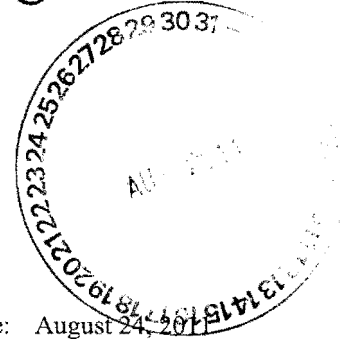


05

ENTERED



Environmental Protection Division
Water Quality & RCRA Group (ENV-RCRA)
P.O. Box 1663, Mail Stop K490
Los Alamos, New Mexico 87545
(505) 667-7969/FAX: (505) 665-9344

Date: August 24, 2011
Refer To: ENV-RCRA-11-0172
LAUR: 11-04843

Mr. Jerry Schoeppner, Acting Chief
Ground Water Quality Bureau
New Mexico Environment Department
Harold Runnels Building, Room N2250
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502

Dear Mr. Schoeppner:

SUBJECT: NOTICE OF INTENT TO DISCHARGE TREATED GROUNDWATER FROM R-28 DEVELOPMENT AND PUMPING TEST

In accordance with Subsection A of 20.6.2.1201 New Mexico Administrative Code (NMAC), Los Alamos National Laboratory (the Laboratory) is filing this notice of intent (NOI) to discharge (Enclosure 1) approximately 400,000 gal of treated groundwater produced during well development and a pumping test at monitoring well R-28, located in Mortandad Canyon. Well development was conducted to remove fine-grained sediments and to restore the porosity and permeability of the formation materials around the well screen. A 5-day pumping test will be conducted in accordance with the New Mexico Environment Department (NMED)-approved Sandia Canyon Phase II Investigation Work Plan (LA-UR-10-04921). The work plan describes a cross-hole pumping test at R-28 to better define the spatial distribution of regional aquifer heterogeneity and anisotropy in the vicinity of the chromium plume near wells R-28 and R-42. Data collected from the pumping test will be used to constrain flow parameters used in the model for groundwater flow and transport in the regional aquifer.

Groundwater produced during the above-referenced activities will be treated with ion exchange (IX) prior to discharge. The IX treatment system will remove chromium to less than 90% of the New Mexico Water Quality Control Commission (NMWQCC) 20.6.2.3103 NMAC groundwater standard of 50 µg/L, as required by the NMED-approved Decision Tree for the Land Application of Drilling, Development, Rehabilitation, and Sampling Purge Water (March 2010). As a contingency against the discharge of chromium in excess of land application criteria, samples of product water from the IX treatment system will be analyzed twice daily for chromium by the Laboratory's Geochemistry &



Geomaterials Research Laboratory (GGRL) analytical laboratory. If chromium concentrations in the product water exceed 45 µg/L (90% of the NMWQCC groundwater standard of 50 µg/L), then land application will cease until the IX resins can be replaced. Based on existing water quality data, no other regulated contaminants exceed land application criteria.

The land application of treated groundwater from R-28 will be conducted in accordance with the terms and conditions of the Laboratory's standard operating procedure, ENV-RCRA-QP-010.2, *Land Application of Groundwater*. Criteria for land application include, but are not limited to, the following:

- land application site cannot be located in a watercourse
- land application cannot result in runoff to a watercourse
- land application cannot create ponds or pools
- land application must be conducted in a manner that maximizes infiltration and evaporation
- land application is restricted to daylight hours and for a maximum of 10 hrs/day
- land application must be supervised at all times
- land application is prohibited while precipitation is occurring

In the event that your agency determines that a discharge permit is required for the previously described activity, in accordance with Subsection B of 20.6.2.3106 NMAC, the Laboratory requests temporary permission to discharge treated groundwater from well development and a pumping test at R-28. The \$150.00 filing fee required by the regulation is provided in Enclosure 7.

Please contact me at (505) 667-7969 if you have questions regarding this NOI and request for temporary permission to discharge.

Sincerely,



Robert Beers
Water Quality & RCRA Group

BB/lm

Enclosures: a/s

Cy: James Bearzi, NMED/SWQB, Santa Fe, NM, w/enc. (w/o CD)
John Keiling NMED/HWB, Santa Fe, NM, w/enc., (w/o CD)
Gene Turner, LASO-EO, w/enc., A316, (w/o CD)
Hai Shen, LASO-EO, w/enc., A316, (w/o CD)
Steve Yanicak, LASO-GOV, w/enc., M894, (w/o CD)
Carl A. Beard, PADOPS, w/o enc., A102
J. Chris Cantwell, ADESHQ, w/o enc., K491

Cy (continued):

Michael Graham, ADEP, w/o enc., M991, (w/o CD)
Victoria George, REG-DO, w/enc., M991, (w/o CD)
Kate Lynnes, REG-COM, w/o enc., M991, (w/o CD)
Steve Veenis, PMFS-DO, w/o enc., M997, (w/o CD)
Ted Ball, PMF-FUNCT, w/o enc., M996, (w/o CD)
Mark Everett, ET-EI, w/enc., M992, (w/o CD)
Mike Saladen, ENV-RCRA, w/o enc., K490, (E-File)
ENV-RCRA File, w/enc., M704
IRM-RMMSO, w/enc., A150



New Mexico Environment Department
Ground Water Quality Bureau

Ground Water Quality Bureau –
Pollution Prevention Section
Notice of Intent

1. **Name and mailing address of person proposing to discharge:**
Michael Graham, Associate Director, Environmental Programs
Chris Cantwell, Associate Director, ESH&Q
Los Alamos National Laboratory, PO Box 1663, MS K490, Los Alamos, New Mexico 87545

