COSCO/CPC SITE
Spring Valley, NY

GROUNDWATER REMEDIATION SYSTEM
SYSTEM EVALUATION/RE-DESIGN

Site No. 3-44-035

Prepared for:

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NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION
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COSCO/CPC SITE

GROUNDWATER REMEDIATION SYSTEM
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1. SITE BACKGROUND

COSCO/CPC is a 0.3 acre, Class 2 site, located in the Village of Spring Valley, Rockland County, NY (see Figure 1). The site is bordered by a Conrail line from the north and by West Central Avenue in the south. It makes up the western corner of an approximately 2.5 acre triangular block that holds the former Consolidated Stamp Company (COSCO) buildings on the eastern side (see aerial photo in Attachment A, and site layout figure from the 1999 ROD Amendment in Attachment B). The site was used as a parking lot and a tailings dump area while COSCO was in operation. COSCO ceased operations in the late 90's. The surrounding parcels are currently used for commercial, light industrial and residential.

The two sources of soil and groundwater contamination on this site were COSCO and Continental Plastic Company (CPC). COSCO was using TCE in a vapor degreasing process and discharged rinse water from the plating operation into a subsurface drainage stream (referred to as Reach B). CPC was pumping 20-30 gallons per minute of TCE/PCE noncontact cooling water into the same drainage stream.

Past investigations include a site investigation by the Rockland County Health Department (1979), and a Remedial Investigation/Feasibility Study (1990) by the NYSDEC. The 1990 RI/FS revealed total VOCs to be at up to 2,700 ppb in soils, up to 25,000 ppb in overburden wells, and up to 15,000 ppb in bedrock wells. The NYSDEC issued a Record of Decision (ROD) in March 1990 which called for treatment of soil and groundwater. It recommended soil vapor extraction (SVE) for contaminated soils and sediments in the source area with carbon treatment of the soil vapor. Subsequent soil testing during a 1997 pre-design study indicated the contaminant levels in onsite soils to have decreased below NYSDEC soil cleanup objectives, and as a result, did not present an exposure concern. By then, the drainage channel was found to be filled in and a cell tower built in its place. Also, total VOCs were found to be 1,200 ppb in overburden groundwater, and 2,200 ppb in bedrock groundwater in the 1997 Pre-Design investigation (see Attachment C for selected pages from the Pre-Design Investigation). Exposures to tetrachloroethene and trichloroethene via drinking water from the Spring Valley Wellfield (located three thousand feet to the northeast) occurred for an unknown time prior to 1978. The potable water supply wells currently in use are being treated by granular activated carbon filters and spray aeration, eliminating exposure from drinking public water.

A ROD Amendment (selected figures and tables included as Attachment B) was issued by the NYSDEC in August 1999 which became the basis for the Remedial Design (2000) and Remedial Action (2003). The 1999 ROD Amendment called for:

- No further action on source area soils and sediments (instead of SVE)
- Extraction of contaminated overburden and bedrock groundwater in the source area, treatment by chemical oxidation and polishing technologies, and discharge to surface water.
- Maintain the existing asphalt cap over the tailings dump area

- Long-term groundwater monitoring to evaluate the effectiveness of both the groundwater extraction system and the tailings dump cap

The Remedial Design was completed in 2000, followed by implementation of the selected remedy in 2003 for contaminated groundwater. Investigations indicated a plume of groundwater contamination that extended east/northeast of the property border. The remedy included groundwater extraction from three bedrock wells (one shallow and two deep), treatment (35 gpm design flow, and 45 gpm maximum flow) using UV/hydrogen peroxide oxidation for VOC destruction, bag filters for solids removal, specialty activated carbon for excess hydrogen peroxide destruction, activated carbon polishing, and surface water discharge. Photos and details of the existing treatment system are included in Attachment D, including trailer, process equipment and treated groundwater discharge criteria.

The entire groundwater treatment system, housed in a trailer, went into operation in November 2003. Operational issues (full time operator attention, special materials handling, safety) and costs (chemicals, power and labor) associated with the UV/peroxide process resulted in the system being shut down within a couple of years. The treatment system required full time staffing and special materials handling due to the use of high strength hydrogen peroxide and hydrochloric acid. At the same time, the NYSDOH was concerned about potential off-site migration of the VOCs through groundwater and soil vapor intrusion.

The NYSDEC therefore decided to evaluate the groundwater treatment system so as to develop a more easily manageable process and still remain within the intent of the 1999 ROD Amendment. The NYSDEC and NYSDOH also initiated additional investigations to determine the potential for soil vapor intrusion into structures on or near the site. Exposure to contaminants in source area sediments is not expected to occur as the affected area had been substantially modified and sediments were previously removed. An on-site soil vapor study was completed in 2004. Aztech Technologies Inc. was issued a callout by the NYSDEC in 2009 under the standby remediation contract to renovate and upgrade the treatment system. Iyer Environmental Group, PLLC was retained by Aztech as a subconsultant to evaluate and re-design the treatment system, and assist during the supplemental investigation.

This report presents the results of the evaluation and re-design of the groundwater treatment system, and the results of the supplemental investigation to assess off-site migration of contaminants.

2. OBJECTIVES

The overall remedial objective for the COSCO/CPC site as per the 1999 ROD Amendment is to extract contaminated groundwater from shallow and deep bedrock, treat it onsite for volatile organic compounds (primarily TCE, PCE, and their degradation products), and discharge treated groundwater to surface water. UV/hydroxide peroxide destruction of the VOCs was selected as the treatment process based on a 1990 Feasibility Study.

This callout assignment was undertaken with the following objectives:

- ➢ Evaluate an alternative process, preferably re-using available equipment (e.g. air strippers in NYSDEC's inventory) that would alleviate the operational and cost issues related to the existing UV/peroxide process, and yet remain within the pump-and-treat intent for groundwater in the 1999 ROD Amendment.

- Determine the extent, if any, of off-site migration of contaminants towards residential homes to the east. This is to be performed using Geoprobe for soil vapor and shallow ground water, and a new deep bedrock monitoring well.
- Re-design, install and operate a modified treatment system to meet the intent of the 1999 ROD Amendment for groundwater remediation.

3.0 PREVIOUS INVESTIGATIONS

Previous investigations started with a 1979 Rockland County site investigation that identified the two sources of contamination (COSCO and CPC). This was followed by a RI/FS in 1990 by the NYSDEC, and a pre-design investigation by the NYSDEC in 1998. The initial ROD (1990) was based on the results of the RI/FS, and was subsequently amended (1999) based on the pre-design investigation results.

The overburden consists of a layer of fill material of sands and gravel, and below that lies glacially derived materials consisting of a silty clay zone, a glacial outwash of sands and gravel, followed by a glacial till unit. The bedrock in the area is about 40 feet below grade and is part of the Brunswick Formation consisting primarily of red shales and mudstones (see geologic cross-section in Attachment C). The groundwater flow in the overburden aquifer at the site is reported to be to the southeast with a downward gradient between the overburden and bedrock aquifers. Regional flow in the bedrock aquifer beneath the site appears to be to the northeast.

The trend in groundwater contamination levels is illustrated by the historical VOC data summarized in Table 1. Total VOCs in on-site groundwater has decreased from a maximum of 24,900 ppb in 1984 to a maximum of 470 ppb in 2009.

Between 1979 and1984, very high levels of TCE and PCE contamination were found in on-site wells and the drainage waterway. According to one report, CPC and COSCO production wells had as much as 7,600 ppb TCE and the waterway path as much as 59,000 ppb TCE. Monitoring wells installed in 1998 by the NYSDEC revealed up to 210 ppb TCE and 40 ppb PCE in overburden wells. PCE and TCE were found in the bedrock groundwater at concentrations of 7,700 ppb and 4,300 ppb, respectively.

During the pre-design investigation in 1999, four groundwater monitoring wells (two shallow and two deep bedrock) and one soil vapor extraction well were installed and sampled along with existing wells. VOCs ranged from a maximum of 530 ppb for VC and DCE to 1300 ppm for TCE (see also Attachment C), which became the basis for the design (see Table 2) of the UV/peroxide treatment system. The design flow was set at 35 gpm normal and 45 gpm maximum based on pump testes performed during the pre-design investigation.

The NYSDEC conducted an on-site soil vapor intrusion (SVI) investigation in 2006, at which time the treatment system had been shut down due to the operational issues and a lack of an operations and maintenance contract. Using a Geoprobe, six soil vapor samples and six overburden groundwater samples were collected and sampled for VOCs (see results in Attachment E). Along with the chlorinated organics, trace levels of petroleum-derived compounds (benzene, toluene, ethylbenzene, and xylene) were also detected. VOCs in soil vapor included PCE at 2 to 1,275 µg/m^3, TCE at 186 to 4,303 µg/m^3, and cis-1,2-dichloroethene (1,2-

DCE) at 547 to 692 µg/m^3. TCE in groundwater ranged from 1 to 61 ppb, 1,2-DCE from 1 to 61 ppb, PCE in one sample at 5 ppb, and VC in one sample at 23 ppb. Based on the results of the investigation, the NYSDEC and the NYSDOH recommended off-site sampling of soil gas and groundwater to evaluate the potential for soil vapor intrusion. This work was included in the callout work assignment to Aztech.

4. SUPPLEMENTAL OFF-SITE INVESTIGATION (2009)

To further assess potential off-site migration of contaminants, Aztech completed a Geoprobe soil and groundwater screening and sampling program in October 2009 in front of residential homes immediately east of the site. Nine locations (shown on Figure 2) were screened for volatile organics, and groundwater was sampled from five of the nine locations and analyzed for VOCs. In addition, a shallow bedrock groundwater monitoring well (DW-1) was installed at the northeast corner of the site (east end of the access driveway) and was sampled in January 2010 for VOCs. The results are tabulated with a location map on Figure 2, while raw analytical data are included along with boring logs in Attachment F.

Of the four chlorinated organics of concern at the site, only TCE was detected at 4.4 to 33 ppb in three of the five off-site groundwater samples. Trace levels of other unrelated volatile organics (acetone, 2-butanone and 4-methyl-2-pentanone) were also detected in two wells. No VOCs were detected in the new monitoring well DW-1 at the eastern edge of the site. These results show that off-site levels of chlorinated organics are not significant enough to need further action, but should be monitored over time.

5. EXISTING SYSTEM EVALUATION

The existing bedrock groundwater extraction system comprises of one shallow bedrock well (RW-1S), and two deep bedrock wells (RW-3D and RW-8D; see locations on Figure 3), all equipped with submersible pumps and piping that carries groundwater to the treatment system trailer as illustrated by the P&ID on Figure 4A. The existing groundwater treatment system, housed in a 10’x40’ trailer, consists of a 1700-gal influent equalization tank, a 200-gal feed tank for 50% hydrogen peroxide, two UV/peroxide contact chambers, two bag filters, a 400-gal hydrogen peroxide destruct unit with specialty granular activated carbon (GAC), and a 400-gal GAC polishing column. The P&ID’s for these units are included as Figures 4B and 4C, with additional details in Attachment D.

The treatment system is designed for a normal flow of 35 gpm, and maximum flow of 45 gpm. The operating range for the system is 15 gpm minimum to 35 gpm. Treated effluent is discharged into Reach B. According to the treatment system installation and operations manuals, the UV/OX unit turns on when the equalization tank pump comes on, but then takes ten minutes to warm up. During this time, the target effluent discharge criteria will not be met, and the effluent is therefore recycled back to equalization tank. Once the UV/peroxide unit is at full strength, the system switches the effluent to discharge mode.

For the UV/peroxide unit to not cycle on/off frequently, the cumulative flow rate from the three extraction wells has to average above the system flow rate which is the faster than 15 gpm. Control of flow from the equalization tank to the treatment system was initially based upon equalization tank level, but modified to use influent totalized flow so as to control process flow rates between 20 and 45 gpm. This limitation still presented operational several difficulties, including the need to have full time operator attention to ensure the system cycles properly.

UV/OX treatment system requires operators with specialized training and enhanced health and safety precautions. The treatment process uses 50% hydrogen peroxide for VOC destruction, and 10% hydrochloric acid is needed for routine cleaning of the UV quartz tubes. The operators therefore have to regularly handle corrosive liquids, and contact with either of them can cause chemical burns. The UV reactor tanks produce high intensity ultraviolet light that can be damaging to the eyes and exposed skin. The quartz lamps also have to be handled with care as their operating temperatures can exceed 1500^{o}C during normal operation, and will retain heat for a considerable time after the unit is turned off.

The UV/OX system is designed to treat groundwater containing up to 530 ppb VC and DCE, 1800 ppb TCE and 1200 ppb PCE, consistent with the range of VOC concentrations observed during the pre-design investigation, and as outlined in a 12/21/1998 NYSDEC Memo (included in Attachment D). The NYSDEC effluent limitations for this site are 6 ppb for PCE, and 10 ppb for DCE, TCE and VC.

Actual treatment system influent VOC concentrations (combined from two shallow and one deep bedrock wells) were considerably lower than the design basis right from the start. Monthly operating reports for December 2003 and August 2004 (data included in Attachment D) show TCE to have been present in the influent at 96.4 and 69.1 ppb respectively, and PCE at 63.5 and 50.2 ppb respectively. VC and DCE were non-detect on both occasions. The post-UV/OX sample for December 2003 (included in Attachment D) had 23.1 ppb TCE and 7.22 ppb PCE, which correspond to 76% and 90% in VOC removal respectively. All four VOCs were non-detect in the final effluent following GAC polishing, implying that the GAC unit may have been a crucial process step in meeting the effluent discharge limitation.

Overall, groundwater sampling over the last two decades has shown declining VOC levels on-site, with no significant VOC concentrations off-site. At these reduced influent VOC levels and observed flow rates (average 25 gpm), a simpler and less operator intensive process like air stripping is worth considering for this site.

6. REPLACEMENT AIR STRIPPER DESIGN

A properly sized air stripper can provide the necessary removal efficiency without even the need for a carbon polishing step at the anticipated influent concentrations. The NYSDEC has a shallow tray air stripper (NEEP Model 2341-P) and a blower from another site that is now available for re-use. Details about this air-stripper, including photos, manufacturer's product sheet and dimensions, are included in Attachment G. It is 4 feet in diameter, and has an overall height of 6.5 feet. It houses four trays and a sump. This polyethylene air stripper is rated for a groundwater flow rate of 1 to 50 gpm, and the blower is rated for 300 cfm air flow rate.

The Model 2341-P air-stripper was evaluated using NEEP's Air-Stripper modeling spreadsheet with design VOC concentrations from the 1998 Remedial Design of the UV/OX system, as well as anticipated concentrations (referred to herein as the new design basis) based on recent groundwater data. The two sets of design concentrations are listed in Table 2. Both sets of design concentrations were run at the design average (25 gpm) and maximum flow rates (45 gpm) which are within the operating range of this air-stripper. The same parameters were also input into another air-stripper model from QED for comparison and to confirm that the selected air-stripper will provide consistent performance for the site conditions. The results of the air stripper model calculations for the four combinations of design parameters (two sets of design concentrations, and two design flows) are included in Attachment H. The air-stripper data was also input into the Air Guide I model to estimate air emissions and compare them with allowable guidance concentrations (AGCs). The results of these calculations are presented in Tables 3A through 3D.

With respect to ease of stripping, vinyl chloride and tetrachloroethene are the most easily stripped from an aqueous solution, followed by cis-1,2-dichloroethylene and trichloroethylene. The shallow tray calculations in Attachment H show that the Model 2341-P can attain effluent concentrations of less than 1 ppb for the four VOCs at an average flow rate of 25 gpm, and less than 2 ppb at the maximum flow rate of 45 gpm – these predicted effluent concentrations are well below discharge limitations for the site. The QED model calculations confirm the same performance for a similar air stripper at the same flow rates. A reduced air flow of 200 cfm will also work at the new design influent concentrations.

The Air Guide I calculations indicate that actual air emissions would have exceeded allowable AGCs for the four VOCs of concern at the original UV/OX design concentrations, but will be below allowable AGCs at the new design influent concentrations given the anticipated range of operating flows (25 to 45 gpm). A stack height of 35 feet was assumed in the Air Guide I calculations.

Based on the above calculations, the available NEEP Model 2341-P air-stripper with a rated groundwater flow rate of 1 to 50 gpm, and 300 cfm air flow rate, will be suitable for remediation of groundwater at the COSCO site. Average VOC concentrations in combined groundwater from the three bedrock wells should remain below the new design basis developed from recent sampling results, and target effluent discharge limitations can be met with the air-stripper alone. Since the GAC unit is already part of the existing system, it can remain in the process train as a polishing step during the initial months of operation, and removed from service performance sampling results confirm it is not needed.

7. PROPOSED REMEDIATION SYSTEM MODIFICATIONS

The proposed groundwater extraction and treatment system without the UV/OX process and with the air stripper is illustrated by the P&ID diagram on Figure 5. Table 4 lists new and used equipment for this modified treatment system. The three existing extraction wells (RW-1S, RW-3D and RW-8D) and associated piping will be retained as part of the modified system. The existing submersible pumps have been in the wells for a considerable length of time and is better to replace them than fix them up for reuse.

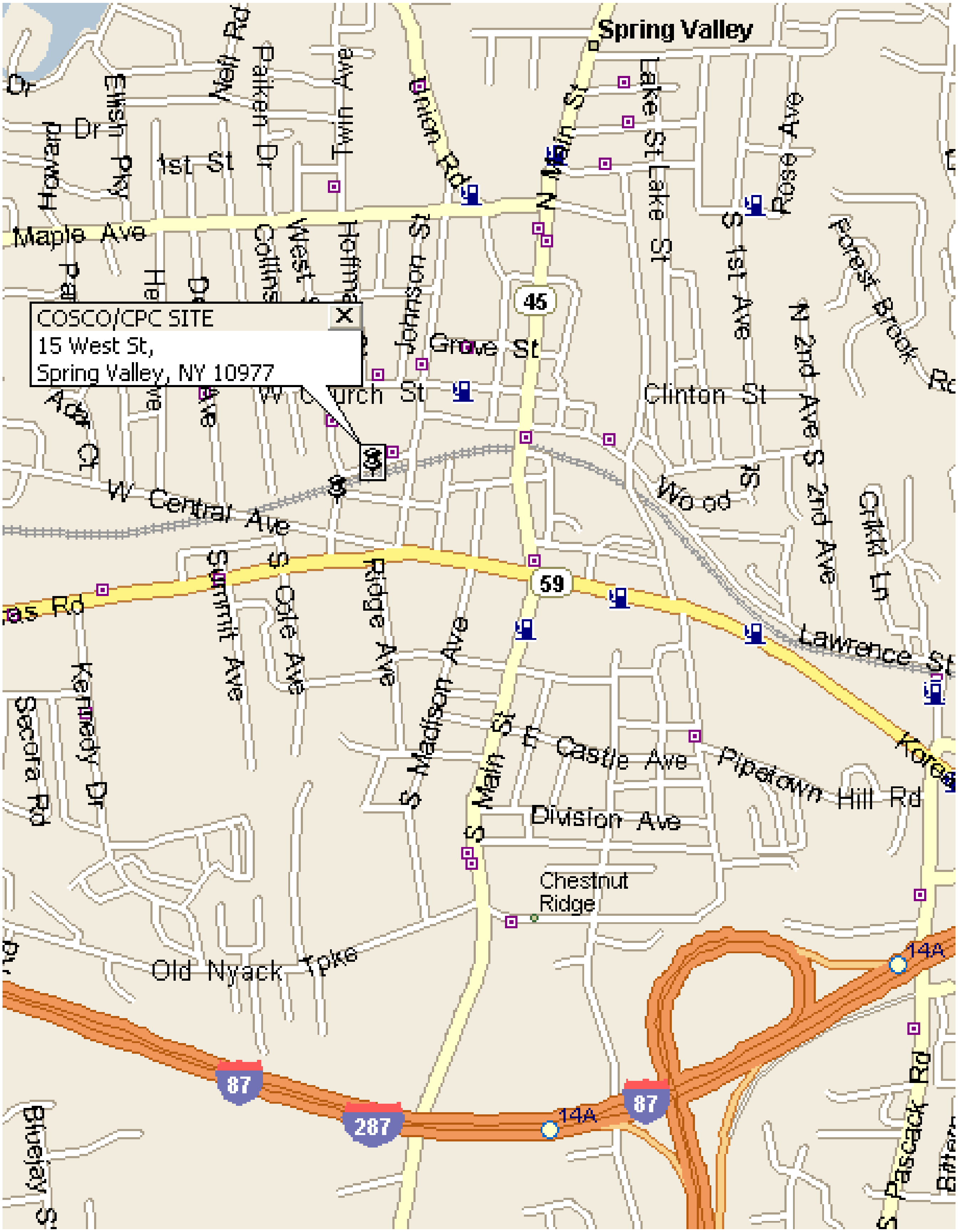
Existing process units and other treatment components that will be re-used are identified by the recycle symbol on Figure 5. It includes the majority of piping, all flow meters, settling tank, transfer pump, air stripper, blower, etc. All other components shown on the P&ID diagram and others (air discharge stack, gauges, interior temperature, security, etc.) not shown but necessary to make the system fully operational with minimum daily operator attention will be provided new. The interior space in the existing trailer will adequate for the modified system, but the trailer will need to be cleaned and refurbished to render it suitable and secure. A stack extending about 20 feet above the roof of the trailer will be added for air discharge.

