

Engineering Data Sheet

8090

Product: ContamAway II Plus™ Mini Series

Aqueous Waste Treatment and Water Recycling System with Spot Free Rinse

Product Description

The ContamAway II Plus™ Mini Series units are small flow, multipurpose, factory packaged aqueous waste treatment plants which are designed to:

- ◆ Remove free oils/fuels (i.e., insoluble hydro-carbons).
- ◆ Remove gross settleable solids,
- ◆ Remove fine suspended solids (to 1 micron),
- ◆ Remove chemically and mechanically emulsified oils, and
- ◆ Remove volatile and semi-volatile organic compounds, PCBs, pesticides, BOD/COD/TOC, dissolved organics, and heavy metals to near non-detect levels.
- ◆ Recycle the treated water
- ◆ Provide spot free final rinse

Product Application

In addition to decon water, the unit will successfully treat stormwater runoff, hydroblast waters, tank and equipment washwaters, ground dewatering liquids, underground storage tank residuals, and contaminated site groundwater. ContamAway II Plus™ Mini Series units are ideal for contractors, car and truck dealerships, machine shops, maintenance facilities, airport terminals, taxi and bus garages, equipment rental shops, rail yards, and most manufacturing companies.

Product Usage

Routine plant operation is entirely automatic and fail-safe. Improper operation is virtually impossible. Routine maintenance consists of two activities:

1. The replacement of either of the 5 micron filter cartridges, or
2. The replacement of the dual media adsorber when the adsorptive capacity has been reached as determined by periodic sampling and testing.

For many applications, the filter cartridges and adsorber will last for several months before requiring change out. WaterSmart Environmental, Inc. stocks the replacement items in inventory for overnight shipment, if necessary.

Treated water is collected in a 500 gallon capacity storage tank for recycling. The spot free rinse water is collected in a 200 gallon storage tank. A factory mounted pressure washer completes the Mini Series system.

The ContamAway II Plus™ Mini Series product line requires absolutely no chemicals for either heavy metals removal or for disinfection.

Heavy metals are removed through media adsorption technology rather than chemical precipitation. Differences in raw water quality do not matter when adsorption technology is selected for heavy metals removal.

Our research has established that suspended solids in the flow stream rather than biological growths cause the so-called 'plugging' of granular activated carbon contactors. Backwashing activated carbon always reduces its adsorptive capacity because of the associated disruption of the adsorption profile. Media plugging can easily be minimized by removing particulate matter down to 5 micron in size upstream from the adsorption device. The ContamAway II Plus™ Mini Series product line follows this design approach.

Principal Features

- ◆ User friendly. Maintenance requirements are specifically identified. No guesswork necessary.
- ◆ Extended run times between maintenance procedures. Each system component is intentionally oversized to maximize service cycle.
- ◆ No chemicals required. Raw wastewater may vary considerably without any change in effluent quality.

System Description - Summary

The ContamAway II Plus™ Mini Series product line accomplishes treatment through filtration and adsorption technologies. The first treatment vessel is called **5 micron cartridge filter T-01**. This unit removes suspended solids. The 5 micron cartridge filter effluent is further treated by tri-media adsorption consisting of OrganoSorb over granular activated carbon over MetalSorb™. The treated water is collected in a storage tank for subsequent recycling. The above design maximizes the useful life of the tri-media adsorber that is the most expensive component of the treatment system. The 5 micron cartridge filter and the tri-media adsorber must be replaced when their useful capacity has been reached. See attached drawings S-1790 and S-1791.

System Description - Complete

The ContamAway II Plus™ Mini Series product line is always fed from a sump. The use of a screened intake 12" or so above the sump floor:

1. Permits an accumulation of coarse sludge within the sump
2. Prevents the introduction of coarse solids into the downstream treatment unit
3. Permits free oils to accumulate at the surface.

The pump used for liquid transfer is a shallow well jet pump with a 25 ft suction lift capability. If the pump encounters excessive pressure it will shut down. The 5 micron cartridge filter then needs replacement.

The tri-media adsorber consists of 1/3 OrganoSorb over 1/3 aqueous phase granular activated carbon over 1/3 MetalSorb™. The adsorber has 10 minutes EBCT (empty bed contact time). Lignite or coconut based carbons are used because they adsorb a wider range of molecular organics than bituminous based carbons. Data sheets on the OrganoSorb and MetalSorb™ products are attached.

The adsorber also removes chemically emulsified oils, TOC, BOD, TOX, VOC, and SVOC compounds. Because particles to 5 microns are removed upstream from the adsorbers, no backwashing of the carbon is ever necessary. If COCs (contaminants of concern) include anions such as cyanides, hexavalent chromium, selenium, and arsenic, their removal may be accomplished using a polishing An-sorb™ adsorber.