Regulatory Point of Contact: Robert Beers, ENV-RCRA
Phone: 505-667-7969 FAX: 505-665-9344 Email: bbeers@lanl.gov
2. **Name of facility:** Los Alamos National Laboratory (LANL or the Laboratory)
3. **Physical location of discharge (if applicable, give street address, township, range, section, distance from closest town or landmark, directions to facility, location map):**
Monitoring well R-28 is located in Mortandad Canyon at T19N R06E S24. Enclosure 2 provides a location map.
4. **Type of operation generating the discharge (e.g., truck wash, food processing plant, restaurant, etc.):**
R-28 is a regional aquifer monitoring well at LANL. Groundwater was produced during well development to remove fine-grained sediments and to restore the porosity and permeability of the formation materials around the well screen. A pumping test is planned to measure aquifer parameters in accordance with the NMED-approved *Sandia Canyon Phase II Investigation Work Plan* (LA-UR-10-04921). Enclosure 3 provides a copy of the work plan on CD.
5. **Source(s) of the discharge. Describe how the wastewater, sludge, or other discharges processed and/or disposed at your facility are generated. Identify all sources. Attach additional pages if needed:**
Approximately 12,000 gal of R-28 development water are presently in storage at the well site. LANL plans to generate approximately 360,000 gal of groundwater from R-28 during a 5-day, 50 gallons per minute (gpm), pumping test.
6. **Expected contaminants in the discharge (e.g., nitrate-nitrogen, metals, organic compounds, salts, etc.) Include estimated concentration if known, and copies of results of laboratory analyses, if available:**
The contaminant of concern at R-28 is chromium at concentrations ranging from 310 to 472 µg/L. Enclosure 4 provides water-quality data from R-28. No other contaminants at R-28 exceed land application criteria.

LANL will install an ion exchange (IX) treatment system at the R-28 well site to remove chromium from the produced groundwater. The treatment system design will be based on the following criteria: Influent chromium concentration of 500 µg/L and a maximum effluent (product) chromium concentration of 35 µg/L, at the design flow rate of 50 gpm. The treatment system will be capable of reducing chromium to less than 90% of the NM WQCC Regulation 3103 groundwater standard of 50 µg/L, as required by the NMED-approved *Drilling, Development, Rehabilitation, and Sampling Purge Water Decision Tree* (March 2010).

As a contingency against the discharge of chromium in excess of land application criteria, samples of product water from the IX treatment system will be analyzed twice daily for chromium by the Laboratory's GGRL analytical laboratory. If chromium concentrations exceed 45 µg/L (90% of the NM WQCC Regulation 3103 standard of 50 µg/L), then land application will cease until the spent IX resin can be replaced.
7. **Describe all components of wastewater processing, treatment, storage, and disposal system (e.g., grease interceptor, lagoon, septic tank/leachfield, etc.) Include sizes, site layout map, plans and specifications, etc. if available:**
Enclosure 5 provides a schematic of the IX treatment system. Enclosure 6 provides technical specifications on the IX resin.
8. **Estimated maximum daily discharge volume in gallons per day (or other units):**
The Laboratory proposes to land apply a total volume of approximately 400,000 gal of treated groundwater to dirt roads and the land surface using water trucks. Daily discharges will be approximately 75,000 gal. Land application will be conducted in accordance with the requirements of the Laboratory's Standard Operating Procedure for the Land Application of Groundwater (ENV-RCRA-QP-010.2).
9. **Estimated depth to ground water (ft):** The static water level at R-28 is 890 ft below ground surface.

Signature: _____

Date: _____

8/24/11

Printed name: _____

Theodore T. Ball

Title: _____

Project Manager

Table 1.0. Groundwater Quality in Regional Monitoring Well R-28, Metals.