8. SUMMARY AND CONCLUSIONS

In order to alleviate operational issues and costs associated with the existing UV/OX treatment system, it can be replaced with an air stripper available from another NYSDEC site. The air stripper is a 4-tray NEEP Model 2341-P, rated at 1 to 50 gpm groundwater flow and 300 cfm air flow. VOC concentrations in groundwater at the site have steadily declined over time, and are now at less than half the design concentrations assumed in 1998 design of the UV/OX system. Off-site groundwater does not appear to need further action at this time. Based on the new design basis, the air stripper will be capable of providing the required VOC removals to meet discharge criteria. A modified groundwater treatment using existing components and the available air stripper is proposed for this site. The treatment system will include the GAC polishing step during the initial months, and removed if not deemed not necessary based on performance testing.

COSCO/CPC SITE
GROUNDWATER REMEDIATION SYSTEM
EVALUATION/RE-DESIGN

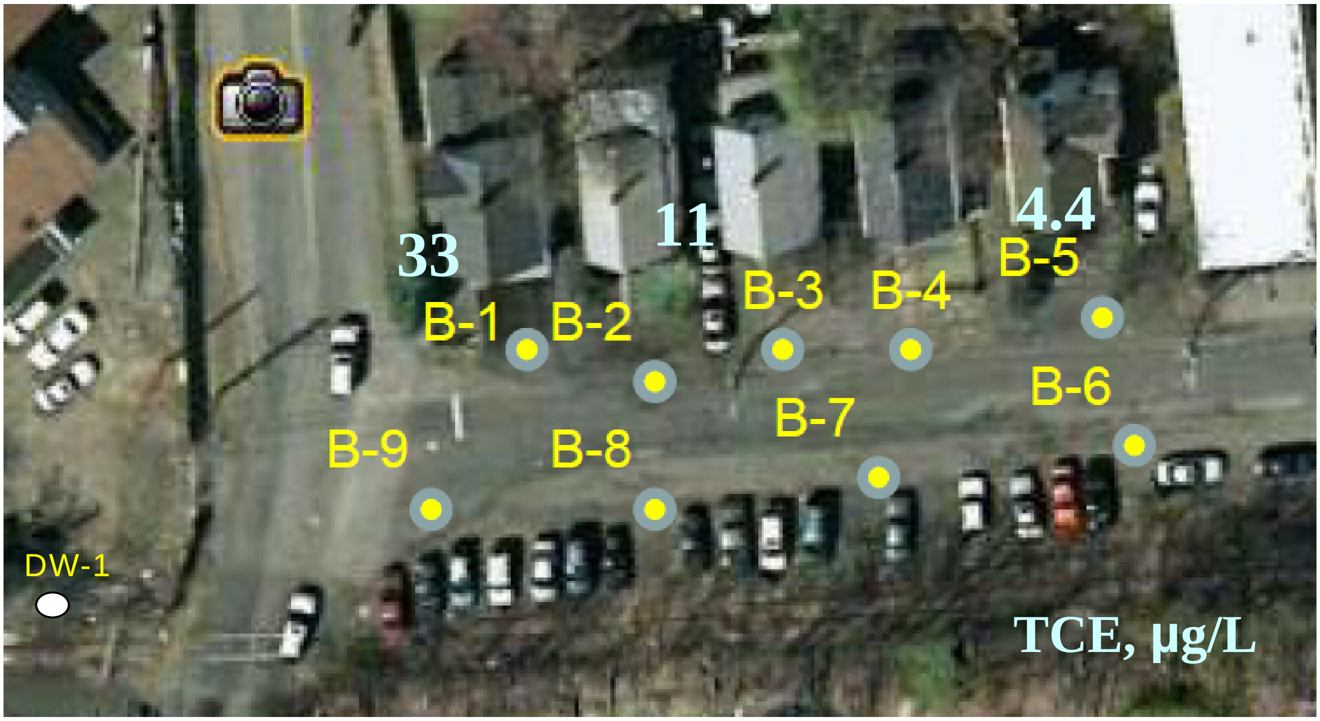
FIGURES



COSCO SITE OM&M
OFF-SITE GROUNDWATER SAMPLING

FIGURE 1

IEG

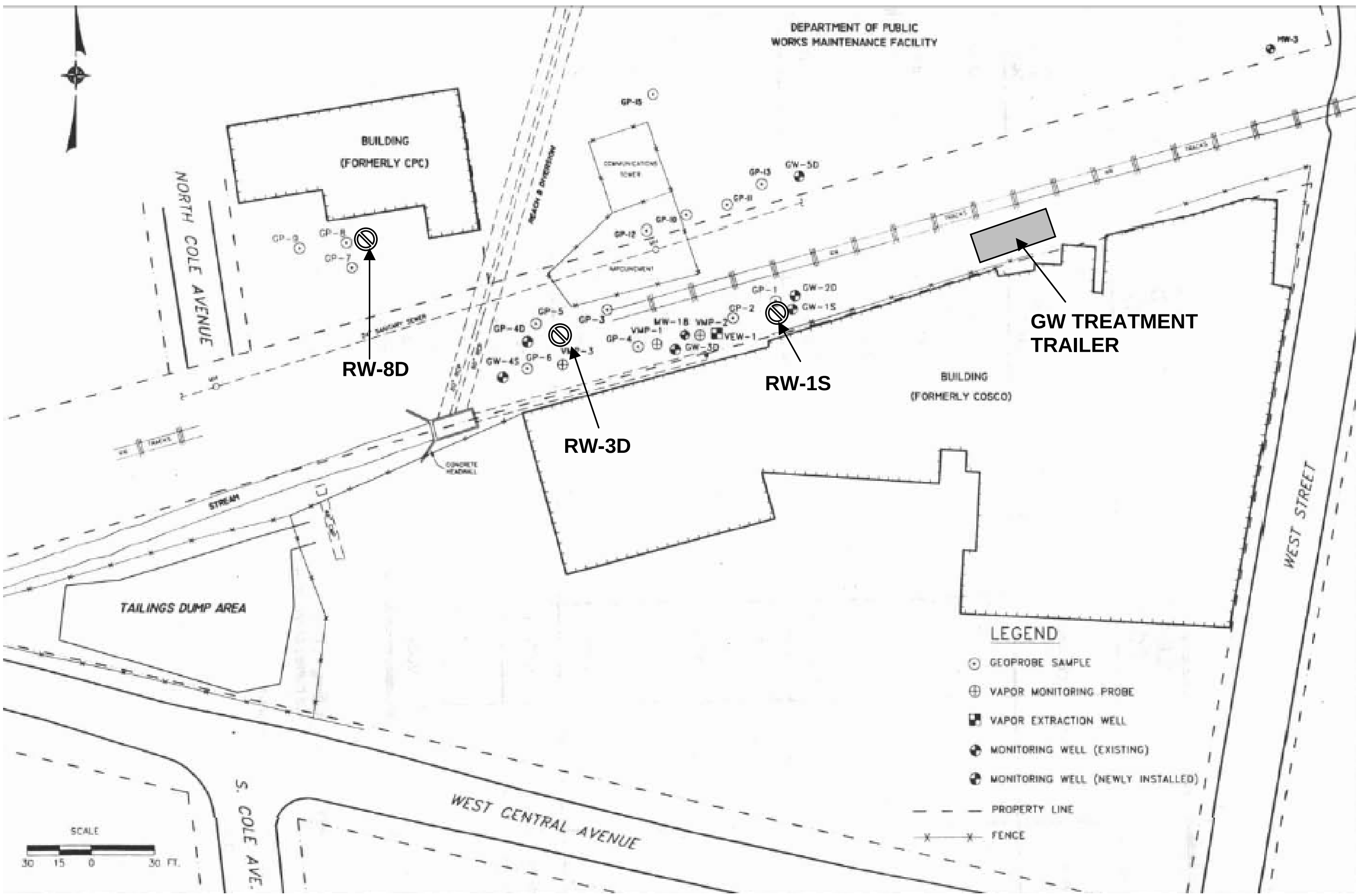


VOCs DETECTED in GROUNDWATER (10/15/09)

ANALYTE	B-1	B-2	B-3	B-5	B-7	DW-1
Acetone	11	43	nd	nd	nd	nd
2-Butanone	nd	13	nd	nd	nd	nd
4-Methyl-2-Pentanone	nd	12	nd	nd	nd	nd
Trichloroethene	33	nd	11	4.4 J	nd	nd
TOTAL VOCs	**44**	**68**	**11**	**4.4**	**ND**	**ND**

Note: B-1 through B-7 are Geoprobe samples, and DW-1 is a new monitoring well

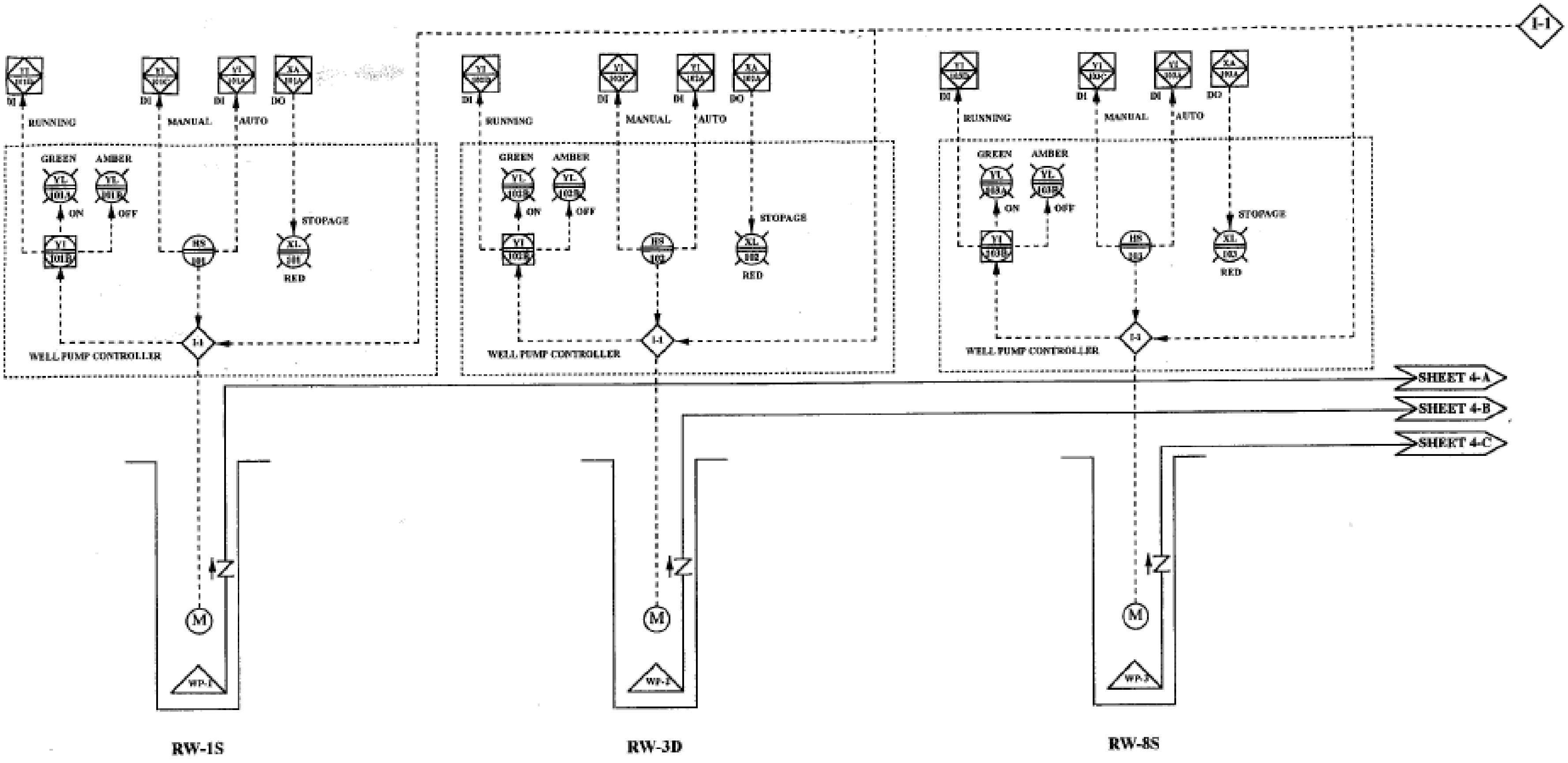
COSCO SITE OM&M OFF-SITE GROUNDWATER SAMPLING (2009)	FIGURE 2 IEG



