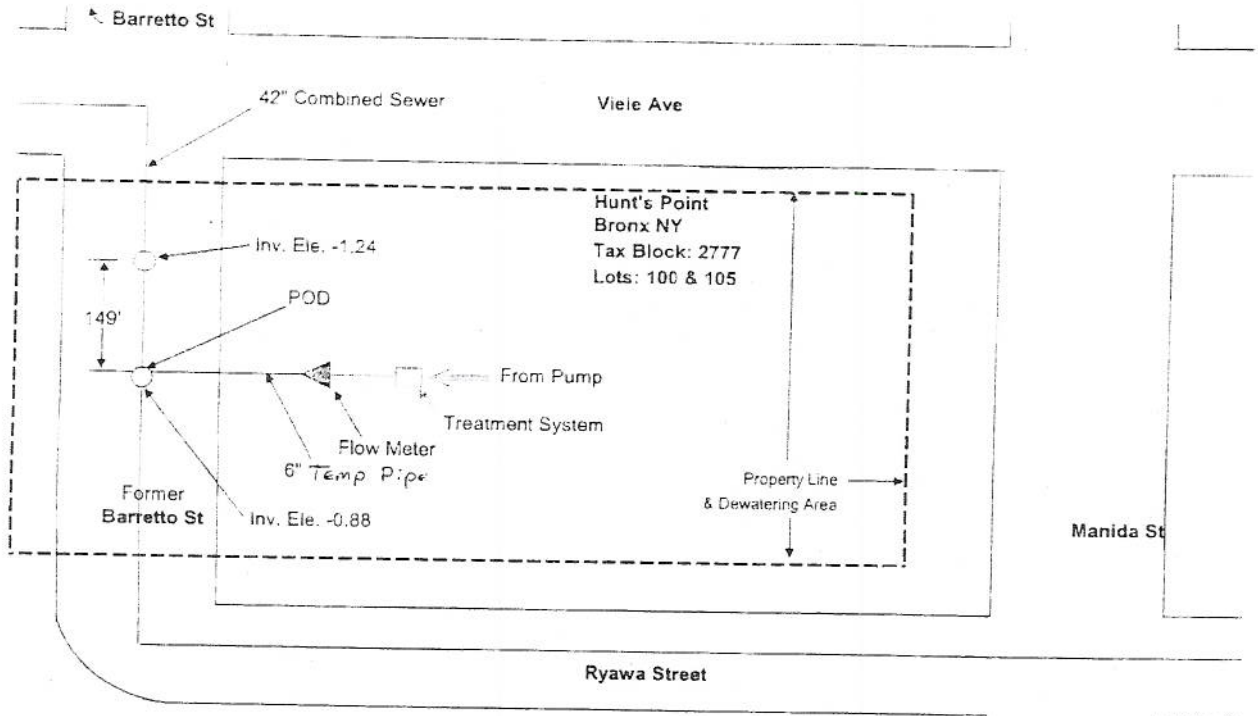
- The groundwater will be sumped through a treatment system and flowmeter before discharging through a temporary flexible 6" pipe which will connect to the on site manhole of the existing 42" combined sewer located on the former Barreto Street in the Bronx, NY.

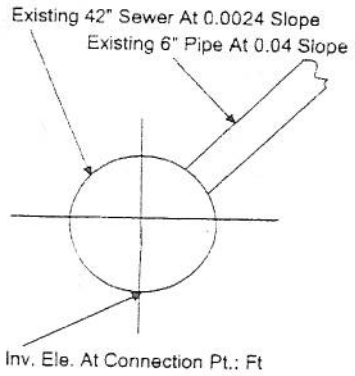
If you have any questions do not hesitate to contact Joseph Mahon at (914) 423-1331.

Thank you.

Leonard Guglielmo


COSTER ST
MANIDA ST
BARRETTO ST
CASANOVA ST
AVE
VIELE
ST
TIFFANY
EAST
BAY
AVE
OAK POINT AVE
BLACKHEAD LINE
10
20
30
3
5





SUMMARY OF DEWATERING SYSTEM

Scope of Work	Dewatering discharge will be to an existing 42" combined Sewer located on Barretto St, Bronx, NY
Project Name:	Hunts Point
Pump Capacity:	30 GPM
Number of Pumps:	1 pump running = 30GPM
Total Quantity of Discharge:	30 GPM = 21600 GPD = 0.07 CFS = 2888 CFD
Duration of Discharge:	
Flow Meter:	MW500 manufactured by McCrometer
Pretreatment Equipment:	Treatment System
Discharge Pipe Location:	Temp 6" Pvc Pipe Connected To Existing 42" Combined Sewer located on Barretto St between Ryawa Ave and Viele Ave in Bronx, NY

Flow Rate Inside The Existing 42" Combined Sewer

Slope

Invert Elevation At Mh At South End	-0.88	
Invert Elevation At Mh At North End	-1.24	
Distance between manholes (ft)	149	
s=Slope of sewer		0.0024

Flow Velocity

V=Flow Velocity	(1.486/n)*(Rh)^2/3 *(s)^1/2	
Rh=Hydraulic Radius	r/2	0.88
n=	0.014	
V=Flow Velocity	1.486/0.014*0.875^2/3*0.0024^1/2	4.76 Ft/sec

Max Flow Rate Through 42" Combined Sewer

Area=A	(PI*D^2)/4	9.62 SF
Flow Rate	Q=V*A	45.77 CFS
Max Flow Rate through Sewer		20,541 GPM

Flow Rate Ratio = (Dewatering Flow Rate)/(Max flow Rate in Sewer)

Total pump capacity 0.07 CFS

42" Sewer Capacity 45.77 CFS 0.07/45.77

% Capacity Of Dewatering System Into Existing Sewer Pipe 0.15%

Flow Rate Inside The Temp 6" Discharge Pipe

Slope

Invert Elevation at Flowmeter and Property Line		4.8 ft
Approximate Length Of Discharge Pipe To 42" Sewer		120 ft
S=Slope Of 6" Temp Discharge Pipe		0.04

Flow Velocity

V=Flow Velocity	(1.486/n)*(Rh)^2/3 *(s)^1/2	
Rh=Hydraulic Radius	r/2	0.13
n=	0.014	
V=Flow Velocity	1.486/0.014*0.125^2/3*0.04^1/2	5.31 Ft/sec

Max Flow Rate Through 6" Discharge Pipe

Area=A	(PI*D^2)/4	0.20 SF
Flow Rate	Q=V*A	1.04 CFS
Max Flow Rate Through 6" Pvc Pipe		466 GPM

Flow Rate Ratio = (Dewatering Flow Rate)/(Max Rate in Discharge Pipe)

Total pump capacity 0.07 CFS

Discharge pipe capacity 1.04 CFS 0.07/1.04

% Capacity Of Dewatering System Into Temp Pvc Discharge Pipe 6.72%

Leonard R. Guglielmo
51 Smart Avenue
Yonkers, NY 10704

The purpose of this drawing is to show dewatering capacity and tie-in to existing sewer. Responsibility for field installation and compliance is by others. Existing sewer information, orientation and inverts are provided by others. Based on the information provided, this drawing represents a reasonable sewer connection design. The dewatering system and treatment system if required is designed by others.

MORETRENCH
Hunts Point

DRAWING NO. 1

Drawn: MS
Scale: NTS
Date: 4/25/2008