Location Name	Start Date	Analyte	Anyl Meth Code	Fld Prep Code	Symbol	Std Result	Units	Std Mdl	Lab Qual Code	Concat Flag Code	Lab Code	Sample Id
R-28	2/14/2011	Ag	SW-846:6020	F	<	1	ug/L	0.2	U	U	GELC	CAMO-11-4599
R-28	2/14/2011	Al	SW-846:6010B	F	<	200	ug/L	68	U	U	GELC	CAMO-11-4599
R-28	2/14/2011	As	SW-846:6020	F	<	5	ug/L	1.7	U	U	GELC	CAMO-11-4599
R-28	2/14/2011	B	SW-846:6010B	F		22.9	ug/L	15	J	J	GELC	CAMO-11-4599
R-28	2/14/2011	Ba	SW-846:6010B	F		66	ug/L	1			GELC	CAMO-11-4599
R-28	2/14/2011	Be	SW-846:6010B	F		1.18	ug/L	1	J	J	GELC	CAMO-11-4599
R-28	2/14/2011	Cd	SW-846:6020	F	<	1	ug/L	0.11	U	U	GELC	CAMO-11-4599
R-28	2/14/2011	Co	SW-846:6010B	F	<	5	ug/L	1	U	U	GELC	CAMO-11-4599
R-28	2/14/2011	Cr	SW-846:6020	F		356	ug/L	2	E		GELC	CAMO-11-4599
R-28	2/14/2011	Cu	SW-846:6010B	F	<	10	ug/L	3	U	U	GELC	CAMO-11-4599
R-28	2/14/2011	Fe	SW-846:6010B	F		37	ug/L	30	J	J	GELC	CAMO-11-4599
R-28	2/14/2011	Hg	EPA:245.2	F	<	0.2	ug/L	0.066	U	U	GELC	CAMO-11-4599
R-28	2/14/2011	Hg	EPA:245.2	UF	<	0.2	ug/L	0.066	U	U	GELC	CAMO-11-4598
R-28	2/14/2011	Mn	SW-846:6010B	F	<	10	ug/L	2	U	U	GELC	CAMO-11-4599
R-28	2/14/2011	Mo	SW-846:6020	F	<	0.86	ug/L	0.17		U	GELC	CAMO-11-4599
R-28	2/14/2011	Ni	SW-846:6020	F		20.9	ug/L	0.5			GELC	CAMO-11-4599
R-28	2/14/2011	Pb	SW-846:6020	F	<	2	ug/L	0.5	U	U	GELC	CAMO-11-4599
R-28	2/14/2011	Sb	SW-846:6020	F	<	3	ug/L	1	U	U	GELC	CAMO-11-4599
R-28	2/14/2011	Se	SW-846:6020	F	<	5	ug/L	1.5	U	U	GELC	CAMO-11-4599
R-28	2/14/2011	Tl	SW-846:6020	F	<	2	ug/L	0.45	U	U	GELC	CAMO-11-4599
R-28	2/14/2011	U	SW-846:6020	F		1.36	ug/L	0.067			GELC	CAMO-11-4599
R-28	2/14/2011	Zn	SW-846:6010B	F	<	10	ug/L	3.3	U	U	GELC	CAMO-11-4599
R-28	6/1/2011	Ag	SW-846:6020	F	<	1	ug/L	0.2	U	U	GELC	CAMO-11-10704
R-28	6/1/2011	Al	SW-846:6010B	F	<	200	ug/L	68	U	U	GELC	CAMO-11-10704
R-28	6/1/2011	As	SW-846:6020	F	<	5	ug/L	1.7	U	U	GELC	CAMO-11-10704
R-28	6/1/2011	B	SW-846:6010B	F		25.2	ug/L	15	J	J	GELC	CAMO-11-10704
R-28	6/1/2011	Ba	SW-846:6010B	F		66.6	ug/L	1			GELC	CAMO-11-10704
R-28	6/1/2011	Be	SW-846:6010B	F	<	5	ug/L	1	U	U	GELC	CAMO-11-10704
R-28	6/1/2011	Cd	SW-846:6020	F	<	1	ug/L	0.11	U	U	GELC	CAMO-11-10704
R-28	6/1/2011	Co	SW-846:6010B	F	<	5	ug/L	1	U	U	GELC	CAMO-11-10704
R-28	6/1/2011	Cr	SW-846:6020	F		344	ug/L	2			GELC	CAMO-11-10704
R-28	6/1/2011	Cu	SW-846:6010B	F		3.28	ug/L	3	J	J	GELC	CAMO-11-10704
R-28	6/1/2011	Fe	SW-846:6010B	F	<	100	ug/L	30	U	U	GELC	CAMO-11-10704
R-28	6/1/2011	Hg	EPA:245.2	F	<	0.2	ug/L	0.066	U	U	GELC	CAMO-11-10704
R-28	6/1/2011	Hg	EPA:245.2	UF	<	0.2	ug/L	0.066	U	U	GELC	CAMO-11-10705
R-28	6/1/2011	Mn	SW-846:6010B	F	<	10	ug/L	2	U	U	GELC	CAMO-11-10704
R-28	6/1/2011	Mo	SW-846:6020	F		0.771	ug/L	0.17			GELC	CAMO-11-10704
R-28	6/1/2011	Ni	SW-846:6020	F		17.9	ug/L	0.5			GELC	CAMO-11-10704
R-28	6/1/2011	Pb	SW-846:6020	F	<	2	ug/L	0.5	U	U	GELC	CAMO-11-10704
R-28	6/1/2011	Sb	SW-846:6020	F	<	3	ug/L	1	U	U	GELC	CAMO-11-10704
R-28	6/1/2011	Se	SW-846:6020	F	<	5	ug/L	1.5	U	U	GELC	CAMO-11-10704
R-28	6/1/2011	Tl	SW-846:6020	F	<	2	ug/L	0.45	U	U	GELC	CAMO-11-10704
R-28	6/1/2011	U	SW-846:6020	F		1.36	ug/L	0.067		J	GELC	CAMO-11-10704
R-28	6/1/2011	Zn	SW-846:6010B	F		5.86	ug/L	3.3	J	J	GELC	CAMO-11-10704

Table 2.0. Groundwater Quality in Regional Monitoring Well R-28, General Inorganics.

Location Name	Start Date	Analyte	Analyte Desc	Anyl Meth Code	Fld Prep Code		Std Result	Units	Std Mdl	Lab Qual Code	Concat Flag Code	Lab Code	Sample Id
R-28	2/14/2011	Cl(-1)	Chloride	EPA:300.0	F		30.9	mg/L	0.66			GELC	CAMO-11-4599
R-28	2/14/2011	ClO4	Perchlorate	SW-846:6850	F		0.997	ug/L	0.05			GELC	CAMO-11-4599
R-28	2/14/2011	F(-1)	Fluoride	EPA:300.0	F		0.297	mg/L	0.033			GELC	CAMO-11-4599
R-28	2/14/2011	NH3-N	Ammonia as Nitrogen	EPA:350.1	F	<	0.05	mg/L	0.016	U	U	GELC	CAMO-11-4599
R-28	2/14/2011	NO3+NO2-N	Nitrate-Nitrite as Nitrogen	EPA:353.2	F		3.58	mg/L	0.1			GELC	CAMO-11-4599
R-28	2/14/2011	SO4(-2)	Sulfate	EPA:300.0	F		47.5	mg/L	1			GELC	CAMO-11-4599
R-28	2/14/2011	TDS	Total Dissolved Solids	EPA:160.1	F		306	mg/L	2.4			GELC	CAMO-11-4599
R-28	2/14/2011	pH	pH	EPA:150.1	F		7.87	SU	0.01	H	J-	GELC	CAMO-11-4599
R-28	6/1/2011	Cl(-1)	Chloride	EPA:300.0	F		34.3	mg/L	0.33			GELC	CAMO-11-10704
R-28	6/1/2011	ClO4	Perchlorate	SW-846:6850	F		0.996	ug/L	0.05			GELC	CAMO-11-10704
R-28	6/1/2011	F(-1)	Fluoride	EPA:300.0	F		0.297	mg/L	0.033			GELC	CAMO-11-10704
R-28	6/1/2011	NH3-N	Ammonia as Nitrogen	EPA:350.1	F	<	0.022	mg/L	0.016	J	U	GELC	CAMO-11-10704
R-28	6/1/2011	NO3+NO2-N	Nitrate-Nitrite as Nitrogen	EPA:353.2	F		3.82	mg/L	0.05			GELC	CAMO-11-10704
R-28	6/1/2011	SO4(-2)	Sulfate	EPA:300.0	F		50.7	mg/L	0.5			GELC	CAMO-11-10704
R-28	6/1/2011	TDS	Total Dissolved Solids	EPA:160.1	F		293	mg/L	2.4			GELC	CAMO-11-10704
R-28	6/1/2011	pH	pH	EPA:150.1	F		7.86	SU	0.01	H	J-	GELC	CAMO-11-10704

Table 3.0. Groundwater Quality in Regional Monitoring Well R-28, Radiologicals.