COSCO SITE OM&M
SITE MAP WITH WELL LOCATIONS

FIGURE 3

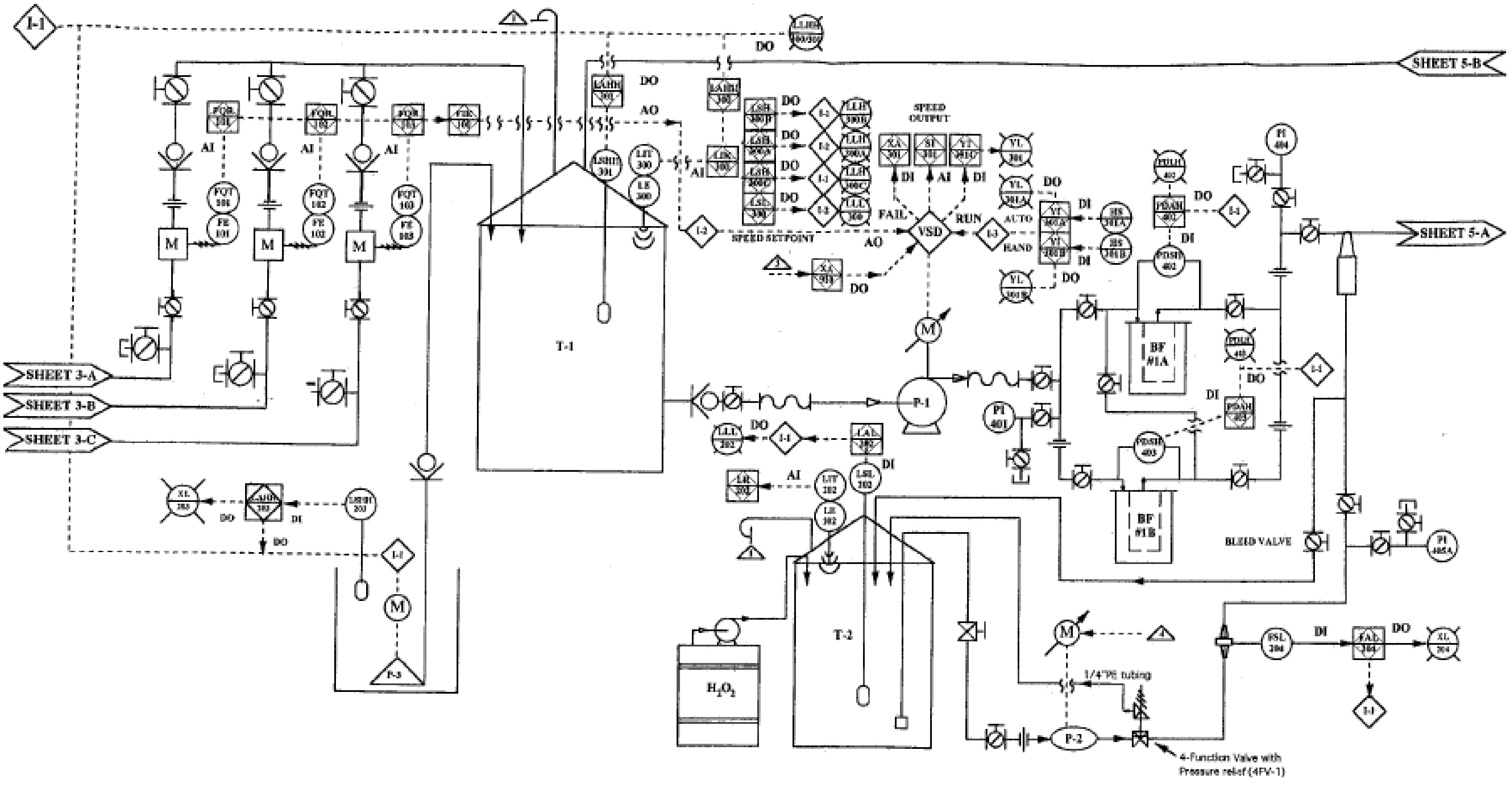
IEG



COSCO SITE OM&M
EXISTING GW TREATMENT SYSTEM P&ID

FIGURE 4A

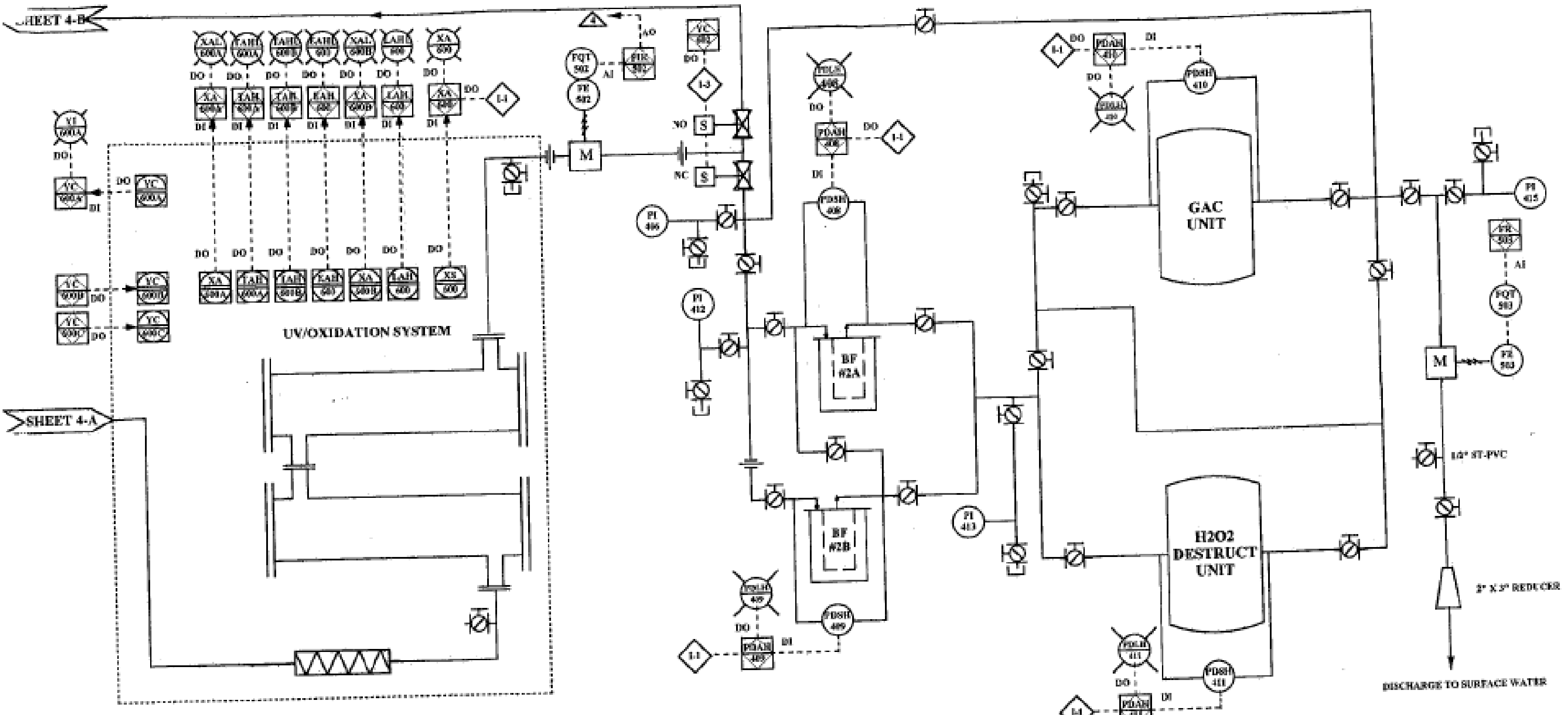
IEG



COSCO SITE OM&M
EXISTING GW TREATMENT SYSTEM P&ID

FIGURE 4B

IEG



COSCO SITE OM&M
EXISTING GW TREATMENT SYSTEM P&ID

FIGURE 4C

IEG

NYSDEC COSCO GWR&T SYSTEM

RECOVERY WELLS
SETTLING TANK
TRANSFER PUMP

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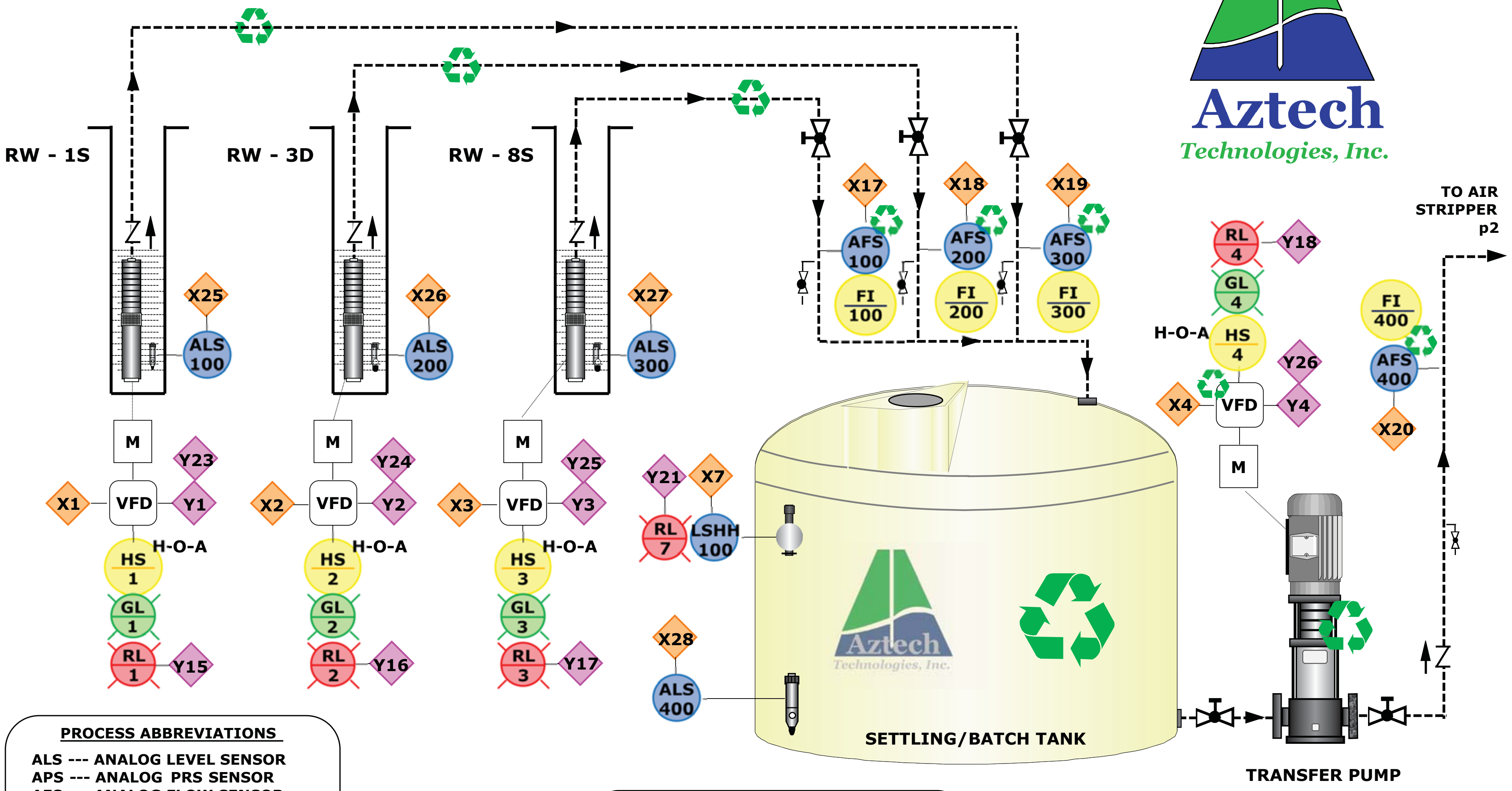

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PROCESS ABBREVIATIONS

ALS --- ANALOG LEVEL SENSOR
APS --- ANALOG PRS SENSOR
AFS --- ANALOG FLOW SENSOR
FI --- FLOW INDICATOR
GL --- GREEN INDICATOR LIGHT
HS --- HAND SWITCH
LSHH - LEVEL SENSOR HI-HI
LSH - LEVEL SENSOR HI
LSL - LEVEL SENSOR LO
LSLL - LEVEL SENSOR LO-LO
M --- MOTOR
RL --- RED INDICATOR LIGHT
VFD --- VARIABLE FREQ DRIVE
X ---- CONTROLLER INPUT
Y ---- CONTROLLER OUTPUT

INSTRUMENT LEGEND

- ● FIELD MOUNT SENSOR/SWITCH
- ⊖ PANEL MOUNT INDICATOR LIGHT
- ● PANEL MOUNT DISP/SWITCH
- ◆ PLC INPUT ◆ PLC OUTPUT

NOTE THAT LOCAL INDICATORS
WILL AUGMENT BLIND ANALOG
SENSORS WHENEVER PRACTICAL

♻ = RECYCLED EQUIPMENT

Aztech Iyer NYSDEC COSCO P&ID	
Terrence Bohn	rev 8, no scale
23 Aug 2010	FIGURE 5

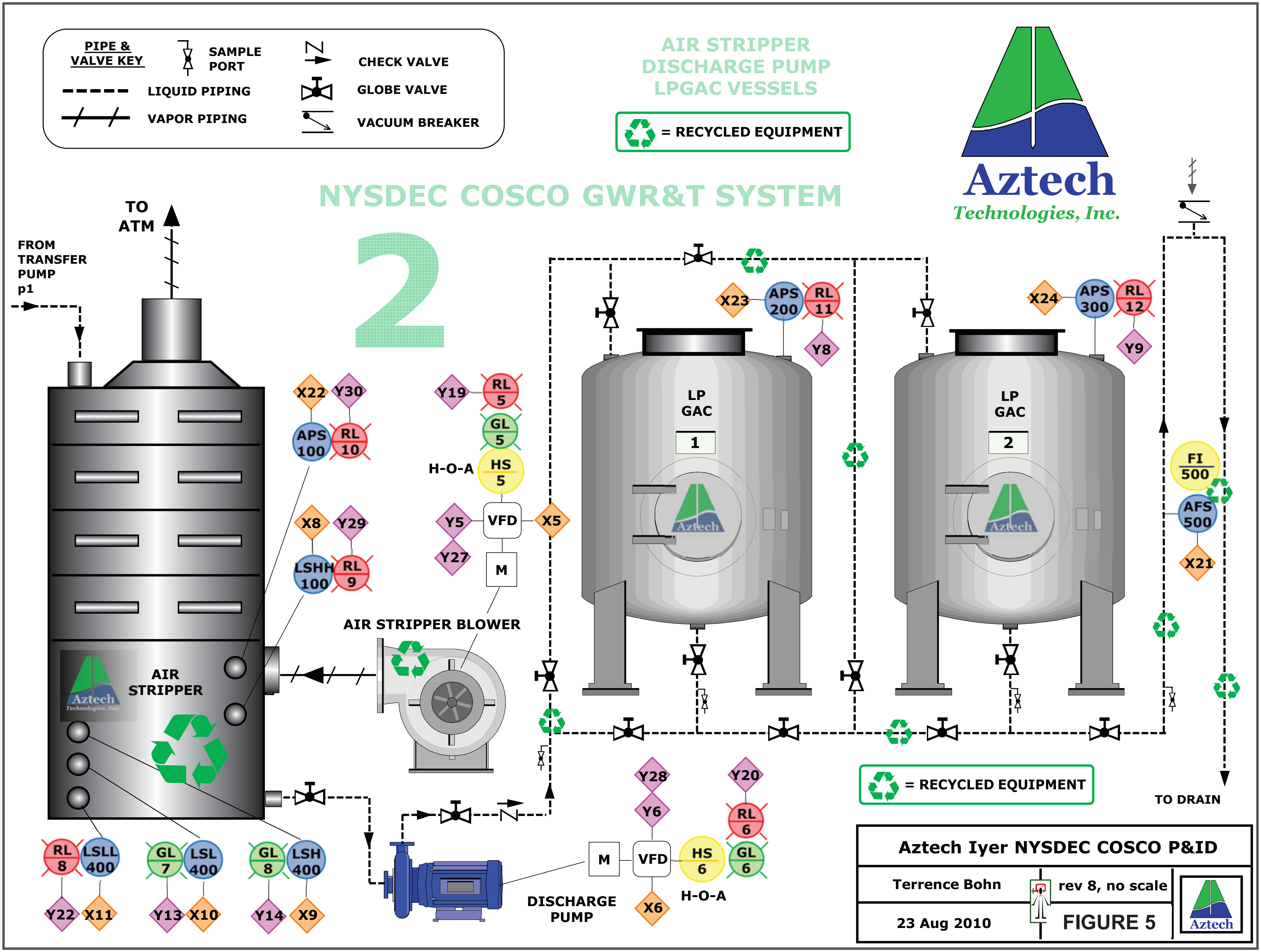
Aztech

NYSDEC COSCO GWR&T SYSTEM

2

AIR STRIPPER
DISCHARGE PUMP
LPGAC VESSELS

♻ = RECYCLED EQUIPMENT



Aztech Iyer NYSDEC COSCO P&ID

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23 Aug 2010 | FIGURE 5

COSCO/CPC SITE

GROUNDWATER REMEDIATION SYSTEM

EVALUATION/RE-DESIGN

TABLES

TABLE 1
COSCO GROUNDWATER REMEDIATION
HISTORY OF VOCs IN GROUNDWATER

PARAMETER	GROUND WATER STANDARDS	1990s SI & RI/FS	1999 Pre-Design	UVOX SYSTEM - 12/2003 NFLUENT	After UVOX	EFFLUENT	6/28/2005 GW MAX	4/26/2009 RW1s	RW8s	RW3D
Vinyl Chloride	2	320 - 5800	nd - 530	nd	nd	nd	24	nd	20	nd
cis 1,2-Dichloroethene (DCE)	5	1500 - 19000	nd - 530	nd	nd	nd	61	1 J	53	73 / ND
Trichloroethene	5	7700 - 9700	nd - 1300	96	23	nd	61	2 J	4	190 / 250
Tetrachloroethene	5	4300 - 4400	nd - 830	64	7.2	nd	na	0.9	1	180 / 220
TOTAL VOCs	5	15400 - 24900	nd - 3110	160	30.2	nd	na	3.9	79	443 / 470

TABLE 2
COSCO GROUNDWATER REMEDIATION
DESIGN BASIS FOR GROUNDWATER VOCs

PARAMETER	**GROUND WATER STANDARDS** µg/L	**EXISTING UVOX DESIGN BASIS** 2000	**NEW ARI STRIPPER DESIGN BASIS** 2010
Vinyl Chloride	2	530	5
cis 1,2-Dichloroethene (DCE)	5	530	150
Trichloroethene	5	1800	500
Tetrachloroethene	5	1200	500

TABLE 3A

COSCO GROUNDWATER REMEDIATION

AIR STRIPPER DESIGN - ESTIMATED VOC EMISSIONS (BASED ON EXISTING UV/OX DESIGN CONCS. & MAX. FLOW)

CHEMICAL	Toxicity Rating	CAS Registry Number	Air Stripper Influent Design Value (µg/l)	Contaminant Emissions (lb/h)	Contaminant Emissions (lb/yr)	Calculated Max. Actual Annual Impact (µg/m^3)	AGC (µg/m^3)	% of Allowable Emissions	Calculated Max. Short Term Impact (µg/m^3)	SGC (µg/m^3)	% of Allowable Emissions
Vinyl Chloride	High	00075-01-4	530	0.012	105	0.21	0.11	191.32%	13.679	180,000	0.01%
1,2-Dichloroethene (total)	Moderate	00540-59-0	530	0.012	105	0.21	1900	0.01%	13.679	190,000	0.01%
Trichloroethene	Moderate	00079-01-6	1,800	0.041	355	0.71	0.5	142.95%	46.458	54,000	0.09%
Tetrachloroethene	Moderate	00127-18-4	1,200	0.027	237	0.48	1	47.65%	30.972	1,000	3.10%
TOTALS				0.0914	801						

Based on the New York State Air Guide - 1, 1997

1. Air Stripper Influent Design Value - The level of contaminant assumed to be the maximum of the source area.
2. Contaminant Emissions - Assumes that 100% of the volatile contaminants in the water are removed by the air stripper.

Assumed Stack Height: **35 ft.**

Treatment System Flow Rate: **45 gpm**

TABLE 3B

COSCO GROUNDWATER REMEDIATION

AIR STRIPPER DESIGN - ESTIMATED VOC EMISSIONS (BASED ON NEW AIR STRIPPER DESIGN CONCS & MAX. FLOW)

CHEMICAL	Toxicity Rating	CAS Registry Number	Air Stripper Influent Design Value (µg/l)	Contaminant Emissions (lb/h)	Contaminant Emissions (lb/yr)	Calculated Max. Actual Annual Impact (µg/m³)	AGC (µg/m³)	% of Allowable Emissions	Calculated Max. Short Term Impact (µg/m³)	SGC (µg/m³)	% of Allowable Emissions
Vinyl Chloride	High	00075-01-4	5	0.000	1	0.00	0.11	1.80%	0.129	180,000	0.00%
1,2-Dichloroethene (total)	Moderate	00540-59-0	150	0.003	30	0.06	1900	0.00%	3.872	190,000	0.00%
Trichloroethene	Moderate	00079-01-6	500	0.011	99	0.20	0.5	39.71%	12.905	54,000	0.02%
Tetrachloroethene	Moderate	00127-18-4	500	0.011	99	0.20	1	19.85%	12.905	1,000	1.29%
TOTALS				0.0260	228						

Based on the New York State Air Guide - 1, 1997

1. Air Stripper Influent Design Value - The level of contaminant assumed to be the maximum of the source area.
2. Contaminant Emissions - Assumes that 100% of the volatile contaminants in the water are removed by the air stripper.

Assumed Stack Height: **35 ft.**

Treatment System Flow Rate: **45 gpm**

TABLE 3C

COSCO GROUNDWATER REMEDIATION

AIR STRIPPER DESIGN - ESTIMATED VOC EMISSIONS (BASED ON EXISTING UV/OX DESIGN CONCS. & AVG. FLOW)

CHEMICAL	Toxicity Rating	CAS Registry Number	Air Stripper Influent Design Value (µg/l)	Contaminant Emissions (lb/h)	Contaminant Emissions (lb/yr)	Calculated Max. Actual Annual Impact (µg/m³)	AGC (µg/m³)	% of Allowable Emissions	Calculated Max. Short Term Impact (µg/m³)	SGC (µg/m³)	% of Allowable Emissions
Vinyl Chloride	High	00075-01-4	530	0.007	58	0.12	0.11	106.29%	7.600	180,000	0.00%
1,2-Dichloroethene (total)	Moderate	00540-59-0	530	0.007	58	0.12	1900	0.01%	7.600	190,000	0.00%
Trichloroethene	Moderate	00079-01-6	1,800	0.023	197	0.40	0.5	79.42%	25.810	54,000	0.05%
Tetrachloroethene	Moderate	00127-18-4	1,200	0.015	131	0.26	1	26.47%	17.207	1,000	1.72%
TOTALS				0.0508	445						

Based on the New York State Air Guide - 1, 1997

1. Air Stripper Influent Design Value - The level of contaminant assumed to be the maximum of the source area.
2. Contaminant Emissions - Assumes that 100% of the volatile contaminants in the water are removed by the air stripper.

Assumed Stack Height: **35 ft.**

Treatment System Flow Rate: **25 gpm**

TABLE 3D

COSCO GROUNDWATER REMEDIATION

AIR STRIPPER DESIGN - ESTIMATED VOC EMISSIONS (BASED ON NEW AIR STRIPPER DESIGN CONCS & MAX. FLOW)

CHEMICAL	Toxicity Rating	CAS Registry Number	Air Stripper Influent Design Value (µg/l)	Contaminant Emissions (lb/h)	Contaminant Emissions (lb/yr)	Calculated Max. Actual Annual Impact (µg/m^3)	AGC (µg/m^3)	% of Allowable Emissions	Calculated Max. Short Term Impact (µg/m^3)	SGC (µg/m^3)	% of Allowable Emissions
Vinyl Chloride	High	00075-01-4	5	0.000	1	0.00	0.11	1.00%	0.072	180,000	0.00%
1,2-Dichloroethene (total)	Moderate	00540-59-0	150	0.002	16	0.03	1900	0.00%	2.151	190,000	0.00%
Trichloroethene	Moderate	00079-01-6	500	0.006	55	0.11	0.5	22.06%	7.169	54,000	0.01%
Tetrachloroethene	Moderate	00127-18-4	500	0.006	55	0.11	1	11.03%	7.169	1,000	0.72%
TOTALS				0.0144	127						

Based on the New York State Air Guide - 1, 1997

1. Air Stripper Influent Design Value - The level of contaminant assumed to be the maximum of the source area.
2. Contaminant Emissions - Assumes that 100% of the volatile contaminants in the water are removed by the air stripper.