Of significance to routine operation, no chemicals are required to achieve the effective removal of a broad spectrum of contaminants. Since raw characteristics can and do change, the associated requirement to continually adjust chemical dosage can impair performance. The absence of chemical addition translates into simple, reliable and easy operation.

Vapor Emission Control

The ContamAway II Plus™ Mini Series system is entirely enclosed which eliminates all vapor emissions to the atmosphere. No air monitoring is therefore necessary.

All equipment is skid mounted and factory piped, wired, and tested prior to shipment. Site installation consists of terminal connections and power feed only.

Quality Control

The ContamAway II Plus™ Mini Series is skid mounted, factory assembled, prepiped, prewired, and fully tested prior to shipment. It is available on a purchase or lease/rental basis as follows:

Purchase Option	
Model CA2PMS-05	Price
Unit Price (Effective 2/1/99)	\$56,400.00
Replacement 5 Micron Filter Cartridge Set (# In Set)	\$126.00 (14)
Replacement Tri-Media Adsorber Set (# In Set)	\$1,760.00 (1)
Process Flow Schematic Drawing No.	S-1790
Equipment Layout Drawing No.	S-1791

Selling Terms:

- ◆ 50% of contract amount with purchase order;
- ◆ 40% of contract amount prior to shipment date; and
- ◆ 10% of contract amount net 30 days from shipment date.
- ◆ Availability: Four (4) weeks after receipt of order (ARO) or after receipt of approved submittals (ARAS), whichever applies.

Lease/Rental Option	
Model	CA2PMS-05
Monthly charge	\$2,600.00

Lease/Rental Terms:

- ◆ Three (3) month minimum charge payable with transmittal of fully executed lease/rental agreement.
- ◆ 50% of initial twelve (12) months lease/rental is applicable to purchase price any time during the lease period.
- ◆ Final equipment decontamination, if required is the responsibility of user.
- ◆ Availability: Four (4) weeks after receipt of order (ARO) or after receipt of approved submittals (ARAS), whichever applies.

For Both Above Options

- ◆ Price includes Operation & Maintenance manuals.
- ◆ Plant start-up and operator training services are available at the rate of \$660.00/day (one factory trained representative) plus portal to portal expenses. No taxes, permit fees, chemicals, spare parts site labor, or technical services are included.

All freight costs are excluded.



Equipment and Performance Specifications

8091

Product: ContamAway II Plus™ Mini Series
Aqueous Waste Treatment and Water Recycling System with Spot-Free Rinse

Par. _____ Wastewater Treatment And Water Reuse System

The system to be furnished must be capable of treating the wastewaters generated by maintenance type cleaning operations. **Contaminant removal is to be accomplished using filtration and adsorption technologies only in order to minimize operator skill requirements without compromising treatment performance. Treatment systems that require chemical feed addition are not acceptable and will not be considered.** Contaminants to be removed include free and emulsified petroleum hydrocarbons (oils, grease and fuels), heavy metals, suspended solids, cleaning fluids, antifreeze coolants, and detergents.

The unit shall be equipped with suspended solids removal components in order to accommodate heavy solids loadings. All components shall be generously oversized in order to maximize the run time between maintenance procedures. As a minimum, treatment shall consist of suspended solids removal followed by dissolved organics removal through adsorption. A total of 10 minutes of empty bed contact time (EBCT) shall be provided. (A second in-service adsorber can be furnished to increase the EBCT to 20 minutes at a cost adder.) All equipment shall be factory piped and wired

on a common epoxy painted steel skid. The completed unit shall be tested for leaks and for functional integrity prior to shipment.

A raw water feed pump with liquid level controls shall be provided in order to transfer wastewater from the collection sump. Power availability at the site is

Operation of the plant shall be entirely automatic. The treatment capacity of the plant shall be _____ GPM. (The treatment system shall be installed in a concrete vault as shown on the plans.) (The treatment system shall be enclosed with an epoxy painted 1/4" A-36 carbon steel vault as shown on the plans.) A representative of the factory shall participate in the start-up of the equipment and shall provide two hours of operator training. Lastly, the unit shall be tested to establish proof of performance. An independent testing laboratory shall do the sample testing. The vendor shall furnish a test procedure for consideration by the contracting officer.