Location Name	Start Date	Analyte	Analyte Desc	Anyl Meth Code	Fld Prep Code		Std Result	Units	Std Uncert	Std Mda	Lab Qual Code	Concat Flag Code	Lab Code	Sample Id
R-28	11/10/2005	Ra-226	Radium-226	EPA:901.1	UF	<	4.54	pCi/L	2.01	5.48	U	U	GELC	GU05110G28R01
R-28	11/14/2007	Ra-228	Radium-228	EPA:904	UF	<	0.125	pCi/L	0.24	0.83	U	U	GELC	CAMO-08-8713
R-28	11/14/2007	Ra-226	Radium-226	EPA:903.1	UF	<	0.479	pCi/L	0.17	0.44		U	GELC	CAMO-08-8713
R-28	8/15/2008	Ra-226	Radium-226	EPA:903.1	UF	<	0.381	pCi/L	0.2	0.62	U	U	GELC	CAMO-08-14543
R-28	5/20/2005	Ra-226	Radium-226	EPA:901.1	UF		14.1	pCi/L	4.71	7.43		J	GELC	GU05050G28R01
R-28	2/15/2008	Ra-226	Radium-226	EPA:903.1	UF	<	0.462	pCi/L	0.21	0.62	U	U	GELC	CAMO-08-10442
R-28	2/15/2008	Ra-228	Radium-228	EPA:904	UF	<	-0.04	pCi/L	0.22	0.84	U	U	GELC	CAMO-08-10442
R-28	8/15/2008	Ra-228	Radium-228	EPA:904	UF	<	0.515	pCi/L	0.19	0.51		U	GELC	CAMO-08-14543

Table 4.0. Groundwater Quality in Regional Monitoring Well R-28, Volatile Organic Compounds (VOCs).

Location Name	Start Date	Analyte	Analyte Desc	Anyl Meth Code	Fld Prep Code		Std Result	Units	Std Mdl	Lab Qual Code	Concat Flag Code	Lab Code	Sample Id
R-28	7/14/2010	67-64-1	Acetone	SW-846:8260B	UF	<	10	ug/L	3.5	U	UJ	GELC	CAMO-10-22860
R-28	7/14/2010	75-05-8	Acetonitrile	SW-846:8260B	UF	<	25	ug/L	6.3	U	R	GELC	CAMO-10-22860
R-28	7/14/2010	107-02-8	Acrolein	SW-846:8260B	UF	<	5	ug/L	1.3	U	UJ	GELC	CAMO-10-22860
R-28	7/14/2010	107-13-1	Acrylonitrile	SW-846:8260B	UF	<	5	ug/L	1	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	71-43-2	Benzene	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	108-86-1	Bromobenzene	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	74-97-5	Bromochloromethane	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	75-27-4	Bromodichloromethane	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	75-25-2	Bromoform	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	74-83-9	Bromomethane	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	71-36-3	Butanol[1-]	SW-846:8260B	UF	<	50	ug/L	15	U	R	GELC	CAMO-10-22860
R-28	7/14/2010	78-93-3	Butanone[2-]	SW-846:8260B	UF	<	5	ug/L	1.3	U	UJ	GELC	CAMO-10-22860
R-28	7/14/2010	104-51-8	Butylbenzene[n-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	135-98-8	Butylbenzene[sec-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	98-06-6	Butylbenzene[tert-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	75-15-0	Carbon Disulfide	SW-846:8260B	UF	<	5	ug/L	1.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	56-23-5	Carbon Tetrachloride	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	126-99-8	Chloro-1,3-butadiene[2-]	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	107-05-1	Chloro-1-propene[3-]	SW-846:8260B	UF	<	5	ug/L	1.5	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	108-90-7	Chlorobenzene	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	124-48-1	Chlorodibromomethane	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	75-00-3	Chloroethane	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	67-66-3	Chloroform	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	74-87-3	Chloromethane	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	95-49-8	Chlorotoluene[2-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	106-43-4	Chlorotoluene[4-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	96-12-8	Dibromo-3-Chloropropane[1,2-]	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	106-93-4	Dibromoethane[1,2-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	74-95-3	Dibromomethane	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	95-50-1	Dichlorobenzene[1,2-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	541-73-1	Dichlorobenzene[1,3-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	106-46-7	Dichlorobenzene[1,4-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	75-71-8	Dichlorodifluoromethane	SW-846:8260B	UF	<	1	ug/L	0.3	U	UJ	GELC	CAMO-10-22860
R-28	7/14/2010	75-34-3	Dichloroethane[1,1-]	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	107-06-2	Dichloroethane[1,2-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	75-35-4	Dichloroethene[1,1-]	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	156-59-2	Dichloroethene[cis-1,2-]	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	156-60-5	Dichloroethene[trans-1,2-]	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	78-87-5	Dichloropropane[1,2-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	142-28-9	Dichloropropane[1,3-]	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	594-20-7	Dichloropropane[2,2-]	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860

Table 4.0 (con't). Groundwater Quality in Regional Monitoring Well R-28, Volatile Organic Compounds (VOCs).