Assumed Stack Height: **35 ft.**

Treatment System Flow Rate: **25 gpm**

TABLE 4
COSCO GROUNDWATER REMEDIATION
PROCESS EQUIPMENT & INSTRUMENTATION

EQUIPMENT	SOURCE
PUMPING WELLS RW-1S, RW-3D, RW-8S	EXISTING
WELL PUMPS/MOTORS WP-1, WP-2 & WP-3	NEW
WELL PUMP CONRTOLLERS	NEW
SUMP PUMP/MOTOR / LEVEL SENSOR & CONTROLLER	EXISTING
EQUALIZATION TANK / LEVEL SENSOR & CONTROLLER	EXISTING
TRANSFER PUMP FROM EQ.TANK / VSD MOTOR	EXISTING
SEQUESTERING AGENT FEED TANK/INJECTOR	For future consideration
INFLUENT BAG FILTERS BF#1A & BF#1B / PRESSURE SENSORS	EXISTING
AIR STRIPPER - NEED MODEL P-4341 (1 - 50 GPM)	USED - NYSDEC
AIR STRIPPER BLOWER	USED - NYSDEC
SENSORS / INSTRUMENTATION FOR AIR STRIPPER	NEW
AIR STRIPPER TRANSFER PUMPS (x 2) / PRESSURE SENSORS	NEW
AIR STRIPPER SUPPLY AIR	NEW
TREATED WATER DISCHARGE PIPING / SENSORS & CONTROLLERS	EXISTING
OFF-GAS VENT/STACK (attached to building?)	NEW

ATTACHMENT

A. Aerial Photo of COSCO/CPC Site

AERIAL PHOTO: COSCO/CPC SITE, 15 WEST STREET, SPRING VALLEY, NY 10977

COSCO/CPC SITE
GROUNDWATER REMEDIATION SYSTEM
EVALUATION/RE-DESIGN

ATTACHMENT

B. Pages from 1999 ROD Amendment

Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision Amendment
COSCO/CPC Site
Spring Valley, Rockland County
Site Number 3-44-035

August 1999

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* JOHN P. CAHILL, *Commissioner*

1.0 INTRODUCTION

On March 29, 1990, the New York State Department of Environmental Conservation signed a Record of Decision (ROD) which selected the remedy to cleanup the COSCO/CPC Class 2 Site on the Registry of Inactive Hazardous Waste Disposal Sites. Trichloroethylene (TCE) from a vapor degreasing process and rinse water from the plating operation were discharged into a surface water drainage stream, contaminating the soils and groundwater in the vicinity of the site. These contaminants have impacted the Spring Valley Water Supply Company wells downgradient of the site. These wells are treated to remove this contamination. One element of the 1990 ROD called for soil vapor extraction (SVE) of contaminated soils and sediments in the source area with carbon treatment of the contaminants. In 1997, as part of the remedial design program for this remedy, additional soil data were collected in the source area, and in January of 1998, a vapor extraction pilot study was performed. This additional testing indicated that the conditions for vapor extraction at this site were not ideal due to the presence of low permeability soils and relatively low quantity of contamination remaining in the soils. The existing contaminant levels were found to be below the current NYSDEC soil cleanup objectives. In addition, the drainage channel containing contaminated sediments has been backfilled and a communications tower has been constructed in that area. Based on the current information, the Department is proposing no further action on the source area soils and sediments rather than the implementation of SVE.

Since the change from SVE to no further action for the source area soils/sediments represents a fundamental change in a portion of the remedy, the Department is amending the 1990 ROD. The Department, with NYS Department of Health concurrence, has determined that the amended remedy is protective of human health and the environment.

Other components of the remedy selected in the 1990 ROD are not being changed. These components include the extraction of contaminated overburden and bedrock groundwater in the source area with treatment using chemical oxidation and polishing technologies, capping of the tailings dump area (partially complete) and a long-term groundwater monitoring program to monitor the effectiveness of the groundwater extraction and cap. Implementing these provisions of the amended remedy will eliminate the significant threat to human health and the environment.

2.0 SITE LOCATION AND DESCRIPTION

The COSCO/CPC site is located in the Village of Spring Valley, Rockland County, New York as shown on Figures 1 and 2. The site is the location of the former Consolidated Stamp Company (COSCO) facility, located at 15 West Street, and the former Continental Plastic Company (CPC) facility, located at 2 North Cole Avenue, about 200 feet northwest of the former COSCO facility. The COSCO property is triangular shaped and is bordered to the east by West Street, to the south by Central Avenue and to the north by an inactive Conrail line and right of way. Various industrial/commercial facilities are located on the north side of the right of way including the former CPC facility, a relatively new communications tower, and an active Spring Valley Department of Public Works maintenance facility.

A drainage way, known as the Reach B Diversion, runs between the facilities. The drainage way originates to the southwest of the industries and continues in a northeast direction and discharges into the West Branch of Pascack Brook located east of the site. The Spring Valley Well Field is located about three-thousand feet to the northeast of the site. In addition, a COSCO's tailing disposal area is located on the west side of the property which is currently being used for vehicle storage.

Based on subsurface studies conducted at the site, the overburden materials consist of a layer of fill material of sands and gravel below which lies glacially derived materials consisting of a silty clay zone, a glacial outwash of sands and gravel, followed by a glacial till unit. The bedrock in the area is about 40 feet below grade and is part of the Brunswick Formation consisting primarily of red shales and mudstones. The RI indicated that the groundwater flow in the overburden aquifer at the site was to the southeast and that a downward gradient exists between the overburden and bedrock aquifers. Regional flow in the bedrock in the study area is not certain but appears to be to the northeast.

3.0 SITE HISTORY

The COSCO/CPC site was identified during the course of a State-funded RI/FS for the former Spring Valley Well Field Site (Site No. 3-44-018). The RI/FS, performed during 1987 to 1990 by GHR Engineering Associates, Inc., investigated suspected sources of contamination to the well field. Contamination in the well field was first discovered in 1978. Based on a 1979 survey of local industries conducted by the Spring Valley Water Company, CPC was pumping 20-30 gallons per minute of trichloroethene (TCE) and tetrachloroethene (PCE) contaminated non-contact cooling water into a surface water drainage stream (Reach B) and COSCO was using TCE in a vapor degreasing process and discharging rinse water from the plating operation into the same receiving stream. In 1980, Reach B was diverted, as shown on Figure 2, which diverted flow away from the Spring Valley Well Field. Reach B was sampled at various locations during the Spring Valley Well Field RI which found volatile organic compound (VOC) contamination in the original waterway between the COSCO/CPC facilities. In addition, the RI identified VOCs in the soils and groundwater in the vicinity of the COSCO and CPC facilities, as well as semi-volatile organic compounds (SVOCs) in the tailing dump area where solid waste from COSCO had reportedly been discharged.

Based on the results of the remedial investigation, a feasibility study (FS) was performed to identify, screen and evaluate potential remedial alternatives and resulted in the issuance of the ROD for the Spring Valley Well Field site in March 1990. That document identified the selected remedy to address the contamination at the COSCO/CPC properties which consisted of the following elements:

- Source area groundwater extraction and treatment by UV chemical oxidation and polishing;
- Source area soil and sediment soil vapor extraction; and
- Capping of the tailing dump area to prevent erosion and disturbance.

In December 1990, pursuant to the findings of the RI and a petition from the Spring Valley Water Company to delist the site, the site boundaries were redefined, the COSCO/CPC site was listed in the NYS Registry of Inactive Hazardous Waste Disposal Sites, and the Spring Valley Well Field site was deleted.

After the issuance of the 1990 ROD, two post-ROD groundwater studies were conducted in an attempt to generate sufficient data to determine the groundwater flow patterns in the bedrock aquifer. The first was a supplemental remedial investigation conducted during the summer of 1990 by COSCO and the Sara Lee Corporation (which also owned certain assets in the property). The second was a focused supplemental remedial investigation conducted in 1992 by COSCO, Sara Lee and the Spring Valley Water Company, which included an extensive pump test of the area between the site and the well field. After several years of negotiations for implementation of the remedy, in March of 1996 COSCO and Sara Lee settled with the Department for $2.5 million to help defray past and future State costs. In 1997, pre-design investigations began.

4.0 NATURE AND EXTENT OF SITE CONTAMINATION

As described in the original ROD and other documents, many soil, groundwater, and sediment samples were collected at the Site to characterize the nature and extent of contamination. The primary contaminants of concern in the groundwater and soils are VOCs consisting of TCE, PCE, 1,2 dichloroethene (DCE) and vinyl chloride. In addition, SVOCs, pesticides and polychlorinated biphenyls (PCBs) are present in the tailings area. A summary of the extent of contamination is provided below and a summary of analytical data is provided in Table 1.

4.1 Summary of the Remedial Investigation

The 1990 RI report identified contamination in groundwater, soils and sediments in the source area and in soils in the tailings dump. Source area soils were found to be contaminated with VOCs up to a total concentration of 2.27 parts per million (ppm). The soil contamination was identified in an area adjacent to the COSCO building extending to the north side of the railroad tracks, as shown on Figure 3, with a volume estimated at 3000 cubic yards. An on-site overburden monitoring well, MW-18, located in the source area, contained total VOCs up to 24,861 parts per billion (ppb). The nearest bedrock well to the site was MW-17B. This well, since destroyed, contained total VOCs up to 15,437 ppb. This well was believed to be down gradient of the source area. In addition, samples from 1987 identified up to 38.7 ppm of DCE, TCE and PCE in the sediments of the drainage channel located on the DPW property, north of the soil source area.

The tailings area is west of the soil source area and is in the shape of a triangle approximately 18,750 square feet in size as shown on Figure 2. VOCs were not detected in this area during the RI, however, SVOCs were detected, mostly poly-nuclear aromatic hydrocarbons (PAHs), to a total concentration of approximately 90 ppm. This concentration is below the NYSDEC soil cleanup objective of 500 ppm total SVOCs, however, four individual SVOCs were detected above the cleanup objectives. In addition, the pesticides 4,4-DDT and gamma-chlordane were detected at two sample locations at relatively low levels and PCBs were detected in one sample at 5.3 ppm.

4.2 Summary of New Information

Pre-design field investigations began in 1997 to fill data gaps and to confirm that the recommended remedial action in the 1990 ROD is still appropriate based upon existing site conditions. The field investigations performed included:

- Soil and groundwater sampling;
- Aquifer pump testing; and
- Vapor extraction pilot testing.

The 1997 investigation included installation and sampling of six geoprobe borings from the source area with maximum sampling depths of eight to twenty feet, depending on the location. Samples were collected at four foot soil intervals for a total of fifteen samples. Total VOC concentrations in these samples ranged from non-detect to 0.726 ppm. This data indicates that total VOC concentrations in soils have dropped to below one-quarter of the 1988 levels. In addition, the subsurface soil investigation confirmed the presence of very low permeability soils in the source area, intermixed with more permeable layers.

During the 1997 investigation, the former drainage channel on the Department of Public Works property was found to have been filled in and a communications tower was constructed in that area. Therefore, it was not possible to resample sediments from the channel directly. However, in December 1998, an attempt was made to locate the previously contaminated portion of the channel by the installation and sampling of geoprobe borings adjacent to the communications tower. Geoprobes were installed and screened for VOCs at five locations; soils were analyzed for VOCs at three of these locations and groundwater was analyzed at one location. Concentrations in the soil samples were relatively low, ranging from 0.0012 ppm to 0.0099 ppm. However, a sample of the overburden groundwater from one of the geoprobes identified total VOC levels at 1,270 ppb. This data indicates that VOC contamination is still present in the area where the former drainage channel was located, but primarily present in the groundwater.

Two overburden and four bedrock monitoring wells were also installed in the source area as part of the pre-design investigation. Groundwater samples were collected and analyzed from those wells and from the only pre-existing on-site well, MW-18, as well as from several geoprobe points. Levels of total VOCs have diminished in the overburden groundwater since 1988 as MW-18 contained only 118 ppb total VOCs compared to 24,861 ppb in 1988. The remaining overburden groundwater data ranged from non-detect to 1,162 ppb total VOCs. Levels of total VOCs in the bedrock aquifer have also diminished since 1988 as GW-5D, located near former well MW-17B, contained only 2,208 ppb total VOCs compared to 24,861 ppb from MW-17B in 1988. The data from the remaining bedrock wells, GW-2D, GW-3D, GW-4D, shown on Figure 3, contained total VOCs at 59 ppb, 3,110 ppb, and non-detect, respectively.

Another site change was noted during the 1997 field investigation; asphalt was found to have been placed over much of the tailings dump area by the property owner and this area is now being used as a parking area. As this cover material satisfies the capping component of the ROD, activities in this area will be limited to repairing the existing asphalt as required and installing additional asphalt in areas where none currently exists.

4.3 Summary of Human Exposure Pathways

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the health risks can be found in Section 8 of the RI Report.

An exposure pathway is how an individual may come into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

The potential human exposure pathways at the COSCO/CPC site are as follows:

1. ingestion, inhalation and dermal contact with contaminated groundwater.

2. dermal contact with or ingestion of contaminated soils in the tailings dump.

4.4 Summary of Environmental Exposure Pathways

No current pathways for environmental exposure have been identified for this site. In 1980,the Village diverted the Reach B waterway through a drainage culvert around the contaminated area. The data collected in the RI/FS indicates that the contamination present in the source area is not currently migrating via this rerouted waterway. In addition, the West Branch of Pascack Brook is located approximately 2000 feet southeast of the site, which is outside of the range of detectable levels of contaminants in the aquifer.

5.0 SUMMARY OF REMEDIAL GOALS

Goals for the cleanup of the Site were established in the original ROD. The goals selected for this site are as follows:

1. Reduce, control or eliminate to the extent practicable the contamination present within the soils/waste on site.

2. Eliminate the potential for direct human contact with the contaminated soils in the tailings dump.

3. Prevent, to the extent possible, migration of contaminants in the soils/waste to groundwater.

4. Provide attainment of standards, criteria and guidelines (SCGs) for groundwater quality for the overburden and bedrock aquifers.

6.0 EVALUATION OF THE AMENDED REMEDY

6.1 Description of Original ROD and Amended ROD

Original ROD Remedy

The remedy selected in the 1990 ROD included the extraction of contaminated overburden and bedrock groundwater in the source area and soil vapor extraction of the soils and sediments in the source area. Treatment of groundwater would be achieved using chemical oxidation and polishing technologies, due to the presence of vinyl chloride in the groundwater, and the treated water would be returned to the aquifer. For cost purposes it was assumed that one overburden and one bedrock extraction well would be required. The treatment of contaminants from the SVE system would be with granular activated carbon. The RI/FS estimated the volume of the soils to be treated as approximately 3000 cubic yards. In addition, approximately 42 cubic yards of contaminated sediments from the exposed portion of the former drainage channel would be excavated and treated by SVE along with the source area soils. After the completion of the SVE treatment, topsoil and a vegetative cover would be installed over the source area.

This remedy also included capping of the contaminated soils/waste in the tailings dump area. The cap would consist of low permeability soil, topsoil and a vegetative cover. A long-term groundwater monitoring program would be implemented to monitor the effectiveness of the groundwater extraction and the tailings dump cap. In addition, access to the source area would be restricted by fencing.

The ROD also called for the extraction and treatment of groundwater at the Spring Valley water supply wells, however, this element has been addressed separately by the Spring Valley Water Company.

Amended ROD Remedy

The fundamental change to the 1990 ROD involves no further action for the source area soils and sediments rather than SVE treatment. This change is based on the results of the 1997-1998 pre-design study, which identified relatively low levels of contaminants remaining in the soils and sediments and determined that the effectiveness of SVE on these materials is limited. In addition, the former drainage way was filled in during recent construction activities and is now the location of a communications tower. Recent samples in the vicinity of the former drainage way did not identify VOCs in soils/sediments above cleanup objectives.

Because the contaminant levels in soils and sediments meet the NYSDEC soil cleanup objectives found in the Division of Environmental Remediation's Technical, Administrative and Guidance Memorandum (TAGM) 4046, fencing the source area to restrict access will no longer be required. The other elements of the original ROD will remain essentially the same, but will contain some modifications as noted below.

The overburden and bedrock groundwater will be extracted and treated as specified in the 1990 ROD, however, the treated groundwater will be discharged to surface water rather than being recharged back to the aquifer, as this discharge option is more cost effective. In addition, the area of overburden groundwater extraction and treatment will be expanded to address contaminated groundwater in the vicinity of the buried drainage way. Long-term monitoring will be implemented to evaluate the effectiveness of groundwater extraction as per the 1990 ROD. Another modification is the result of a change that occurred at the site since the 1990 ROD. The tailings dump area has largely been capped with asphalt by the property owner and is being used as a vehicle storage area. As this cover satisfies the capping component of the ROD by eliminating human contact with and migration of contaminants, activities in this area will be limited to repairing the existing asphalt as required and installing additional asphalt in areas where none currently exists.

6.2 Evaluation of Original ROD and Amended ROD

The criterion used to compare the remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each criterion, a brief description is provided. A detailed discussion of the evaluation criteria and comparative analysis is contained in the 1990 Feasibility Study.

The first two evaluation criteria are called threshold criteria and must be satisfied in order for an alternative to be considered for selection.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet applicable environmental laws, regulations, standards, and guidance. The primary SCGs for this site are the NYSDEC soil cleanup objectives found in the Division of Environmental Remediation's TAGM 4046 and the NYS groundwater quality standards promulgated in regulation 6 NYCRR Part 703.

The amended remedy will meet SCGs for the source area soils and sediments through no further action as contaminants are currently below the TAGM values. The amended remedy will achieve groundwater SCGs over the long term, similar to the original remedy, through groundwater extraction and treatment. As with the original remedy, the amended remedy will meet SCGs in the tailings dump area through capping.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective. It incorporates several of the criteria listed below with an emphasis on achieving the remediation goals described above.

The amended remedy will be protective of human health and the environment equal to the original remedy. Concentrations of contaminants in the source area soils and sediments are currently below the NYSDEC remedial goals specified in DER's TAGM 4046, which are considered to be protective of human health and protective to groundwater quality. The original remedy would not be any more effective since residual levels of contaminants would still remain in the soils after treatment and these levels would be comparable to the current levels. The amended remedy will have equal protection as the original remedy for groundwater and the tailings dump since the remedial elements are essentially the same.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during construction and operation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared with the other alternatives.

Potential for short-term impacts for the amended remedy are slightly less than the original remedy since there will be no construction and operation activities associated with the source area soils and sediments. The other elements of the amended remedy are identical to the original remedy and will pose relatively low short term risks. The overall time to implement the amended remedy is the same as the original remedy and is driven by the groundwater remediation, which will operate for several years.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of alternatives after implementation of the response actions. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

The long term effectiveness of the amended remedy will be identical to the original remedy since the concentrations of contaminants remaining on-site after remediation is complete will be similar. After the groundwater remediation is complete, use of the source area portion of the site will be unrestricted. However, since wastes will remain capped in the tailings dump area, the cap will have to be maintained with continued restrictions on the use of this area.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Similar to the original remedy, the amended remedy will reduce the toxicity, mobility and volume of contaminants by groundwater extraction and treatment. Contaminants in the source area soils and sediments have been reduced since the 1990 ROD by natural attenuation and dispersion. Because of the reduction in concentrations of contaminants in the source area, the SVE element of the original remedy would have contributed little to the further reduction in the residual levels of contamination. In the tailings dump area, the mobility of contaminants will be reduced equally to the original remedy through repair and maintenance of the current asphalt cap present in this area.

6. Implementability. The technical and administrative feasibility of implementing each alternative is evaluated. Technically, this includes the difficulties associated with the construction, the reliability of the technology, and the ability to monitor the effectiveness of the remedy. Administratively, the availability of the necessary personnel and equipment is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

Both remedies would be relatively easy to implement as they involve common technologies. However, SVE would not be very effective for this site, due to the relatively low levels of contamination currently present in the source area soils and relatively low permeability of these soils. The amended remedy will require long-term operation and maintenance and groundwater monitoring similar to the original remedy.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision.

The estimated costs for the original and amended remedy are presented in Table 2. The cost for the design and implementation of the original remedy was re-estimated during the pre-design to have a present worth of $2,067,153 which is lower than the 1990 ROD estimate of $2,880,673. The total present worth for the amended remedy is estimated at $1,852,153. The reduction in cost of the amended remedy results from the deduction of costs for SVE. The estimates of present worth are conservative since they are based on extraction and treatment of groundwater for thirty years; it is likely that remedial objectives will be achieved in a shorter time frame.

8. Community Acceptance. Concerns of the community regarding the pre-design reports and the Proposed ROD Amendment have been evaluated. The "Responsiveness Summary" included as Appendix A presents the public comments received and the Department's response to the concerns raised. In general, the public comments received were supportive of the selected remedy. Several comments were received, however, concerning the current state of contamination in the buried portion of the former drainage channel which had not been sampled since the channel was filled in. To address these concerns, in December of 1998, the NYSDEC collected samples in the vicinity of the buried channel in an attempt to locate and sample potentially contaminated sediments. The results of this task are summarized in Section 4.2, above. Based on this data, the groundwater extraction and treatment system will be expanded to address groundwater contamination in the vicinity of the buried channel.

7.0 SUMMARY OF THE AMENDED REMEDY

Based upon the results of the RI/FS, pre-design investigations, and the evaluation presented in Section 6, the NYSDEC is amending the Record of Decision (ROD) for the COSCO/CPC Site. The changes consists of no further action on the soil/sediment source area rather than SVE treatment. The amended remedy is considered to provide equal protection of human health and the environment as the original remedy, is as effective in the long-term, will achieve SCGs as quickly and is more cost effective.

