DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

RCRA Corrective Action
Environmental Indicator (EI) RCRIS code (CA750)

Migration of Contaminated Groundwater Under Control

Facility Name: **Waring Products Division**
Facility Address: **283 Main Street, New Hartford, CT**
Facility EPA ID #: **CTD001157049**

1. Has **all** available relevant/significant information on known and reasonably suspected releases to the groundwater media, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

   __x__ If yes - check here and continue with #2 below.

   _____ If no - re-evaluate existing data, or

   _____ if data are not available, skip to #8 and enter"IN" (more information needed) status code.

BACKGROUND

Definition of Environmental Indicators (for the RCRA Corrective Action)

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

Definition of "Migration of Contaminated Groundwater Under Control" EI

A positive "Migration of Contaminated Groundwater Under Control" EI determination ("YE" status code) indicates that the migration of "contaminated" groundwater has stabilized, and that monitoring will be conducted to confirm that contaminated groundwater remains within the original "area of contaminated groundwater" (for all groundwater "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

Relationship of EI to Final Remedies

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRA). The "Migration of Contaminated Groundwater Under Control" EI pertains ONLY to the physical migration (i.e., further spread) of contaminated ground water and contaminants within groundwater (e.g., non-aqueous phase liquids or NAPLs). Achieving this EI does not substitute for achieving other stabilization or final remedy requirements and expectations associated with sources of contamination and the need to restore, wherever practicable, contaminated groundwater to be suitable for its designated current and future uses.

Duration / Applicability of EI Determinations

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

2. Is **groundwater** known or reasonably suspected to be **"contaminated"**[1] above appropriately protective "levels" (i.e., applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action, anywhere at, or from, the facility?

__X__ If yes - continue after identifying key contaminants, citing appropriate "levels," and referencing supporting documentation.

_____ If no - skip to #8 and enter "YE" status code, after citing appropriate "levels," and referencing supporting documentation to demonstrate that groundwater is not "contaminated."

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): There are two identified groundwater contamination concerns relative to this site. The first is a RCRA Post-Closure monitoring of a former lagoon area. Monitoring indicates that groundwater quality meets current regulatory standards. Remediation performed as a Closure activity was completed in 1989. The contaminant of concern is nickel, and the concentrations of nickel in all monitoring wells has been below the Connecticut Department of Public Health Drinking Water Limit of 0.1 mg/l for the past several years (Ref. Annual Reports 1998,1999,2000,2001, EVX). However, all analyses appear to have been performed on filtered groundwater samples. The other identified concern relates to a release of fuel oil from two former underground storage tanks (AOC's 12 and 13). The former tank area has been treated in-situ with hydrogen peroxide to oxidize the residual fuel oil. Contaminant concentrations continue to decrease, but remain above the applicable DEP Extractable Total Petroleum Hydrocarbons (ETPH) standard of 100 ug/l. ETPH within the impacted area has recently ranged from Below Detectable Limits (BDL) to 3630 ug/l (Ref. ATC report dated 1/2/2002).

Footnotes:

[1] "Contamination" and "contaminated" describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriate "levels" (appropriate for the protection of the groundwater resource and its beneficial uses).

3. Has the **migration** of contaminated groundwater **stabilized** (such that contaminated groundwater is expected to remain within "existing area of contaminated groundwater"[2] as defined by the monitoring locations designated at the time of this determination)?

__X__ If yes - continue, after presenting or referencing the physical evidence (e.g., groundwater sampling/measurement/migration barrier data) and rationale why contaminated groundwater is expected to remain within the (horizontal or vertical) dimensions of the "existing area of groundwater contamination"[2]).