The treatment system shall reduce contaminants to the following levels:

CONTAMINANT	LEVEL
Suspended Solids	Less Than One (1) mg/L (ppm)
Oil And Grease	Less Than 10 mg/L (ppm) (EPA Test Method 413.1)
BOD	Less Than 10 mg/L (ppm)
COD	Less Than 10 mg/L (ppm)
TOC	Less Than 10 mg/L (ppm)
Heavy Metals, Total	Less Than One (1) mg/L (ppm)



Installation, Operation, and Maintenance Instructions

8091

Product: ContamAway II *Plus*™ Mini Series Aqueous Waste Treatment and Water Recycling System with Spot-Free Rinse

Installation

- ◆ Set skid mounted treatment system on concrete equipment pad. Refer to WSE drawing S-1790 for operating weight. Refer to drawing S-1791 for equipment sizes.
- ◆ Install sump strainer and piping (provided). Provide and then install connecting piping between sump and treatment system taking care to eliminate all leaks. Treatment system feed pump will not maintain a prime if leaks exist in the feed pump suction piping.
- ◆ Install wide angle float switch in the sump to operate the feed pump. The feed pump float switch should be installed and the tether length adjusted such that the float stops the pump about 24 inches from the bottom sump floor. The pump should be initiated when the sump is approximately 50% full. Refer to wide-angle Sump Pump Float Switch installation instructions in the operation and maintenance manual.
- ◆ Connect power feed to the pumps. Refer to WSE drawing S-1790 or submittal drawings, if applicable, for required power demand requirements.

Start-up

Step #1: Turn feed pump selector switch to the 'off' position.

Step #2: The next step requires filling the sump with sufficient water to fill the treatment system (500 to 1000 gallons). Vessels T-1 and T-2 are equipped with a manual air and vacuum release valve located on top. These valves are

rotated clockwise to open and counterclockwise to close. There are some 4-5 complete revolutions from full open to full close positions.

Step #3: Prime feed pump

Step #4: Run pump in manual mode of operation to fill treatment system. When T-1 overflows close manual valve. Now open valve on T-2. When T-2 overflows close manual valve.

Treatment system is now ready for automatic operation.

Operation and Maintenance

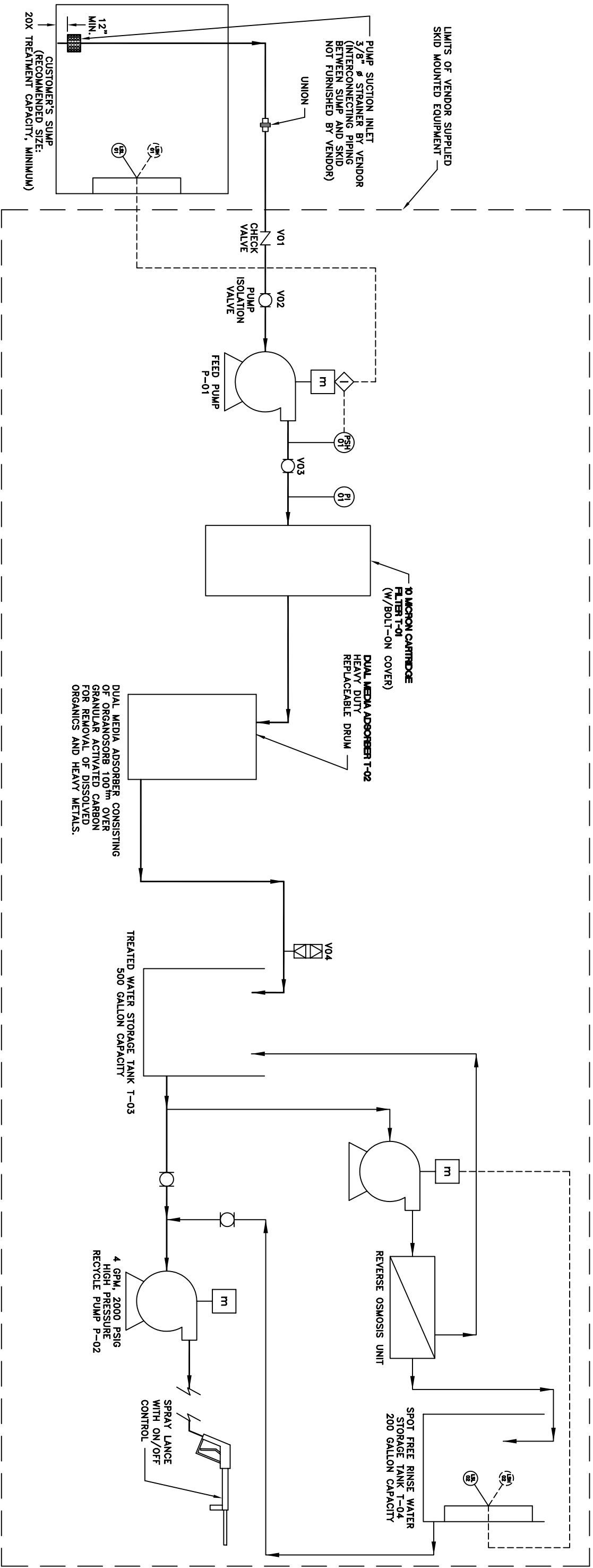
Routine servicing consists of two (2) procedures:

- ◆ Replace 5 micron cartridge filter T-1. It is removed by closing the isolation valves, opening the air/vacuum release valve, and then opening the drain valve to drain the vessel. Remove wing nuts on vessel top to remove and clean (or replace) 5 micron cartridge filter. Replace cover, close air/vacuum release valve, and reopen isolation valves. Manually start pump to bleed air from vessel by opening air/vacuum release valve. When the 5 micron cartridge filter requires replacement, system operation will automatically shut down until the cartridge filter is serviced.
- ◆ The tri-media adsorber must be replaced when the laboratory test results indicate that ultimate treatment capacity has been reached.



ENGINEERING DATA AND SPECIFICATIONS TABLE

MODEL NUMBERS	TREATMENT CAPACITIES	RECYCLE CAPACITIES	PIPE SIZES			PIPE MATERIALS		TOTAL OPERATING HORSEPOWER	REQUIRED POWER FEED		DUAL MEDIA ADSORBER			WEIGHTS, LBS.	
			INLET CONNECTION	PROCESS FLOW	OUTLET CONNECTION	INDOOR INSTALLATION	OUTDOOR INSTALLATION		FEED PUMP	RECYCLE PUMP	QTY.	SIZE	TOTAL LBS. OF MEDIA	SHIPPING	OPERATING
CA2PMR-05	5 GPM	4 GPM	1 1/2" Ø FNPT	1 1/2" Ø	1 1/2" Ø FNPT	PVC	GALV. STEEL	6	110/220V/1 PHASE	208V/3 PHASE	1	24" Ø x 36" H	200	2,500	6,100



PROCESS FLOW SCHEMATIC

LEGEND

○	ROTARY VALVE	⊙	PRESSURE SWITCH
Ⓜ	ELECTRIC MOTOR	⊕	LIQUID LEVEL SWITCH
⊠	COMBINATION AIR/VACUUM RELEASE VALVE	⊙	PRESSURE INDICATOR

MINI SERIES WITH SPOT FREE RINSE
ContamAway II Plus™

REV.	DATE	DESCRIPTION	BY	CHK	SCALE	NONE	DRAWN	B.E.H.	INVC. NO.