The estimated present worth cost to carry out the amended remedy is $1,852,153. The estimated present worth to complete the original remedy is $2,067,153. The cost to construct the amended remedy is estimated to be $484,000 and the estimated average annual operation and maintenance cost for thirty years is $89,000.

The elements of the amended remedy are as follows:

1. A remedial design program to verify the components of the conceptual design and provide the details necessary for the construction, operation and maintenance, and monitoring of the remedial program.

2. Extraction of contaminated overburden and bedrock groundwater in the source area and treatment by chemical oxidation and polishing technologies.

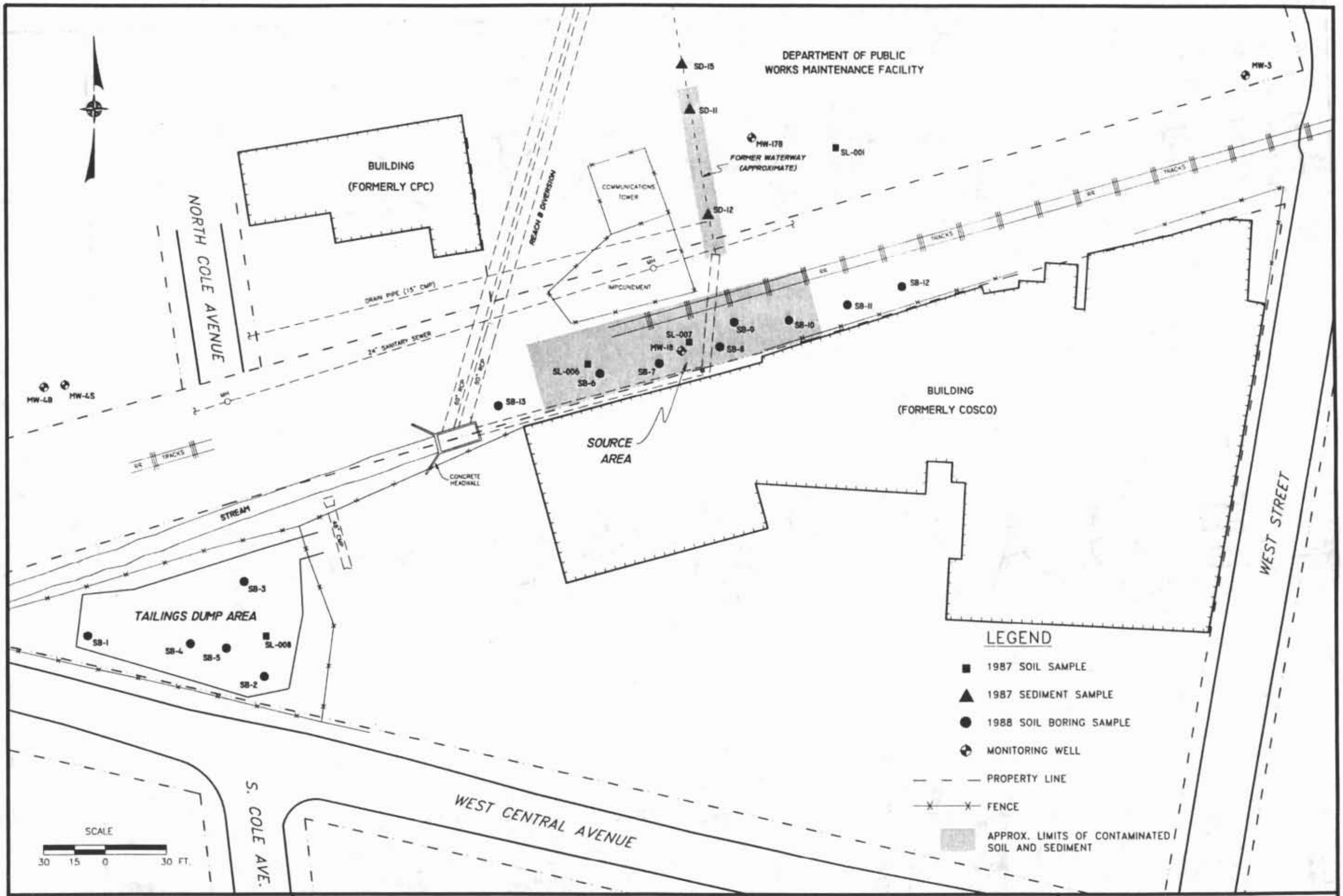
3. Completion/repair of the existing asphalt cap over the tailings dump area.

4. Long-term groundwater monitoring to evaluate the effectiveness of both the groundwater extraction and the tailings dump cap.

8.0 HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the pre-design investigation process, a number of Citizen Participation (CP) activities were undertaken in an effort to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

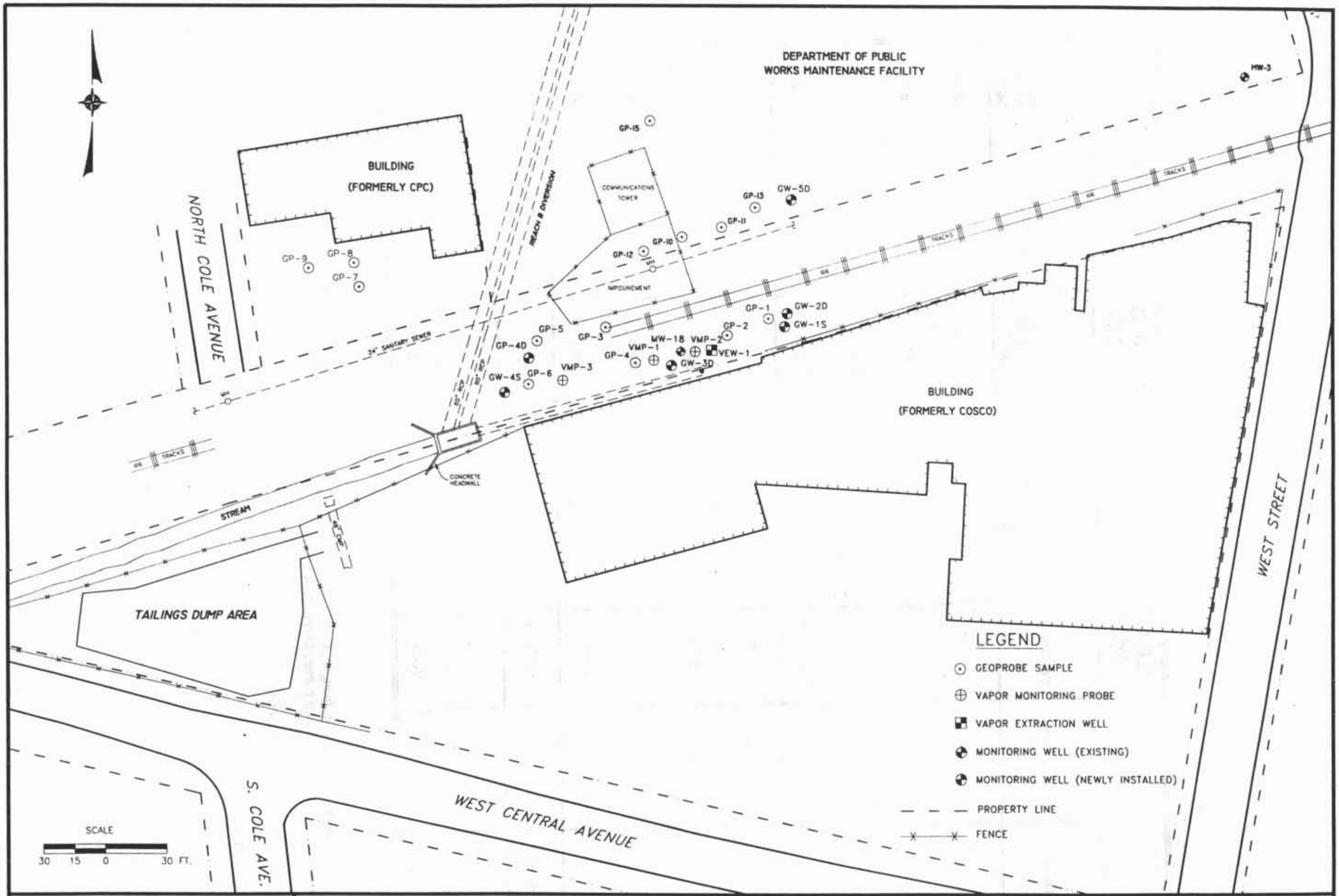
- Documents in the local repository for documents pertaining to the site were updated.
- The site mailing list, which included nearby property owners, local political officials, local media and other interested parties, was updated.
- A fact sheet providing notice of the public meeting for the Proposed ROD Amendment and summary of the pre-design investigation was distributed to the site mailing list.
- A public meeting was held at the Spring Valley Village Hall on November 17, 1998 presenting the Proposed ROD Amendment and current site status.
- A public comment period for the Proposed ROD Amendment was set from November 3, 1998 to December 3, 1998.
- A Responsiveness Summary was prepared in January 1999 to address the comments received during the public comment period for the Proposed ROD Amendment, and is included as an appendix to this ROD Amendment.



COSCO/CPC SITE
SPRING VALLEY, ROCKLAND COUNTY, NEW YORK

SITE FEATURES AND RI SAMPLING LOCATIONS

FIGURE 2



COSCO/CPC SITE
SPRING VALLEY, ROCKLAND COUNTY, NEW YORK

PRE-DESIGN SAMPLING LOCATIONS

FIGURE 3

TABLE 1: SUMMARY OF ANALYTICAL DATA
COSCO/CPC Site, Site No. 3-44-035

Media	Location	Compound	SCG (ppm)	Previous Data		Pre-design Data	
				Concentration Range (ppm)	Frequency of Exceeding SCG	Concentration Range (ppm)	Frequency of Exceeding SCG
Soil	Source Area	1,2-DCE	0.3	ND to 1.2	1 of 10	ND to 0.19	0 of 13
		TCE	0.7	ND to 4.8	2 of 10	ND to 0.22	0 of 13
		PCE	1.4	ND to 0.53	0 of 10	ND to 0.04	0 of 13
		Total VOCs	10	ND to 5.56	0 of 10	ND to 0.726	0 of 13
	Tailings Dump	VOCs	10	ND	0 of 6	NA	NA
		SVOCs	500	ND to 89.4	0 of 6	NA	NA
		Pesticides	10	ND to 0.29	0 of 6	NA	NA
		PCBs	10	ND to 5.3	0 of 6	NA	NA
Sediments	Former Reach B	VOCs	1	0.004 to 38.7	2 of 4	0.0012 to 0.0099 [1]	0 of 3 [1]
Groundwater	Overburden	VOCs	0.005	24.9	1 of 1	ND to 1.16	8 of 23
	Bedrock	VOCs	0.005	15.4	1 of 1	ND to 3.11	3 of 4

Notes:

1. The former drainage way was filled in, therefore, the pre-design data for the former Reach B represent subsurface samples of soils/sediments in vicinity of the buried drainage way.
2. NA = not available (not sampled).
3. ND = non-detected

ATTACHMENT

C. Pages from 1998 Pre-Design Investigation Report

5

FILE COPY

Final Predesign Program Report
Remedial Design

Cosco/CPC Site
Spring Valley, Rockland County, New York

NYSDEC Site #3-44-035
Work Assignment #D002925-19

Prepared for:

New York State
Department Of Environmental Conservation
50 Wolf Road, Albany, New York 12233

John P. Cahill
Commissioner

Division Of Hazardous Waste Remediation

Michael J. O'Toole, Jr., P.E.
Director

Prepared by:

CDM Camp Dresser & McKee
100 Crossways Park West
Woodbury, New York 11797-2012

October 1998

Table 3-1
COSCO/CPC Remedial Design - Predesign Program Report
Groundwater Sampling of Overburden Wells Round One
Results of Groundwater VOC Analysis

PARAMETERS	NYSDOH Drinking Water MCLs (ug/L)	Trip Blank (ug/L)	Q	Field Blank (ug/L)	Q	Overburden Aquifer Wells GW-1S (ug/L)	Q	GW-4S (ug/L)	Q	GW-5S (GW-4S Dup.) (ug/L)	Q	MW-18 (ug/L)	Q
Chloromethane	5.0	10	U	10	U	10	U	10	U	10	U	10	U
Bromomethane	5.0	10	U	10	U	10	UJ	10	UJ	10	UJ	10	UJ
Vinyl Chloride	2.0	10	U	10	U	[illegible]		10	U	10	U	43	
Chloroethane	5.0	10	U	10	U	10	U	10	U	10	U	10	U
Methylene Chloride	5.0	10	U	10	U	10	U	10	U	10	U	10	U
Acetone	50.0	10	U	10	U	10	U	10	UJ	10	UJ	10	UJ
Carbon Disulfide	50.0	10	U	10	U	10	U	10	U	10	U	10	U
1,1-Dichloroethene	5.0	10	U	10	U	10	U	10	U	10	U	10	U
1,1-Dichloroethane	5.0	10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dichloroethene (total)	5.0	10	U	10	U	[illegible]		10	U	10	U	65	
Chloroform	5.0	10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dichloroethane	5.0	10	U	10	U	10	U	10	U	10	U	10	U
2-Butanone	50.0	10	U	10	U	10	UJ	10	UJ	10	UJ	10	UJ
1,1,1-Trichloroethane	5.0	10	U	10	U	10	U	10	U	10	U	10	U
Carbon Tetrachloride	5.0	10	U	10	U	10	U	10	U	10	U	10	U
Bromodichloromethane	50.0	10	U	10	U	10	U	10	U	10	U	10	U
1,2-Dichloropropane	5.0	10	U	10	U	10	U	10	U	10	U	10	U
cis-1,3-Dichloropropene	5.0	10	U	10	U	10	U	10	U	10	U	10	U
Trichloroethene	5.0	10	U	10	U	[illegible]		[illegible]	J	8	J	6	J
Dibromochloromethane	50.0	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2-Trichloroethane	5.0	10	U	10	U	10	U	10	U	10	U	10	U
Benzene	5.0	10	U	10	U	10	U	10	U	10	U	10	U
trans-1,3-Dichloropropene	5.0	10	U	10	U	10	U	10	U	10	U	10	U
Bromoform	50.0	10	U	10	U	10	U	10	U	10	U	10	U
4-Methyl-2-Pentanone	50.0	10	U	10	U	10	U	10	U	10	U	10	U
2-Hexanone	50.0	10	U	10	U	10	U	10	U	10	U	10	U
Tetrachloroethene	5.0	10	U	10	U	[illegible]		10	U	10	U	4	J
1,1,2,2-Tetrachloroethane	5.0	10	U	10	U	10	U	10	U	10	U	10	U
Toluene	5.0	10	U	10	U	10	U	10	U	10	U	10	U
Chlorobenzene	5.0	10	U	10	U	10	U	10	U	10	U	10	U
Ethylbenzene	5.0	10	U	10	U	10	U	10	U	10	U	10	U
Styrene	5.0	10	U	10	U	10	U	10	U	10	U	10	U
Xylene (total)	5.0	10	U	10	U	10	U	10	U	10	U	10	U

U - Indicates analyte was not detected at or below the Contract Required Detection Limit (CRDL), or the compound is not detected due to qualification through the method or field blank.

J - The associated numerical value is an estimated quantity.

D - Reported result taken from diluted sample analysis

B - Indicates that the compound was also detected in the laboratory blank.

E - Reported value is estimated due to quantitation above the calibration range.

Table 3-2
COSCO/CPC Remedial Design - Predesign Program Report
Groundwater Sampling Bedrock Wells Round I and II
Results of Groundwater VOC Analysis

PARAMETERS	NYSDOH Drinking Water MCLs (ug/L)	Round II Trip Blank (ug/L)	Q	Bedrock Aquifer Wells Round I GW-2D (ug/L)	Q	Round II GW-2D-DUP (GW-6D) (ug/L)	Q	Round II GW-2D (ug/L)	Q	Round I GW-3D (ug/L)	Q	Round II GW-3D (ug/L)	Q	Round II GW-4D (ug/L)	Q	Round II GW-5D (ug/L)	Q
Chloromethane	5.0	10	U	[illegible]		20	U	10	U	94	U	200	U	10	U	100	U
Bromomethane	5.0	10	U	[illegible]		20	U	10	U	94	U	200	U	10	U	100	U
Vinyl Chloride	2.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
Chloroethane	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
Methylene Chloride	5.0	1	JB	10	U	1	JB	0.6	J	94	U	19	JB	10	U	6	J
Acetone	50.0	6	JB	16	J	12	JB	5	J	94	UJ	220	B	10	U	91	J
Carbon Disulfide	50.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
1,1-Dichloroethene	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
1,1-Dichloroethane	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
1,2-Dichloroethene (total)	5.0	10	U	10	U	[illegible]		3	J	110		68	J	10	U	39	J
Chloroform	5.0	10	U	10	U	20	U	0.6	J	94	U	200	U	10	U	100	U
1,2-Dichloroethane	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
2-Butanone	50.0	10	U	10	U	20	U	10	U	94	UJ	200	U	10	U	100	U
1,1,1-Trichloroethane	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
Carbon Tetrachloride	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
Bromodichloromethane	50.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
1,2-Dichloropropane	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
cis-1,3-Dichloropropene	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
Trichloroethene	5.0	10	U	21	[illegible]	[illegible]		130		1800		1300		10	U	730	
Dibromochloromethane	50.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
1,1,2-Trichloroethane	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
Benzene	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
trans-1,3-Dichloropropene	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
Bromoform	50.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
4-Methyl-2-Pentanone	50.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
2-Hexanone	50.0	10	U	10	U	20	U	10	U	94	UJ	200	U	10	U	100	U
Tetrachloroethene	5.0	10	U	[illegible]		[illegible]		55		1200		840		10	U	330	
1,1,2,2-Tetrachloroethane	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
Toluene	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
Chlorobenzene	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
Ethylbenzene	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
Styrene	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U
Xylene (total)	5.0	10	U	10	U	20	U	10	U	94	U	200	U	10	U	100	U

U - Indicates analyte was not detected at or below the Contract Required Detection Limit (CRDL), or the compound is not detected due to qualification through the method or field blank

J - The associated numerical value is an estimated quantity

D - Reported result taken from diluted sample analysis

B - Indicates that the compound was also detected in the laboratory blank

E - Reported value is estimated due to quantitation above the calibration range

Exceeds NYSDOH [illegible]

Table 3-3
COSCO/CPC Remedial Design - Predesign Program Report
Geoprobe Investigation
Summary of Geotechnical Soil Sample Results