Location Name	Start Date	Analyte	Analyte Desc	Anyl Meth Code	Fld Prep Code		Std Result	Units	Std Mdl	Lab Qual Code	Concat Flag Code	Lab Code	Sample Id
R-28	7/14/2010	563-58-6	Dichloropropene[1,1-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	10061-01-5	Dichloropropene[cis-1,3-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	10061-02-6	Dichloropropene[trans-1,3-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	60-29-7	Diethyl Ether	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	97-63-2	Ethyl Methacrylate	SW-846:8260B	UF	<	5	ug/L	1	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	100-41-4	Ethylbenzene	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	87-68-3	Hexachlorobutadiene	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	591-78-6	Hexanone[2-]	SW-846:8260B	UF	<	5	ug/L	1.3	U	UJ	GELC	CAMO-10-22860
R-28	7/14/2010	74-88-4	Iodomethane	SW-846:8260B	UF	<	5	ug/L	1.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	78-83-1	Isobutyl alcohol	SW-846:8260B	UF	<	50	ug/L	13	U	R	GELC	CAMO-10-22860
R-28	7/14/2010	98-82-8	Isopropylbenzene	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	99-87-6	Isopropyltoluene[4-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	126-98-7	Methacrylonitrile	SW-846:8260B	UF	<	5	ug/L	1	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	80-62-6	Methyl Methacrylate	SW-846:8260B	UF	<	5	ug/L	1	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	1634-04-4	Methyl tert-Butyl Ether	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	108-10-1	Methyl-2-pentanone[4-]	SW-846:8260B	UF	<	5	ug/L	1.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	75-09-2	Methylene Chloride	SW-846:8260B	UF	<	10	ug/L	3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	91-20-3	Naphthalene	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	107-12-0	Propionitrile	SW-846:8260B	UF	<	5	ug/L	1.5	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	103-65-1	Propylbenzene[1-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	100-42-5	Styrene	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	630-20-6	Tetrachloroethane[1,1,1,2-]	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	79-34-5	Tetrachloroethane[1,1,2,2-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	127-18-4	Tetrachloroethene	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	108-88-3	Toluene	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	76-13-1	Trichloro-1,2,2-trifluoroethane[1,1,2-]	SW-846:8260B	UF	<	5	ug/L	1	U	UJ	GELC	CAMO-10-22860
R-28	7/14/2010	87-61-6	Trichlorobenzene[1,2,3-]	SW-846:8260B	UF	<	1	ug/L	0.33	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	120-82-1	Trichlorobenzene[1,2,4-]	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	71-55-6	Trichloroethane[1,1,1-]	SW-846:8260B	UF	<	1	ug/L	0.33	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	79-00-5	Trichloroethane[1,1,2-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	79-01-6	Trichloroethene	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	75-69-4	Trichlorofluoromethane	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	96-18-4	Trichloropropane[1,2,3-]	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	95-63-6	Trimethylbenzene[1,2,4-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	108-67-8	Trimethylbenzene[1,3,5-]	SW-846:8260B	UF	<	1	ug/L	0.25	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	75-01-4	Vinyl Chloride	SW-846:8260B	UF	<	1	ug/L	0.5	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	108-05-4	Vinyl acetate	SW-846:8260B	UF	<	5	ug/L	1.5	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	95-47-6	Xylene[1,2-]	SW-846:8260B	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	Xylene	Xylenef[1,3-]+Xylenef[1,4-]	SW-846:8260B	UF	<	2	ug/L	0.5	U	U	GELC	CAMO-10-22860

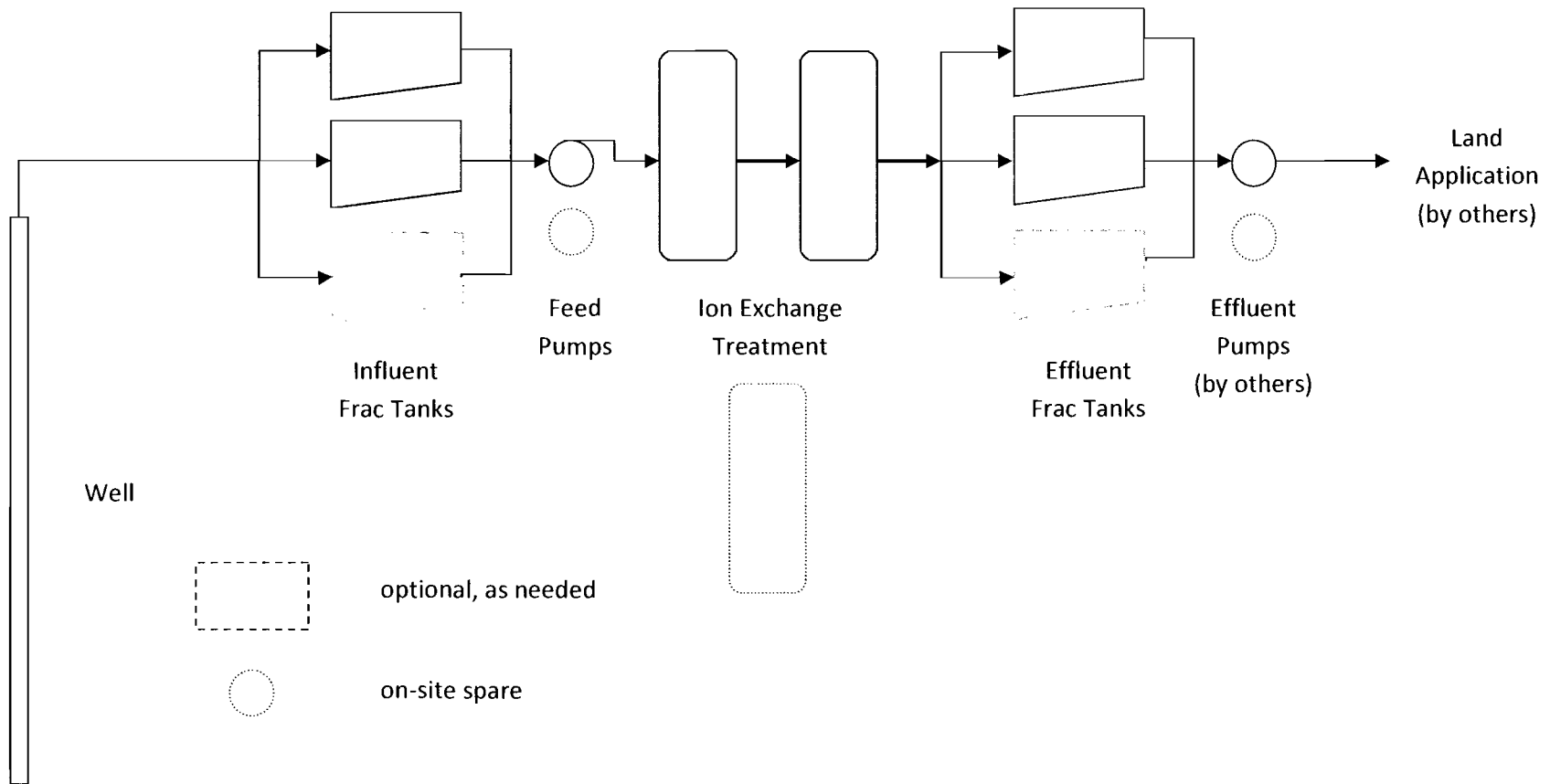
Table 5.0. Groundwater Quality in Regional Monitoring Well R-28, Semivolatile Organic Compounds (SVOCs).