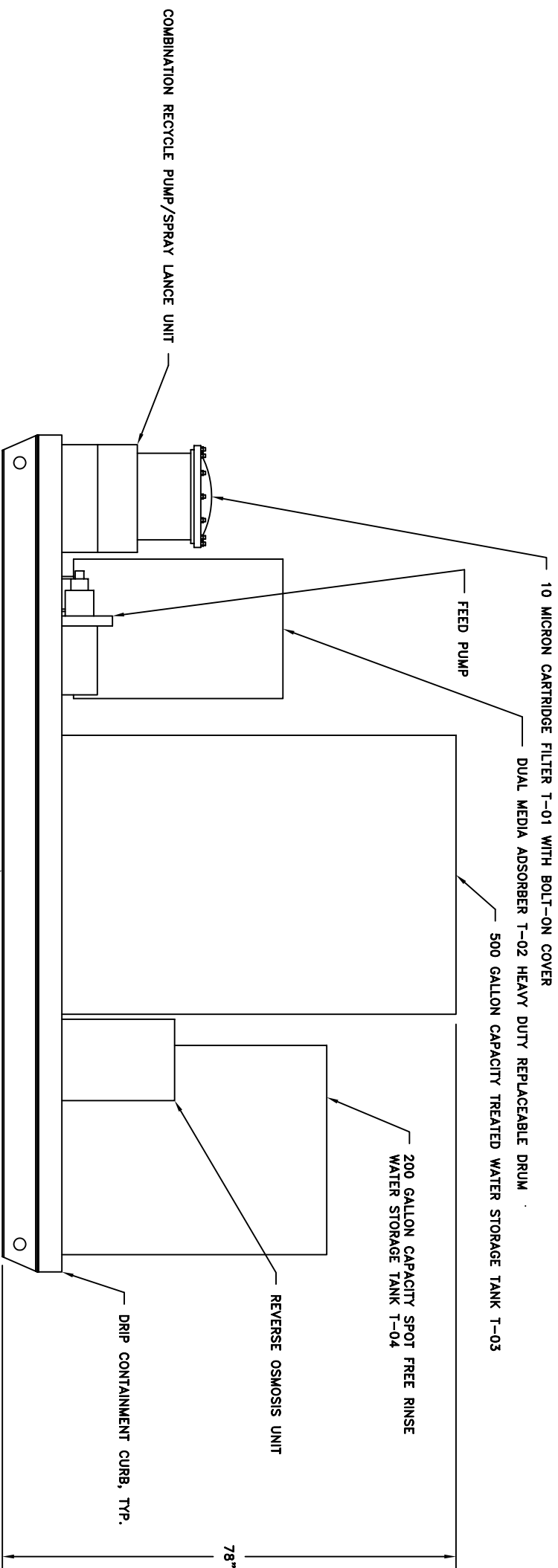
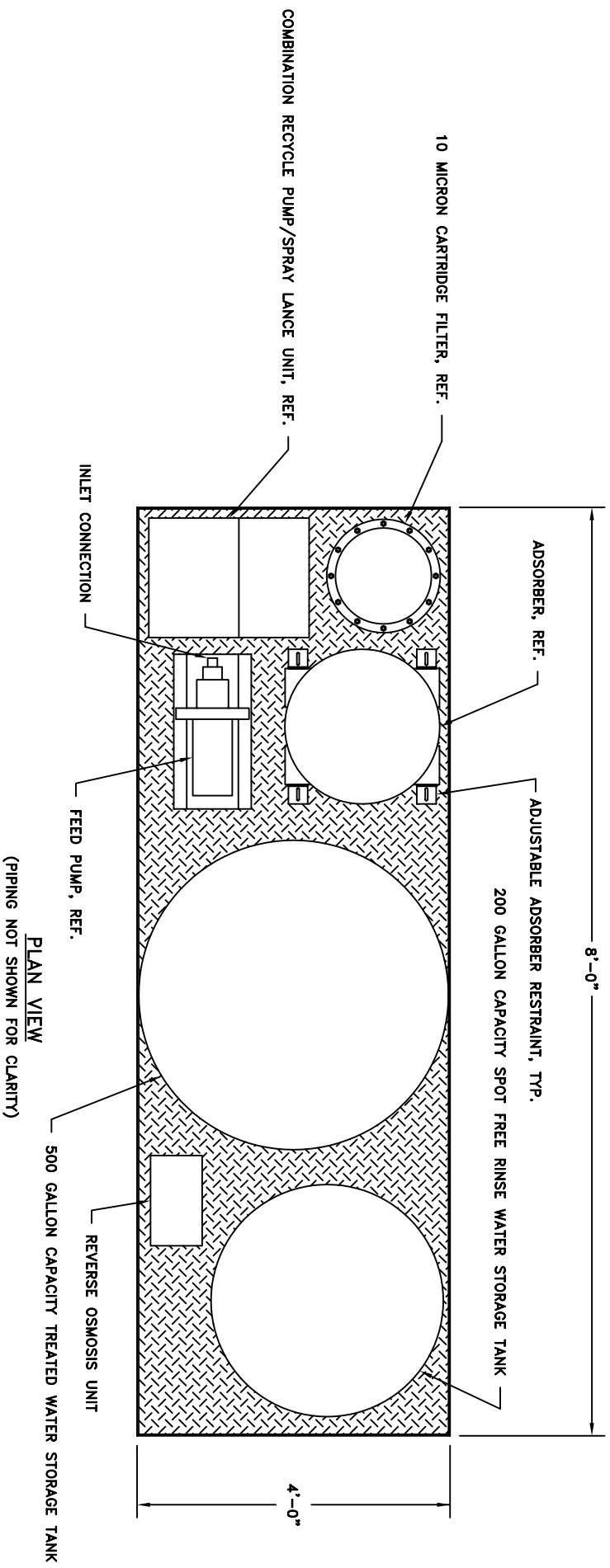
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TITLE: **PROCESS AND INSTRUMENT DRAWING**

DATE: 11/14/96
 CHECKED: C.G.S.
 S-1790

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ELEVATION VIEW
I-BEAM SKID SUPPORT, TYP.

MODEL CA2PPMR-05
MINI SERIES WITH SPOT FREE RINSE
ContamAway II Plus[™]

REV.	DATE	DESCRIPTION	BY	CHK

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Post Office Box 26346
Shawnee Mission, Kansas 66225

TITLE
EQUIPMENT LAYOUT

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SCALE 1"=1'-0"
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