Boring Number	Depth	Moisture Content ASTM D-2216 (percent)	Specifig Gravity ASTM D-854	Total Organic Carbon (TOC) SW846-9060 (percent)
GP-1	4-8'	5.87	2.63	0.11
GP-2	0-4'	9.08	2.58	1.30
GP-2	8-12'	9.38	2.57	1.60
GP-3	8-12'	13.89	2.67	0.16
GP-3	12-16'	38.88	2.58	2.00
GP-3	16-20'	16.88	2.63	4.30
GP-4	4-8'	12.87	2.65	0.28
GP-4	8-12'	14.51	2.60	1.47
GP-4	12-16'	15.09	2.56	0.11
GP-5	8-12'	17.06	2.59	0.23
GP-6	12-16'	11.07	2.65	0.21
GP-7	4-8'	20.17	2.65	0.62
GP-8	4-8'	14.63	2.63	0.11
GP-9	0-4'	26.18	2.60	0.01
GP-9	4-8'	9.19	2.67	0.10
Average		**15.55**	**2.62**	**0.84**

o:\clarkenm\cosco\predesign\text-fig\geotech.xls

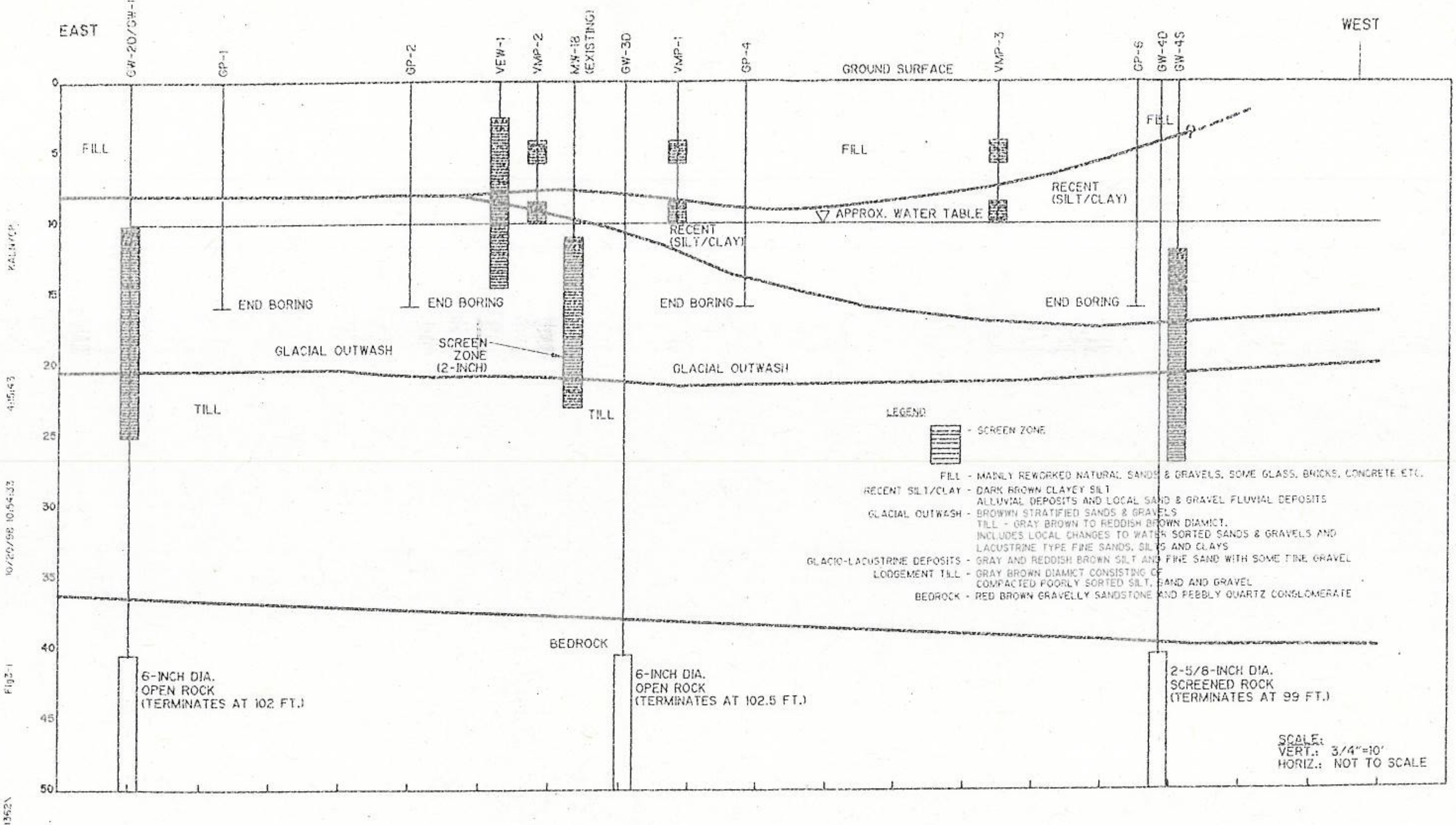


Figure 3-1
Geologic Cross-Section
Cosco/CPC Site, Spring Valley, New York
NYSDEC Site #3-44-035

CDM Camp Dresser & McKee

Table 3-4
Monitoring Well Water Level Data
Cosco/CPC Remedial Design - Predesign Program Report

Well ID No.	Ground Elevation (ft MSL)	Top of Casing Elevation (ft MSL)	Top of PVC Casing Elevation (ft MSL)	December 29, 1997		September 11, 1998		September 25, 1998	
				Depth to Water (ft)	*Elevation of Water Surface (ft MSL)*	*Depth to Water (ft)*	*Elevation of Water Surface (ft MSL)*	*Depth to Water (ft)*	*Elevation of Water Surface (ft MSL)*
MW-1S	454.89	455.11	455.22	10.41	444.81	10.44	444.78	10.81	444.41
MW-2D	455.32	456.83	---	33.75	423.08	30.56	426.27	32.34	424.49
MW-3D	454.82	455.63	---	40.31	415.32	36.58	419.05	38.54	417.09
MW-4S	457.45	459.42	459.54	13.10	446.44	13.25	446.29	13.51	446.03
GW-4D	458.75	459.35	458.98	NA	NA	13.24	445.74	13.88	445.10
MW-18	454.70	457.52	---	13.31	444.21	12.32	445.20	12.75	444.77
GW-5D	456.08	456.08	455.83	NA	NA	30.65	425.18	31.39	424.44

Note:
NA: No data available

Table 3-5

COSCO/CPC Site Remedial Design - Predesign Program Report

Summary of Soil Volatile Organic Analysis

Compounds Detected Above Cleanup Objectives

			COSCO Site								CPC Site			
Parameter	Adjusted Soil Cleanup Objectives [1] (ug/kg)	Proposed Cleanup Objectives 1990 FS[2] (ug/kg)	GP-1 (8-12')	GP-2 (4-8')	GP-4 (0-4')	GP-4*RE* (0-4')	GP-4 (4-8')	GP-6 (8-12')	GP-6*DL* (8-12') Diluted	GP-6 (8-12') Duplicate	GP-7 (0-4')	GP-7 (0-4') RE	GP-9 (0-4')	GP-9 (0-4') Duplicate
Acetone	92	----	BCO	ND	ND	ND	BCO	420	590	ND	ND	ND	100	100
1,2 Dichloroethene (total)	252	14.7	50	20	190	170	16	ND	ND	ND	32	37	27	23
Trichloroethene	588	31	BCO	180	180	220	63	ND	ND	ND	63	83	BCO	BCO
Tetrachloroethene	1176	91	ND	BCO	BCO	BCO	BCO	ND	ND	ND	ND	ND	ND	ND

NOTES:

(1) Soil Cleanup Objectives presented in the NYSDEC TAGM, 04/95, were adjusted for the average soil TOC at the site (0.84 percent).

(2) Specific cleanup objectives were developed for site as part of 1990 Feasibility Study.

BCO - Below Cleanup Objectives; some of the results were estimated by the laboratory

Table 3-6
COSCO/CPC Remedial Design - Predesign Program Report
Summary of Overburden Aquifer Groundwater Sample Results Exceeding Drinking Water MCLs

Parameter	NYSDOH Drinking Water MCLs (ug/L)	Overburden Aquifer Samples					
		Geoprobe Investigation		Groundwater Sampling Round			
		GP-1 (ug/L)	GP-2 (ug/L)	GW-1S (ug/L)	GW-4S (ug/L)	GW-4S Duplicate (ug/L)	MW-18 (ug/L)
Vinyl Chloride	2.0	ND	630	23	ND	ND	43
Carbon Disulfide	50.0	ND	ND	ND	ND	ND	ND
1,2-Dichloroethene (total)	5.0	[illegible]	[illegible]	[illegible]	ND	ND	65
Trichloroethene	5.0	[illegible]	[illegible]	[illegible]	8 J	8 J	6
Tetrachloroethene	5.0	BAS	BAS	[illegible] J	ND	ND	BAS

Note: Only compounds with concentrations exceeding GA groundwater standards are shown here.
Samples in which all compounds were detected below the detection limit are not presented here.
ND indicates that the compound was not detected above method quantitation limit.
BAS indicates that the compound was detected however its detection was below applicable standards
J indicates that the concentration presented was estimated

Table 3-7
COSCO/CPC Remedial Design - Predesign Program Report
Groundwater Sampling Bedrock Wells Round I and II
Summary of Bedrock Aquifer Groundwater Sample Results Exceeding Drinking Water MCLs

				Bedrock Aquifer Wells													
	NYSDOH Drinking Water MCLs	Round II		Round I		Round II		Round II		Round I		Round II		Round II		Round II	
PARAMETERS	(ug/L)	Trip Blank (ug/L)	Q	GW-2D (ug/L)	Q	GW-2D-DUP (GW-6D) (ug/L)	Q	GW-2D (ug/L)	Q	GW-3D (ug/L)	Q	GW-3D (ug/L)	Q	GW-4D (ug/L)	Q	GW-5D (ug/L)	Q
Chloromethane	5.0	10	U	[illegible]		20	U	10	U	94	U	200	U	10	U	100	U
Bromomethane	5.0	10	U	[illegible]		20	U	10	U	94	U	200	U	10	U	100	U
Methylene Chloride	5.0	1	JB	10	U	1	JB	0.6	J	94	U	19	JB	10	U	[illegible]	[illegible]
Acetone	50.0	6	JB	16	J	12	JB	5	J	94	UJ	220	B	10	U	91	J
1,2-Dichloroethene (total)	5.0	10	U	10	U	[illegible]	[illegible]	[illegible]	J	110	[illegible]	68	J	10	U	[illegible]	J
Trichloroethene	5.0	10	U	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1800	[illegible]	1300		10	U	[illegible]	[illegible]
Tetrachloroethene	5.0	10	U	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	840		10	U	[illegible]	[illegible]

U - Indicates analyte was not detected at or below the Contract Required Detection Limit (CRDL), or the compound is not detected due to qualification through the method or field blank.
J - The associated numerical value is an estimated quantity.
D - Reported result taken from diluted sample analysis.
B - Indicates that the compound was also detected in the laboratory blank.
E - Reported value is estimated due to quantitation above the calibration range.

COSCO/CPC SITE
GROUNDWATER REMEDIATION SYSTEM
EVALUATION/RE-DESIGN

ATTACHMENT

D. Existing Treatment System Photos & Details

COSCO GROUNDWATER REMEDIATION
PHOTOPAGES – GW TREATMENT SYSTEM

Page 1 of 2

Treatment Trailer

Inlet Groundwater Entering Trailer

Pumping Well

Process Piping

COSCO GROUDWATER REMEDIATION
PHOTOPAGES – GW TREATMENT SYSTEM

Page 2 of 2

Treatment Trailer

Hydrogen Peroxide Storage Tank

Control Panel

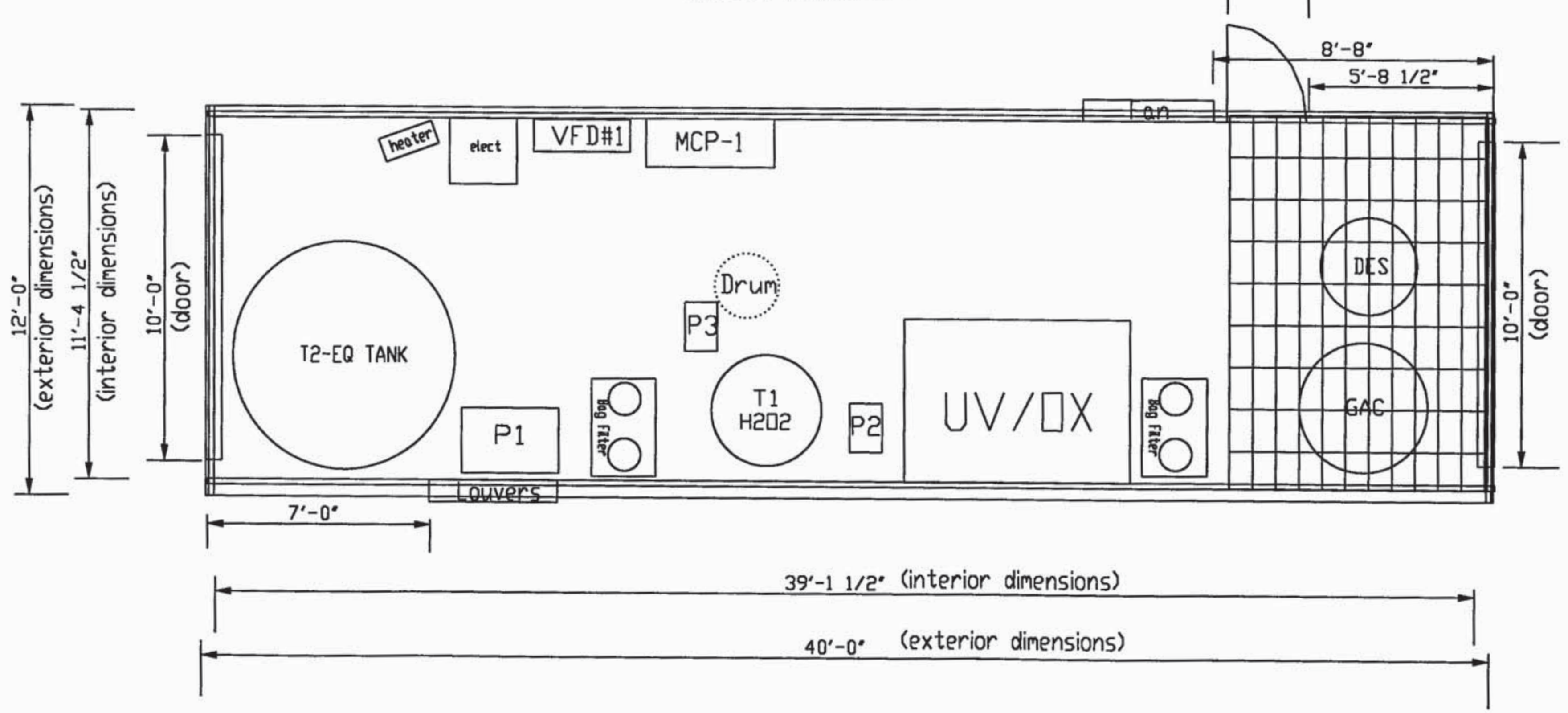
UV/Oxidation Chambers

Influent Equalization Tank

Aqueous Phase GAC and H2O2 Destruct Units

UNIVERSAL ENVIRONMENTAL TECHNOLOGIES 4 Townsend West, Unit 7 Nashua, NH 03063 Phone: (603) 889-8747 Fax:(603) 889-8072 SUBMITTAL SHEET	DESCRIPTION: COSCO/CPC ENCLOSURE LAYOUT SAMPLE DRAWING	PROJECT NAME: COCSO/CPC	SPEC. REF. : NONE	MANUFACTURER: UET
		DATE: 4/4/2000	DWG #: 8400-350-TYR-4	SUPPLIER/VENDOR: UET
		PAGE: 1 OF 1	JOB # : TYR-4	VIEWS OF FLOW METER ASSEMBLIES

GENERAL FLOOR PLAN VIEW

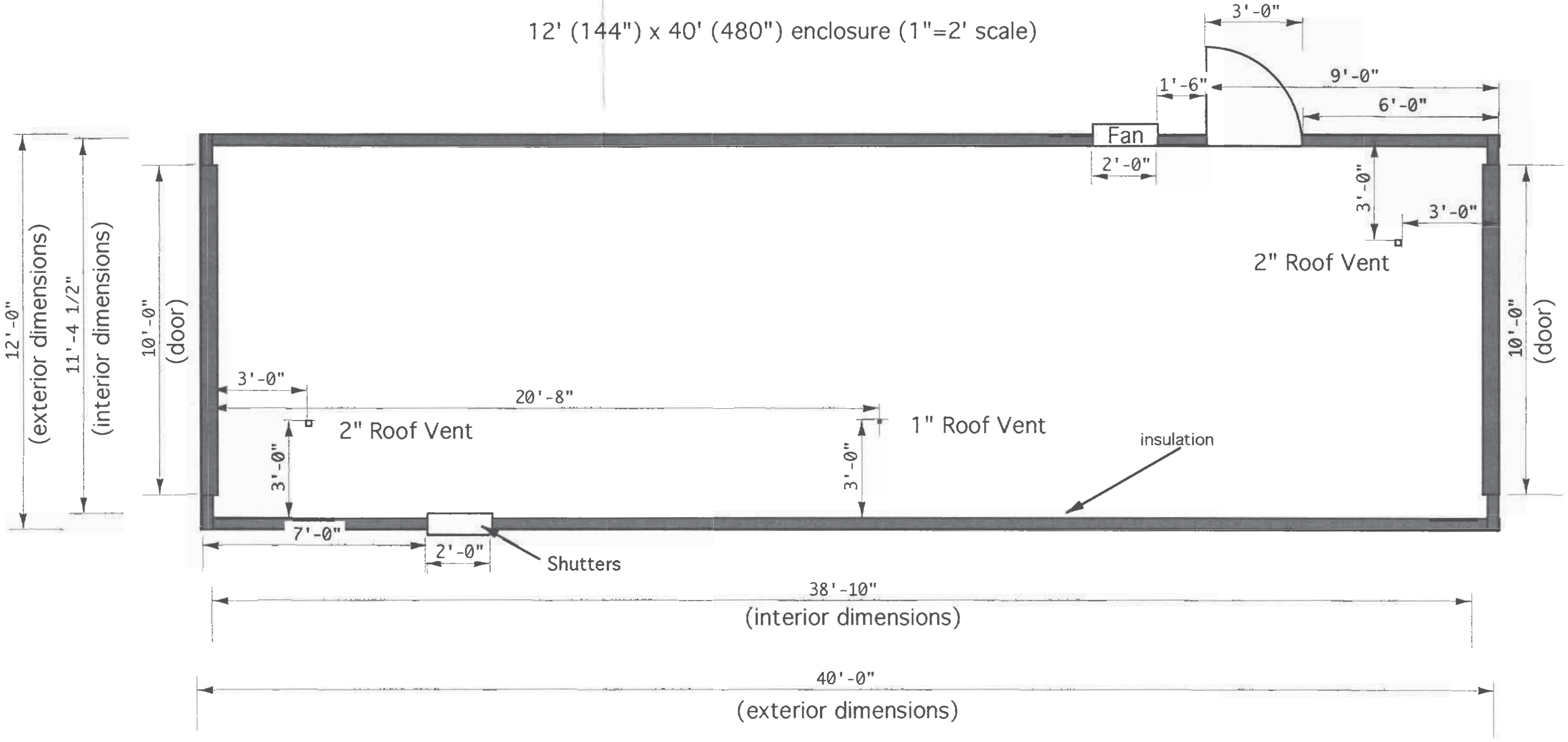


Drawn by: ????????	Date:
Checked by: ???????	Date:
Revision #:	Date Revised:
Revision #:	Date Revised:
Revision #:	Date Revised:

12' (144") x 40' (480") enclosure (1"=2' scale)

GENERAL ENCLOSURE PLAN VIEW

12' (144") x 40' (480") enclosure (1"=2' scale)



UET

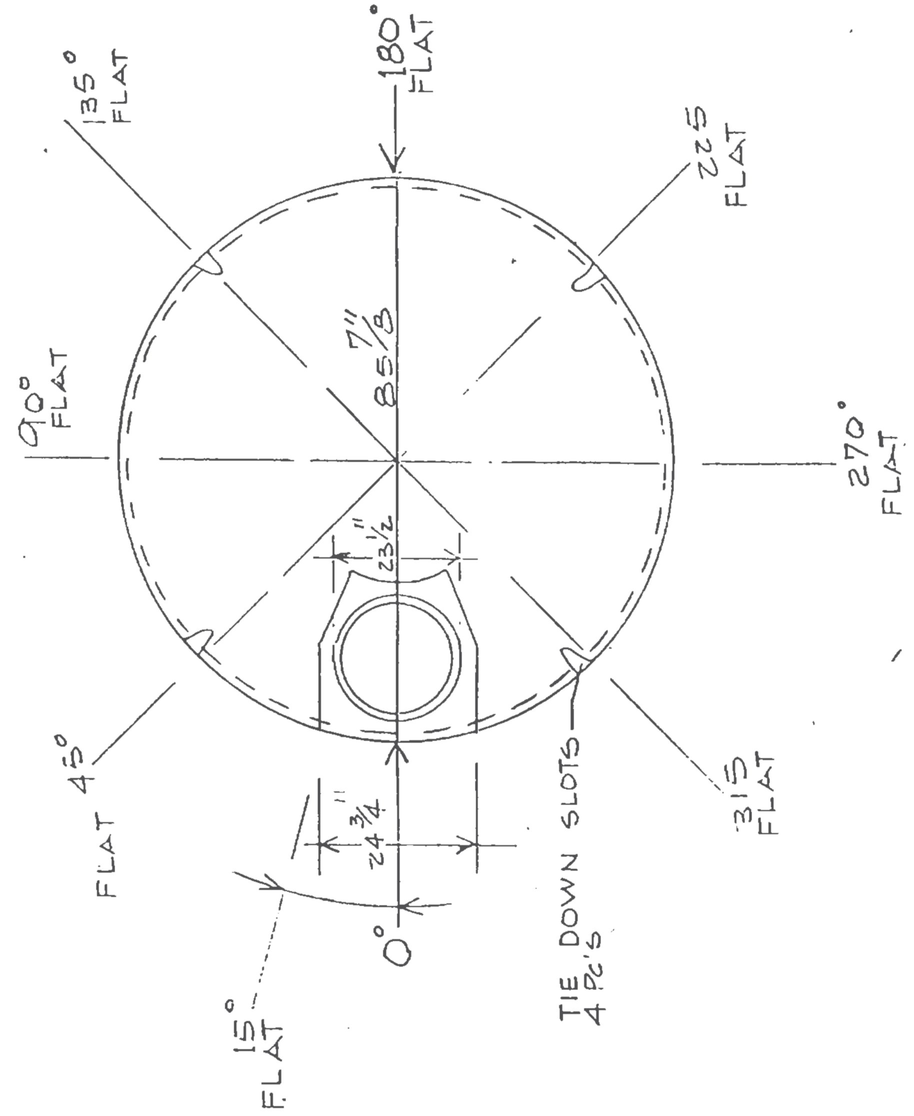
UNIVERSAL ENVIRONMENTAL TECHNOLOGIES
4 Townsend West Suite 7 Nashua, NH 03063
Phone: (603) 889-8747 Fax:(603) 889-8072