Location Name	Start Date	Analyte	Analyte Desc	Anyl Meth Code	Fld Prep Code		Std Result	Units	Std Mdl	Lab Qual Code	Concat Flag Code	Lab Code	Sample Id
R-28	7/14/2010	83-32-9	Acenaphthene	SW-846:8270C	UF	<	1	ug/L	0.31	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	208-96-8	Acenaphthylene	SW-846:8270C	UF	<	1	ug/L	0.2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	62-53-3	Aniline	SW-846:8270C	UF	<	10	ug/L	2.5	U	UJ	GELC	CAMO-10-22860
R-28	7/14/2010	120-12-7	Anthracene	SW-846:8270C	UF	<	1	ug/L	0.2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	1912-24-9	Atrazine	SW-846:8270C	UF	<	10	ug/L	3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	103-33-3	Azobenzene	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	92-87-5	Benzidine	SW-846:8270C	UF	<	10	ug/L	3	U	UJ	GELC	CAMO-10-22860
R-28	7/14/2010	56-55-3	Benzo(a)anthracene	SW-846:8270C	UF	<	1	ug/L	0.2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	50-32-8	Benzo(a)pyrene	SW-846:8270C	UF	<	1	ug/L	0.2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	205-99-2	Benzo(b)fluoranthene	SW-846:8270C	UF	<	1	ug/L	0.2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	191-24-2	Benzo(g,h,i)perylene	SW-846:8270C	UF	<	1	ug/L	0.2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	207-08-9	Benzo(k)fluoranthene	SW-846:8270C	UF	<	1	ug/L	0.2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	65-85-0	Benzoic Acid	SW-846:8270C	UF	<	20	ug/L	6	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	100-51-6	Benzyl Alcohol	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	111-91-1	Bis(2-chloroethoxy)methane	SW-846:8270C	UF	<	10	ug/L	3	U	UJ	GELC	CAMO-10-22860
R-28	7/14/2010	111-44-4	Bis(2-chloroethyl)ether	SW-846:8270C	UF	<	10	ug/L	2	U	UJ	GELC	CAMO-10-22860
R-28	7/14/2010	117-81-7	Bis(2-ethylhexyl)phthalate	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	101-55-3	Bromophenyl-phenylether[4-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	85-68-7	Butylbenzylphthalate	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	59-50-7	Chloro-3-methylphenol[4-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	106-47-8	Chloroaniline[4-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	91-58-7	Chloronaphthalene[2-]	SW-846:8270C	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	95-57-8	Chlorophenol[2-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	7005-72-3	Chlorophenyl-phenyl[4-] Ether	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	218-01-9	Chrysene	SW-846:8270C	UF	<	1	ug/L	0.2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	84-74-2	Di-n-butylphthalate	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	117-84-0	Di-n-octylphthalate	SW-846:8270C	UF	<	10	ug/L	3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	53-70-3	Dibenz(a,h)anthracene	SW-846:8270C	UF	<	1	ug/L	0.2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	132-64-9	Dibenzofuran	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	95-50-1	Dichlorobenzene[1,2-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	541-73-1	Dichlorobenzene[1,3-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	106-46-7	Dichlorobenzene[1,4-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	91-94-1	Dichlorobenzidine[3,3'-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	120-83-2	Dichlorophenol[2,4-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	84-66-2	Diethylphthalate	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	131-11-3	Dimethyl Phthalate	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	105-67-9	Dimethylphenol[2,4-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	534-52-1	Dimitro-2-methylphenol[4,6-]	SW-846:8270C	UF	<	10	ug/L	3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	51-28-5	Dinitrophenol[2,4-]	SW-846:8270C	UF	<	20	ug/L	5	U	UJ	GELC	CAMO-10-22860

Table 5.0 (con't). Groundwater Quality in Regional Monitoring Well R-28, Semivolatile Organic Compounds (SVOCs).