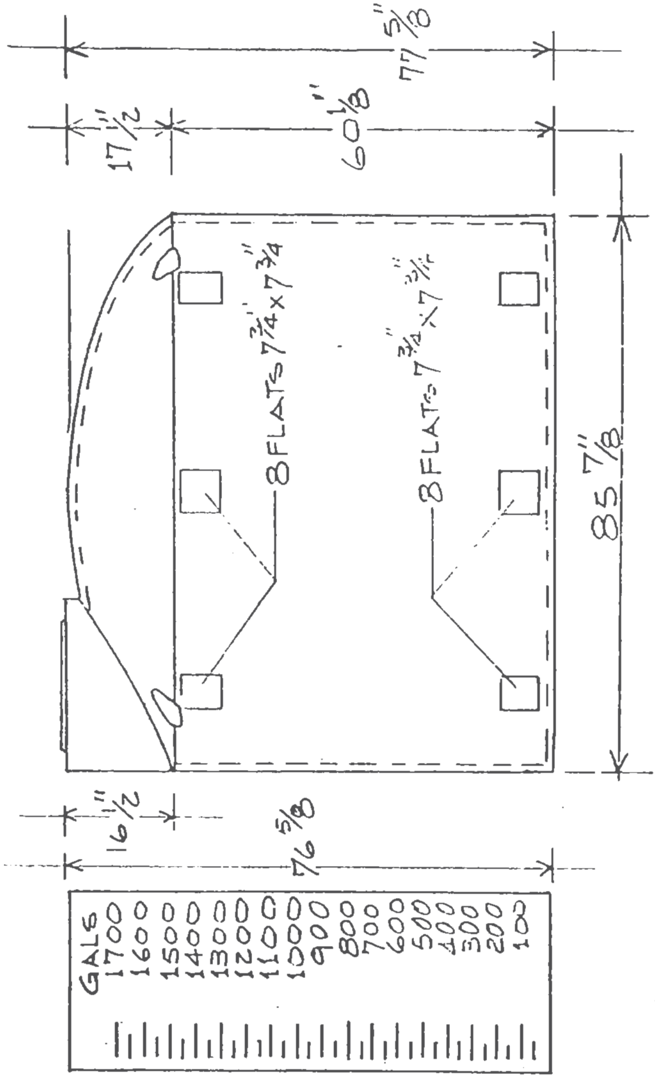
DESIGN SPECIFICATION SUBMITTAL SHEET

GENERAL ENCLOSURE PLAN VIEW

NO	BY	DATE	REVISION
840-351-TYR4	SM	4/18/01	0

SHEET 1 OF 3
SPEC. NO. **13121, Drawing BD-1**
REV. **REV-0**
CONTRACT **3-44-035**
DATE 4/18/01
REQ. - P.O. **COSCO/CPC**
BY
CHK'D
APPR.



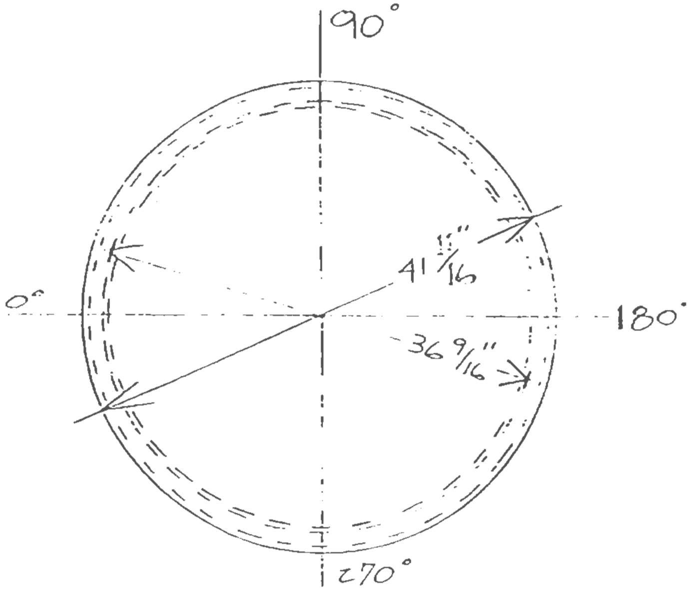


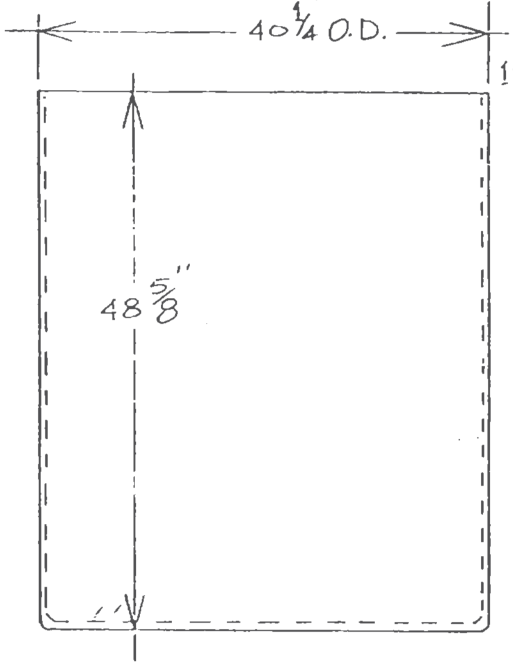
SIZE # 16, ACCESS IS STANDARD

Rev.	Date	
CHEM-TAINER INDUSTRIES, INC. 361 Neptune Ave N. Babylon, NY 11704 (516) 661-8300 Fax: (516) 661-8209	Date 7/1/93	Scale
	Material	Sheet
	Drawn By:	Cust Rep
TITLE 1700 GAL. VERT. STORAGE TANK		
Dwg # TC8674IA. AP	A-1039	

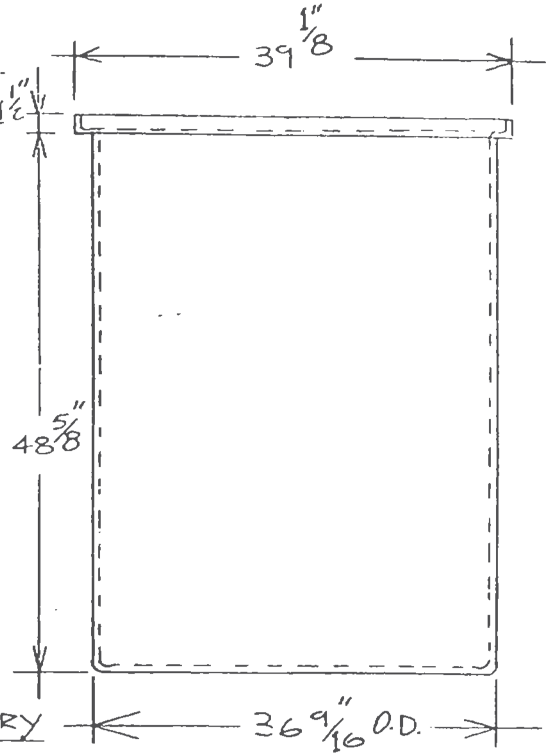
P. E. P.
Specializing in Plastic Engineered Products

50 Tannery Road, Building 3
Readington Industrial Center
Branchburg, New Jersey 08876
Tel:(908)534-6111 • Fax:(908)534-5287
E-MAIL pep@pep-plastic.com

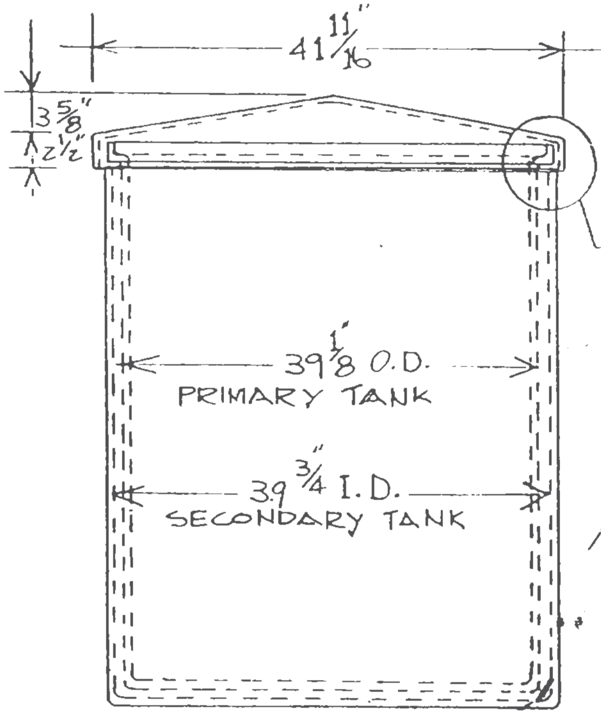




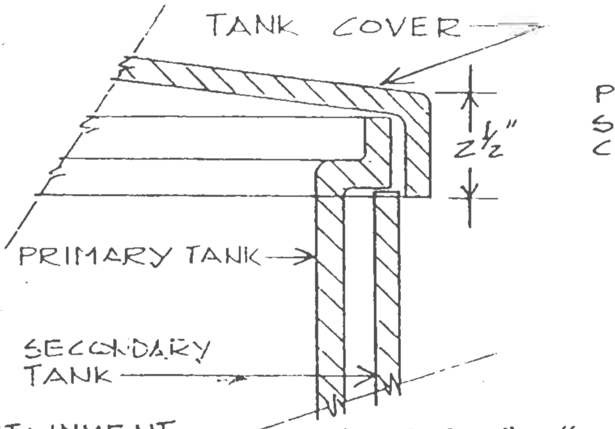
DOUBLE WALL SECONDARY TANK



DOUBLE WALL PRIMARY TANK



200 GAL. DOUBLE WALL CONTAINMENT TANK ASSEMBLY



DETAIL "A"

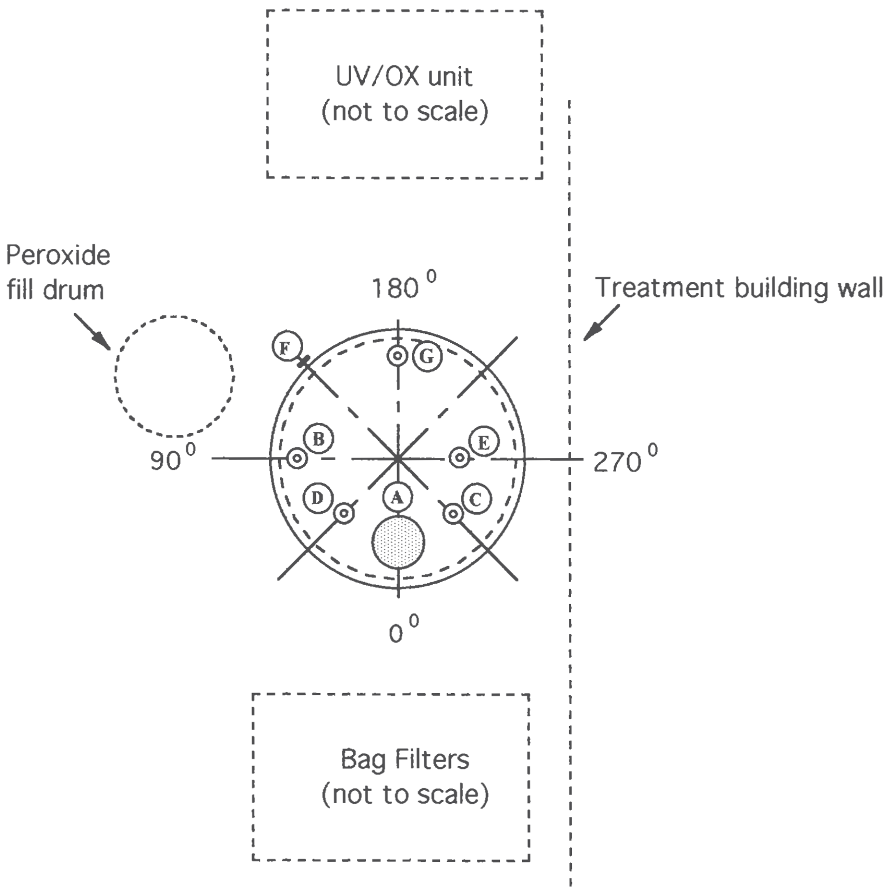
PRIMARY TANK - TC 3648 A. 5P
SECONDARY TANK-TC 4152 DC. 5P
COVER FOR TANT TC 3648. 5P

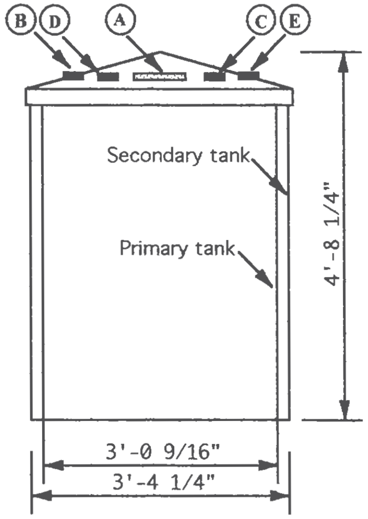
Rev.	Date		
CHEM-TAINER INDUSTRIES, INC 361 Neptune Ave N. Babylon, NY 11704 (516) 661-8300 Fax (516) 661-8209		Date / /	Scale 1/16" = 1"
		Material	Sheet
		Drawn By:	Cust Rep
TITLE 200 GAL DOUBLE WALL CONTAINMENT TANK			
Dwg # TC 3648DC. 5P		A-0927	

P. E. P.

50 Tannery Road, Building 3
Readington Industrial Center
Branchburg, New Jersey 08876
Tel:(908)534-6111 • Fax:(908)534-5287

Letter Key	Description	Bulkhead size/Location
A	MANWAY	8" AT TOP O^0
B	PEROXIDE INLET	1" AT TOP 90^0
C	SENSOR PORT - LE/LIT W/ 1" NPT	1" AT TOP 315^0
D	SENSOR PORT - LAL	1" AT TOP 45^0
E	VENT THRU ROOF	1" AT TOP 270^0
F	SITE GLASS	3/4" AT SIDE 135^0
G	TANK OUTLET	1/2" AT TOP 180^0





UET

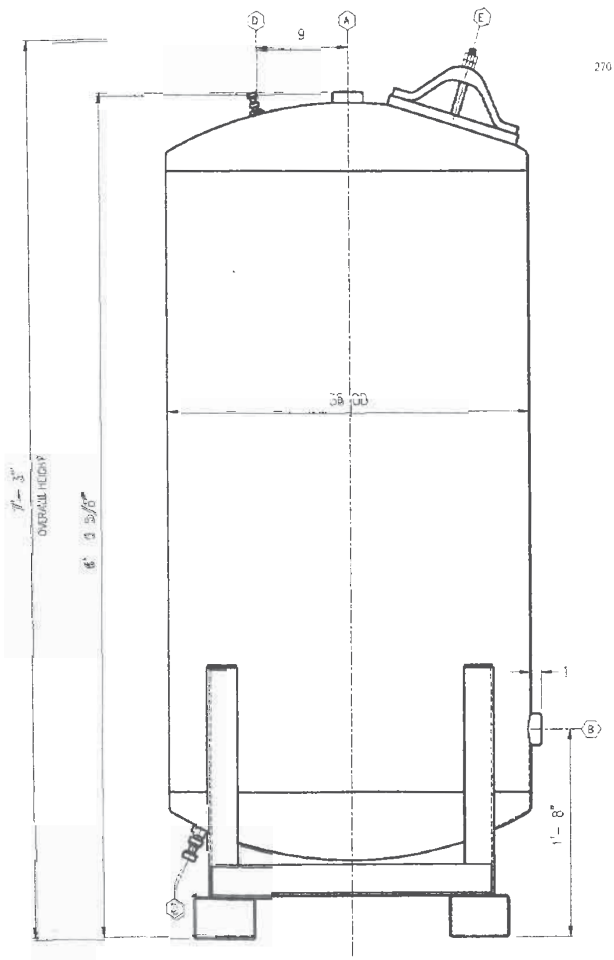
UNIVERSAL ENVIRONMENTAL TECHNOLOGIES
4 Townsend West Suite 7 Nashua, NH 03063
Phone: (603) 889-8747 Fax:(603) 889-8072

DESIGN SPECIFICATION SUBMITTAL SHEET

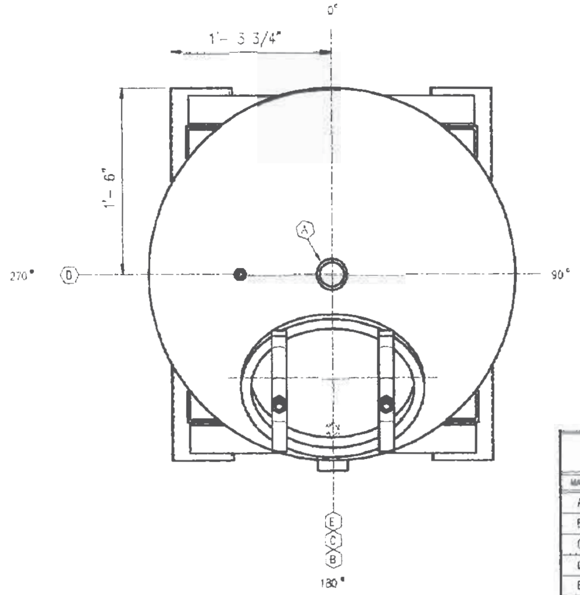
200 GALLON HYDROGEN PEROXIDE TANK

NO	BY	DATE	REVISION
840-353-TYR4	SM	4/23/01	0

SHEET 1 OF 1
SPEC. NO. **11246, DrawingS M-1, I-1**
REV. **REV-0**
CONTRACT **3-44-035**
DATE 4/23/01
REQ. - P.O. **COSCO/CPC**
BY
CHK'D
APPR.



ELEVATION VIEW
NOT TRUE ORIENTATION



PLAN VIEW
TRUE ORIENTATION

SCHEDULE OF OPENINGS

MARK	SIZE	QTY	RATING	TYPE	DESCRIPTION	Mod.			
A	2"	1	3000#	CPLG	INLET				
B	2"	1	3000#	CPLG	OUTLET				
C	~~1/2"~~	1	3000#	CPLG	LIQUID DRAIN	1"			
D	~~1/4"~~	1	FNPT	WLD FLG	VENT	2"			
E	12x16	1	N/A	ELLIP	MANWAY				
F									
G									
H									

DESIGN DATA

Registration	NOT APPLICABLE	Year Built	2000
Construction	NOT APPLICABLE	Serial No.	00-____
Design Pressure	75 PSIG	Capacity (Vol.)	40.4 cu. ft.
Design Temperature	140 Deg F (LIMITED BY INTERNALS)	Shipping Wt. (Empty)	730 POUNDS
External Pressure	NOT APPLICABLE	Wt. full of water	______ POUNDS
Min. Des. Metal Temp	-20 Deg F AT 75 PSIG	Gaskets	TREATED FIBER
MAWP (New & Cold)	75 PSIG (LIMITED BY HEAD)	Studs & Nuts	MILD STEEL (ZINC PLATED)
MAWP (Hot & Corr'd)	75 PSIG (LIMITED BY HEAD)	Internal Surface Prep	SANDBLAST TO SSPC-SP6
Hydro Test Pressure	5 PSIG SOAP TEST /Medium: AIR	External Surface Prep	EXTERNAL POWER CLEAN
Corrosion Allowance	NONE	Internal Coating	SERIES 120 POTAPOX PLUS 10-16 mils DFT
Radiography	NONE	External Coating	MAB PLYMASTIC (LT GRAY) 5-7 mils DFT

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Tetrasolv
Filtration
WWW.TETRASOLV.COM
1200 EAST 26th STREET
ANDERSON, INDIANA 46016
Ph: (765) 643-3941
Fx: (765) 643-3949

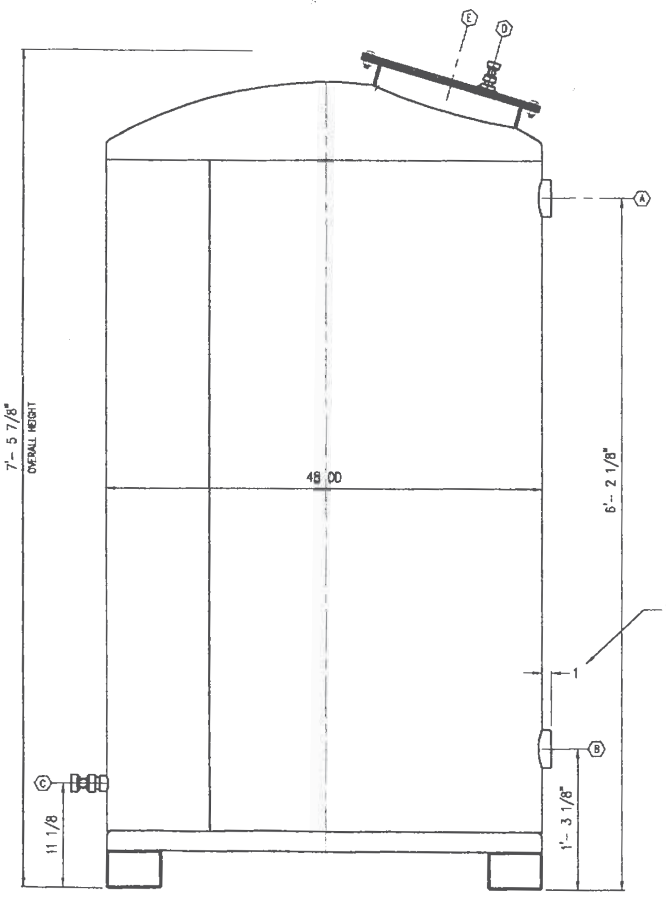
REV	DESCRIPTION OF REVISIONS	BY	DATE

REV	DRAWING ISSUE RECORD	BY	DATE

CUSTOMER	PROJECT
UNKNOWN	UNKNOWN

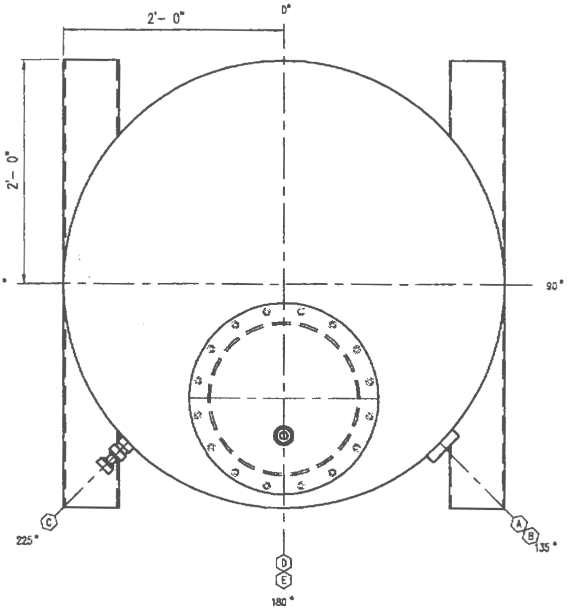
GENERAL ASSEMBLY LAYOUT - ELEVATION AND ORIENTATION
FOR
MODEL HPAF-1000 FILTER 36" OD

DRAWN BY	CHECKED BY	APPR'D BY	DATE	SCALE	JOB No.	DRAWING No.	REV
DB (TF)	TB (TF)	EP (TF)	MAR 23/00	1 1/2" = 1'-0"	UNKNOWN	HPAF1000-CD	C



ELEVATION VIEW

NOT TRUE ORIENTATION



PLAN VIEW

TRUE ORIENTATION

SCHEDULE OF OPENINGS

MARK	SIZE	QTY	RATING	TYPE	DESCRIPTION					
A	3"	1	STD	CPLG	INLET					
B	3"	1	STD	CPLG	OUTLET					
C	3/4"	1	STD	CPLG	LIQUID DRAIN					
D	1/2"	1	FNPT	WLD FLG	VENT					
E	16"	1	N/A	FF FLGNK	MANWAY c/w BLIND					
F										
G										

DESIGN DATA

Registration	NOT APPLICABLE	Year Built	2000
Construction	NOT APPLICABLE	Serial No.	00-____
Design Pressure	40 PSIG	Capacity (Vol.)	78.6 cu. ft.
Design Temperature	140 Deg F (LIMITED BY INTERNALS)	Shipping Wt. (Empty)	1230 POUNDS
External Pressure	NOT APPLICABLE	Wt. full of water	________ POUNDS
Min. Des. Metal Temp	-20 Deg F AT 40 PSIG	Gaskets	TREATED FIBER
MAWP (New & Cold)	40 PSIG (LIMITED BY HEAD)	Studs & Nuts	MILD STEEL (ZINC PLATED)
MAWP (Hot & Corr'd)	40 PSIG (LIMITED BY HEAD)	Internal Surface Prep	SANDBLAST TO SSPC-SP6
Hydro Test Pressure	5 PSIG SOAP TEST /Medium: AIR	External Surface Prep	EXTERNAL POWER CLEAN
Corrosion Allowance	NONE	Internal Coating	SERIES 120 POTAPOX PLUS 5-8 mils DFT
Radiography	NONE	External Coating	MAB PLYMASTIC (Lt GRAY) 5-7 mils DFT

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ANDERSON, INDIANA 46016
Ph: (765) 643-3941
Fx: (765) 643-3949

CUSTOMER UNKNOWN	PROJECT UNKNOWN

GENERAL ASSEMBLY LAYOUT - ELEVATION AND ORIENTATION

FOR

MODEL AF-2000 FILTER 48" OD

DRN BY	CHK'D BY	APP'D BY	DATE	SCALE	JOB No.	DRAWING No.	REV
DB (TF)	TB (TF)	EP (TF)	MAR 20/00		UNKNOWN	AF2000-CD	0

REV	DESCRIPTION OF REVISIONS	BY	DATE

REV	DRAWING ISSUE RECORD	BY	DATE

New York State Department of Environmental Conservation

MEMORANDUM

TO: Angus Eaton, Chief, Chemical Systems Section, Bureau of Water Permits, DOW
FROM: David Camp, Remedial Section C, Bureau of Eastern Remedial Action, DER
SUBJECT: COSCO/CPC Site, Spring Valley, Rockland County, Site No. 3-44-035

DATE: December 21, 1998

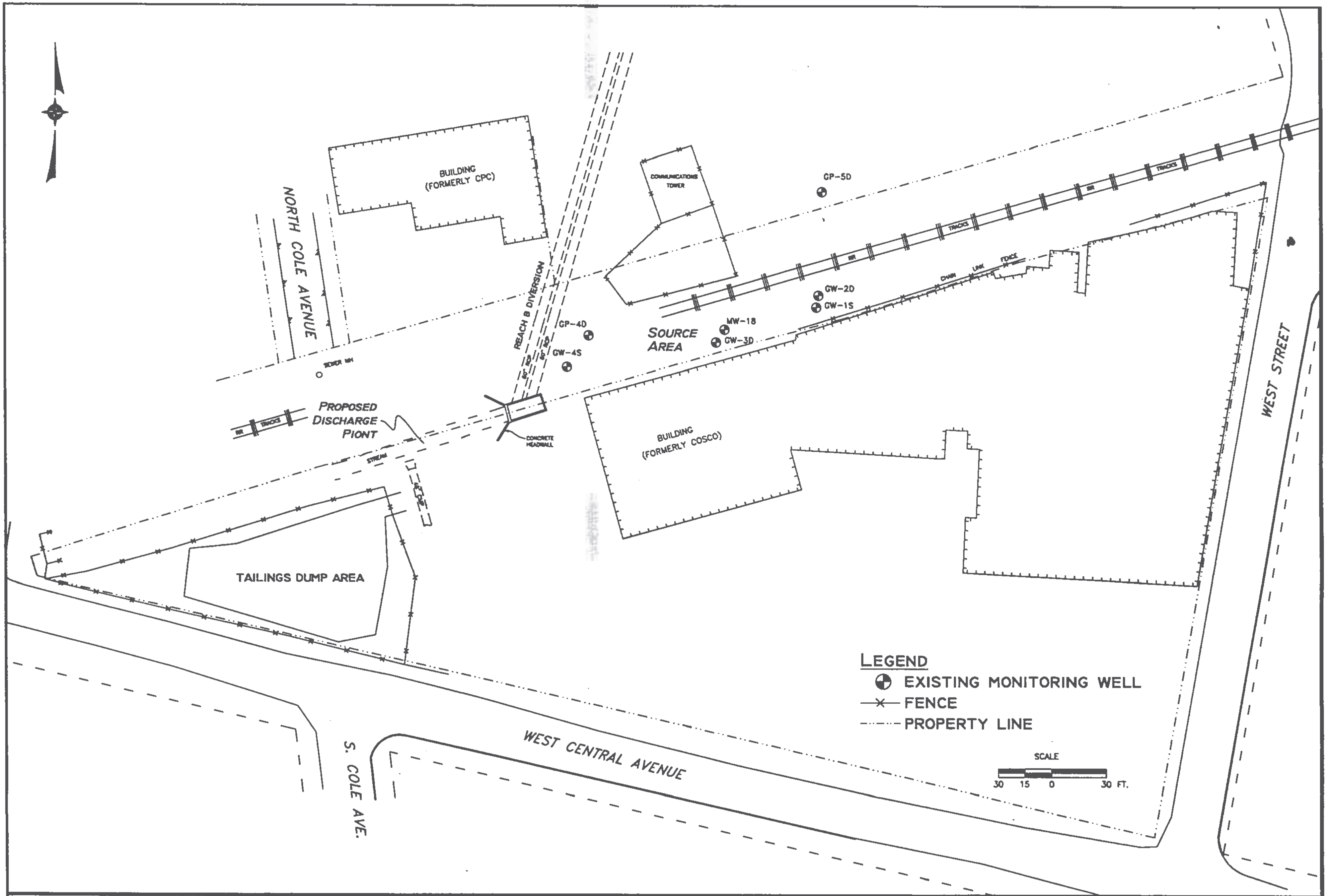
This is a request for effluent criteria for the discharge of remediation waste waters for the above-referenced inactive hazardous waste site. The remediation will involve the extraction and treatment of contaminated overburden and bedrock groundwater with discharge of the treated effluent to an adjacent surface water body. The details of this system are as follows:

Site Location:	15 West Street/2 North Cole Avenue Lattitude: 41 6' 39" / Longitude: 74 3' 5"
Constituents Detected in Groundwater:	Maximum Concentration:
Vinyl Chloride	530 μg/l
1,2 Dichloroethene	530 μg/l
Trichloroethene	1800 μg/l
Tetrachloroethene	1200 μg/l
Treatment Process:	Hydrogen peroxide/UV light oxidation with catalytic carbon polishing
Discharge Point:	Reach B drainage stream (see attached figure)
Discharge Rate:	18 gpm (45 gpm maximum design rate)
Duration:	15 years
Start of Discharge:	Fall 1999
Funding:	State Superfund lead / settlement account

Please provide effluent criteria for this proposed discharge. Although the discharge is estimated to start in the fall of 1999, the criteria is needed at this time for inclusion into the design documents. If you have any questions or need more information, please contact me at 7-3386.

Attachment

cc: J. Yovonditte
D. Camp/file



COSCO/CPC SITE
SPRING VALLEY, ROCKLAND COUNTY, NEW YORK

PROPOSED SURFACE WATER DISCHARGE POINT

FIGURE I

COSCO/CPC SITE
SPRING VALLEY, NY
SITE NO.: 3-44-035
CONTRACT NO.: D004183

SYSTEM INFLUENT / EFFLUENT CONCENTRATIONS AND NYSDEC EFFLUENT LIMITATIONS

DECEMBER 2003 SAMPLING EVENT

PARAMETER	INFLUENT	EFFLUENT	NYSDEC EFFLUENT LIMITATION	UNITS
Flow	26 - 30	24	45	gpm
pH	6.8	6.9	6.5 - 8.5	su
Vinyl Chloride	bdl	bdl	10	ppb
1,1 Dichloroethene	bdl	bdl	10	ppb
1,2 Dichloroethene (T)	bdl	bdl	10	ppb
Trichloroethene	96.4	bdl	10	ppb
Tetrachloroethene	63.5	bdl	6	ppb
Aluminum	29	bdl	4000	ppb
Arsenic (T)	28	30	1800	ppb
Arsenic (D)	23	31	900	ppb
Barium	290	270	4000	ppb
Iron	1,110	760	1800	ppb
Copper (T)	bdl	bdl	75	ppb
Copper (D)	bdl	bdl	50	ppb
Lead (T)	5.2	4.7	100	ppb
Lead (D)	5.1	6.0	24	ppb
Manganese	140	900	2000	ppb
Vanadium	bdl	0.6	84	ppb
Zinc (T)	21	32	600	ppb
Zinc (D)	34	46	400	ppb
Total Dissolved Solids	1,050	1,500	n/a	ppb
Total Suspended Solid	bdl	bdl	20	ppm

NOTES:

1.) NYSDEC Effluent Limitations obtained from page 01010-8 of Tyree/NYSDEC Contract.

2.) The Influent Sample is collected from a sample port located on the pipe which leads from the 3 well manifold to the EQ Tank and therefore is a composite of all 3 recovery wells.

3.) The Effluent Sample is collected from the system discharge pipe prior to just leaving the building (i.e. after the carbon vessels).

12/29/2003

EPA 601 by 8260/624

Sample: P8706-2
Client Sample ID: After UV/OX Skid
Collected: 12/12/2003 13:10
Matrix: Liquid
Type: Grab
Remarks: See Case Narrative
Analyzed Date: 12/20/2003 12:00:00 PM

Analytical Results

Cas No	Analyte	File ID	MDL	Concentration	Units	Q
541-73-1	1,3-Dichlorobenzene	A1209-5838	0.33	0.33	ppb	U
106-46-7	1,4-Dichlorobenzene	A1209-5838	0.30	0.30	ppb	U
95-50-1	1,2-Dichlorobenzene	A1209-5838	0.40	0.40	ppb	U
75-71-8	Dichlorodifluoromethane	A1209-5838	0.31	0.31	ppb	U
74-87-3	Chloromethane	A1209-5838	0.35	0.35	ppb	U
75-01-4	Vinyl Chloride	A1209-5838	0.35	0.35	ppb	U
74-83-9	Bromomethane	A1209-5838	0.42	0.42	ppb	U
75-00-3	Chloroethane	A1209-5838	0.29	0.29	ppb	U
75-69-4	Trichlorofluoromethane	A1209-5838	0.21	0.21	ppb	U
75-35-4	1,1-Dichloroethene	A1209-5838	0.15	0.15	ppb	U
75-09-2	Methylene Chloride	A1209-5838	0.36	0.36	ppb	U
156-60-5	t-1,2-Dichloroethene	A1209-5838	0.32	0.32	ppb	U
75-34-3	1,1-Dichloroethane	A1209-5838	0.29	0.29	ppb	U
67-66-3	Chloroform	A1209-5838	0.31	0.31	ppb	U
71-55-6	1,1,1-Trichloroethane	A1209-5838	0.32	0.32	ppb	U
56-23-5	Carbon Tetrachloride	A1209-5838	0.26	0.26	ppb	U
107-06-2	1,2-Dichloroethane	A1209-5838	0.33	0.33	ppb	U
79-01-6	Trichloroethene	A1209-5838	0.30	**23.1**	ppb	
78-87-5	1,2-Dichloropropane	A1209-5838	0.33	0.33	ppb	U
75-27-4	Bromodichloromethane	A1209-5838	0.34	0.34	ppb	U
110-75-8	2-Chloroethylvinylether	A1209-5838	0.38	0.38	ppb	U
10061-01-5	c-1,3-Dichloropropene	A1209-5838	0.079	0.079	ppb	U
10061-02-6	t-1,3-Dichloropropene	A1209-5838	0.35	0.35	ppb	U
79-00-5	1,1,2-Trichloroethane	A1209-5838	0.40	0.40	ppb	U
127-18-4	Tetrachloroethene	A1209-5838	0.31	**7.22**	ppb	
124-48-1	Dibromochloromethane	A1209-5838	0.32	0.32	ppb	U
75-25-2	Bromoform	A1209-5838	0.30	0.30	ppb	U
79-34-5	1,1,2,2-Tetrachloroethane	A1209-5838	0.41	0.41	ppb	U
108-90-7	Chlorobenzene	A1209-5838	0.33	0.33	ppb	U

COSCO/CPC SITE
SPRING VALLEY, NY
SITE NO.: 3-44-035
CONTRACT NO.: D004183

SYSTEM INFLUENT / EFFLUENT CONCENTRATIONS AND NYSDEC EFFLUENT LIMITATIONS

AUGUST 2004 SAMPLING EVENT

PARAMETER	INFLUENT	EFFLUENT	NYSDEC EFFLUENT LIMITATION	UNITS
Flow	26 - 30	24	45	gpm
pH	7.07	7.12	6.5 - 8.5	su
Vinyl Chloride	bdl	bdl	10	ppb
1,1 Dichloroethene	bdl	bdl	10	ppb
1,2 Dichloroethene (T)	bdl	bdl	10	ppb
Trichloroethene	69.1	bdl	10	ppb
Tetrachloroethene	50.2	bdl	6	ppb
Aluminum	bdl	43.0	4000	ppb
Arsenic (T)	bdl	bdl	1800	ppb
Arsenic (D)	bdl	bdl	900	ppb
Barium	470	350	4000	ppb
Iron	2,340	450	1800	ppb
Copper (T)	9.00	bdl	75	ppb
Copper (D)	bdl	bdl	50	ppb
Lead (T)	10.0	8.70	100	ppb
Lead (D)	9.70	9.70	24	ppb
Manganese	300	24.0	2000	ppb
Vanadium	3.80	3.30	84	ppb
Zinc (T)	20.0	60.0	600	ppb
Zinc (D)	22.0	38.0	400	ppb
Total Dissolved Solids	1,090	1,090	n/a	ppm
Total Suspended Solid	bdl	bdl	20	ppm

NOTES:

1.) NYSDEC Effluent Limitations obtained from page 01010-8 of Tyree/NYSDEC Contract.

2.) The Influent Sample is collected from a sample port located on the pipe which leads from the 3 well manifold to the EQ Tank and therefore is a composite of all 3 recovery wells.

3.) The Effluent Sample is collected from the system discharge pipe prior to just leaving the building (i.e. after the carbon vessels).

4.) Effluent concentrations in **bold** exceed the NYSDEC Effluent Limitation.