Location Name	Start Date	Analyte	Analyte Desc	Anyl Meth Code	Fld Prep Code		Std Result	Units	Std Mdl	Lab Qual Code	Concat Flag Code	Lab Code	Sample Id
R-28	7/14/2010	121-14-2	Dinitrotoluene[2,4-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	606-20-2	Dinitrotoluene[2,6-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	88-85-7	Dinoseb	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	123-91-1	Dioxane[1,4-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	122-39-4	Diphenylamine	SW-846:8270C	UF	<	10	ug/L	3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	206-44-0	Fluoranthene	SW-846:8270C	UF	<	1	ug/L	0.2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	86-73-7	Fluorene	SW-846:8270C	UF	<	1	ug/L	0.2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	118-74-1	Hexachlorobenzene	SW-846:8270C	UF	<	10	ug/L	2	U	UJ	GELC	CAMO-10-22860
R-28	7/14/2010	87-68-3	Hexachlorobutadiene	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	77-47-4	Hexachlorocyclopentadiene	SW-846:8270C	UF	<	10	ug/L	3	U	UJ	GELC	CAMO-10-22860
R-28	7/14/2010	67-72-1	Hexachloroethane	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	193-39-5	Indeno(1,2,3-cd)pyrene	SW-846:8270C	UF	<	1	ug/L	0.2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	78-59-1	Isophorone	SW-846:8270C	UF	<	10	ug/L	3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	90-12-0	Methylnaphthalene[1-]	SW-846:8270C	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	91-57-6	Methylnaphthalene[2-]	SW-846:8270C	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	95-48-7	Methylphenol[2-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	106-44-5	Methylphenol[4-]	SW-846:8270C	UF	<	10	ug/L	3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	91-20-3	Naphthalene	SW-846:8270C	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	88-74-4	Nitroaniline[2-]	SW-846:8270C	UF	<	10	ug/L	2	U	UJ	GELC	CAMO-10-22860
R-28	7/14/2010	99-09-2	Nitroaniline[3-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	100-01-6	Nitroaniline[4-]	SW-846:8270C	UF	<	10	ug/L	3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	98-95-3	Nitrobenzene	SW-846:8270C	UF	<	10	ug/L	3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	88-75-5	Nitrophenol[2-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	100-02-7	Nitrophenol[4-]	SW-846:8270C	UF	<	10	ug/L	2	U	UJ	GELC	CAMO-10-22860
R-28	7/14/2010	924-16-3	Nitroso-di-n-butylamine[N-]	SW-846:8270C	UF	<	10	ug/L	3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	621-64-7	Nitroso-di-n-propylamine[N-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	55-18-5	Nitrosodiethylamine[N-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	62-75-9	Nitrosodimethylamine[N-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	930-55-2	Nitrosopyrrolidine[N-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	108-60-1	Oxybis(1-chloropropane)[2,2'-]	SW-846:8270C	UF	<	10	ug/L	2	U	UJ	GELC	CAMO-10-22860
R-28	7/14/2010	608-93-5	Pentachlorobenzene	SW-846:8270C	UF	<	10	ug/L	3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	87-86-5	Pentachlorophenol	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	85-01-8	Phenanthrene	SW-846:8270C	UF	<	1	ug/L	0.2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	108-95-2	Phenol	SW-846:8270C	UF	<	10	ug/L	1	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	129-00-0	Pyrene	SW-846:8270C	UF	<	1	ug/L	0.3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	110-86-1	Pyridine	SW-846:8270C	UF	<	10	ug/L	3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	95-94-3	Tetrachlorobenzene[1,2,4,5]	SW-846:8270C	UF	<	10	ug/L	3	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	58-90-2	Tetrachlorophenol[2,3,4,6-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	120-82-1	Trichlorobenzene[1,2,4-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	95-95-4	Trichlorophenol[2,4,5-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860
R-28	7/14/2010	88-06-2	Trichlorophenol[2,4,6-]	SW-846:8270C	UF	<	10	ug/L	2	U	U	GELC	CAMO-10-22860

Final Treatment Configuration – R-28 Pumping Test (all treatment equipment by SUBCONTRACTOR unless noted)



Water Technologies

Wastewater Ion Exchange Services

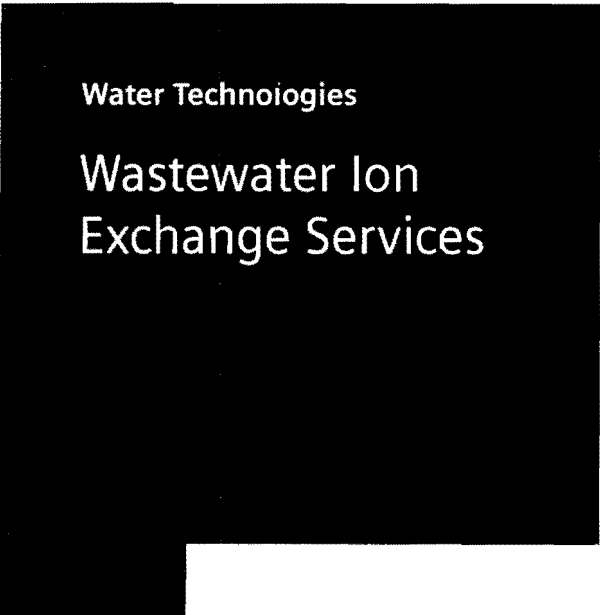
Siemens Water Technologies Wastewater Ion Exchange (WWIX) services and equipment help customers meet their wastewater handling challenges. Siemens provides system design, installation, and custom services that treat wastewater contaminated with heavy metals. Zinc, copper, nickel and chromium are just a few examples of the metals that can be removed to low part per billion levels. Our wastewater treatment systems are designed to meet your discharge requirements, achieve the water quality level needed for reuse and recycling and minimize the liability associated with on-site storage and handling of chemicals and wastes.

EVERY APPLICATION HAS UNIQUE REQUIREMENTS

Each application is examined to determine the system configuration that best meets current and future needs. The system components are selected based upon available manpower, space limitations, access limitation and the specific reuse or discharge quality required. If needs change, our wastewater treatment systems are flexible – we can simply change the media types and/or tank size saving our clients significant capital expense.

WHAT IS WWIX SERVICE?

Ion exchange (IX) is a proven and cost-effective technology for removing inorganic contaminants. Siemens' WWIX service utilizes ion exchange resins and other media selected to remove specific ionic contaminants from groundwater, industrial wastewater, and process water for recycle. DOT approved vessels containing the selected resin or media treat your water until the capacity is reached. Once exhausted, the WWIX vessels are removed and replaced with



SIEMENS



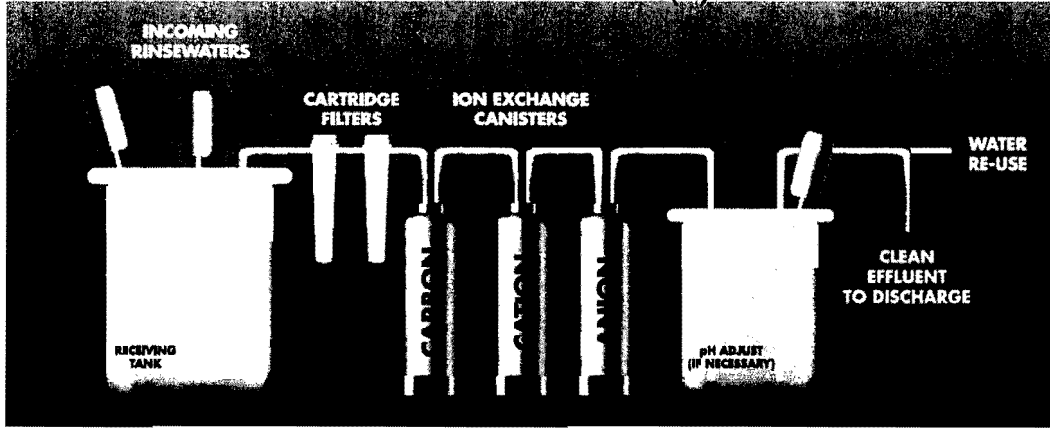
fresh, DOT-compliant vessels and returned to service. Exhausted vessels are returned to our processing facility where the contaminants are removed from the media/resin.

Siemens owns and operates a fully permitted RCRA facility with the technical expertise and equipment necessary to safely manage regeneration of the spent resins while remaining environmentally compliant. Where practical, the media/resin is recycled for future use. We can accept both non-hazardous and hazardous waste.

A SYSTEM DESIGNED FOR YOU:

Your specific requirements are evaluated on an individual basis to determine the system configuration that best meets your current and future needs. The system components are selected based upon your specific reuse or discharge requirements. If your needs change, our wastewater treatment systems are flexible - we can simply change the media types and/or tank size saving you significant capital expense.

TYPICAL CONTAMINANTS REMOVED:	TYPICAL APPLICATIONS MARKETS
Arsenic	• Metal finishing, electroplating and coating
Ammonia	• Parts washing
Cadmium	• Aerospace
Chloride	• Anodizing
Chromium	• Circuit board assembly and manufacturing
Copper	• Microelectronics
Cyanide	• EDM
Molybdenum	• General manufacturing
Lead	• Groundwater remediation
Nickel	• Magnetic/digital media production
Sodium	• Boiler or cooling tower blowdown
Sulfate	• Heating and cooling loops
Zinc	• Telecommunications
And others	



When used for reuse/recycle, WWIX reduces the cost of make-up water and provides a proven and flexible treatment solution to meet ever-changing discharge limits. In groundwater remediation applications, WWIX offers an easy, cost-effective and scalable treatment alternative for discharge or re-injection. WWIX service is also an effective treatment choice for the clean up of retention ponds, cooling loops or spills.

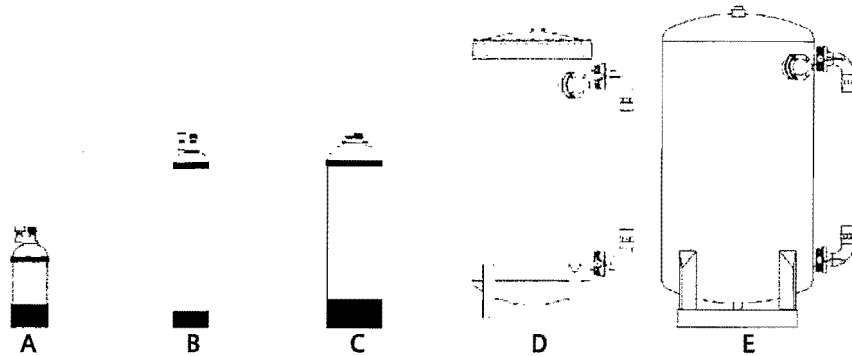
WHY CHOOSE WWIX SERVICE FROM SIEMENS?

Siemens delivers cost-effective, reliable systems to meet our customer's requirements for quality, safety and environmental compliance. WWIX is a service-based approach that integrates equipment and service option combinations, minimizes your capital investments and reduces overall space requirements. WWIX provides the

ultimate flexibility to add or remove treatment/recycle capacity as your business grows or compliance limits change.

WWIX service minimizes the need for handling and on-site storage of chemicals and wastes. WWIX services also save valuable manufacturing space while minimizing your maintenance and installation requirements.

Siemens' experienced engineers, scientists and fully equipped laboratory provide the comprehensive testing needed to ensure optimal performance of your WWIX system. Our WWIX program also minimizes your liabilities associated with safety and environmental compliance.



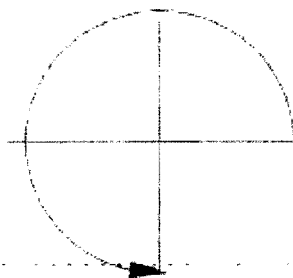
Resin Capacity (ft ³)	0.45	1.2	3.5	12	30
Flow Rate (Min.-Max.)	0.5-1	1-3	2-10	10-35	25-75
Dimensions, Base/Height	8" dia./20.5"	8" dia./48"	14" dia./50"	29" sq./71.5"	36" sq./75.5"

The information provided in this literature contains merely general descriptions or characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of the contract.

Siemens
Water Technologies

Environmental Services
2430 Rose Place
Roseville, MN 55113
800.525.0658 phone

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ION EXCHANGE

USF A-284 ANION RESIN

Description:

USF A-284 is a strong base Type I gel anion resin consisting of a styrene divinylbenzene matrix. The general appearance is a hard spherical bead which is amber in color. This resin has the ability to remove anions and weak acids from aqueous solutions, such as carbonic and silicic acids. This resin is particularly well-suited for low silica effluent requirements.

Chemical Properties

Ionic Form (as shipped)	Chloride
Moisture Content	43 - 48% (Cl form)
Exchange Capacity	1.4 meq / ml minimum (Cl form)
Kinetics	> 15 megohm (USFilter Kinetics Test)

Physical Properties

Particle Screen Sizing	
+16 Mesh	5% maximum
-50 Mesh	1% maximum
Effective Size	0.45 - 0.60 mm
Whole Beads (%)	90 minimum
Shipping Weight	44 lbs. / cu. ft.

Operating Conditions

Operating pH Range	0 to 14
Service Flow Rate	2 - 4 gpm / cu. ft.
Regenerant Flow Rate	0.25 - 0.5 gpm / cu. ft.
Rinse Flow Rate	0.25 - 0.5 gpm / cu. ft. initially, then 1.5 gpm / cu. ft.
Rinse Volume	60 - 75 gallons / cu. ft.
Maximum Operating Temperature	140°F

TECH SHEET MED-301

ENCLOSURE 7

\$150. FILING FEE

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