_____ If no (contaminated groundwater is observed or expected to migrate beyond the designated locations defining the "existing area of groundwater contamination"[2]) - skip to #8 and enter "NO" status code, after providing an explanation.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): The former RCRA lagoons have been remediated to the extent that monitoring wells adjacent to, and down gradient from, the former lagoons are below regulatory criteria. The fuel oil release has stabilized both vertically and horizontally. Fuel oil is a known LNAPL (Light Non-Aqueous Phase Liquid), which will travel at the top of the unconfined aquifer as a homogeneous material.. Thus, this fuel oil release is indicative of many other fuel oil or other petroleum product releases, and the monitoring wells have been constructed to place the screened interval in the vadose/groundwater interface. The horizontal extent has likewise been defined. Groundwater samples taken prior to treatment indicated fairly high (39,000 ug/l at MW-6 and 1,250 ug/l in MW-2) within and near the area from which the tanks were excavated, but with rapidly decreasing concentrations downgradient from the former tank area at MW-5 (112 ug/l) and at MW-4 (BDL). Following treatment, samples taken on 8/14/01 indicated significant decrease in concentration in all except MW-2 (1,580 ug/l), with a decrease in the former tank area (MW-6 at 1,930 ug/l) and all wells downgradient from the former tank area below detectable limits (<75 ug/l), as shown on the attached figure. Additional samples taken on 11/14/01 indicated a slight contaminant rebound within the excavation area (MW-6 at 3,630 ug/l), but with a decrease adjacent to the excavation area (MW-2 at 753 ug/l). Downgradient wells continued to be below detectable levels, with the exception of MW-3, which measured an ETPH concentration of 133 ug/l. It is believed that the close proximity of this well to a drainage swale adjacent to Hwy. 44 contributed to the ETPH concentration in that well, inasmuch as MW-5 and MW-4 are both upgradient from MW-3 and did not contain any measureable concentrations of ETPH. Other Method 8260 VOCs have been below CT DEP GA/GAA Groundwater Protection Criteria on all three of the most recent sampling events (7/3/01, 8/14/01, 11/14/01), as noted in the attached table.

An additional hydrogen peroxide treatment injection was conducted on February 5 and 6, 2002. Thus, it is expected that further ETPH reduction will occur, but the extent of that reduction will be determined by future monitoring at the site. Through remediation of the source area, stabilization and reduction of ETPH downgradient from the excavation area will occur, and future monitoring will verify.

[2] "existing area of contaminated groundwater" is an area (with horizontal and vertical dimensions) that has been verifiably demonstrated to contain all relevant groundwater contamination for this determination, and is defined by designated (monitoring) locations proximate to the outer perimeter of "contamination" that can and will be sampled/tested in the future to physically verify that all "contaminated" groundwater remains within this area, and that the further migration of "contaminated" groundwater is not occurring. Reasonable allowances in the proximity of the monitoring locations are permissible to incorporate formal remedy decisions (i.e., including public participation) allowing a limited area for natural attenuation.

4. Does "contaminated" groundwater **discharge** into **surface water** bodies?

_____ If yes - continue after identifying potentially affected surface water bodies.

__X__ If no - skip to #7 (and enter a "YE" status code in #8, if #7 = yes) after providing an explanation and/or referencing documentation supporting that groundwater "contamination" does not enter surface water bodies.

_____ If unknown - skip to #8 and enter "IN" status code.

Rationale and Reference(s): It is unlikely that The Farmington River , which is approximately 200 feet downgradient from the former Waring Products property, is being impacted by this release. There is no visual evidence of impact (no visible sheen or stain). It should be noted that the ETPH standard applied by the CT DEP is 100 ug/l, whereas the detectable limit for ETPH is 75 ug/l. Since the DEP standard is being met on the former Waring property, it is reasonable to conclude that sampling of the Farmington River would only conclude that ETPH is likewise below measureable levels in that location.

5. Is the **discharge** of "contaminated" groundwater into surface water likely to be **"insignificant"** (i.e., the maximum concentration[3] of each contaminant discharging into surface water is less than 10 times their appropriate groundwater "level," and there are no other conditions (e.g., the nature, and number, of discharging contaminants, or environmental setting), which significantly increase the potential for unacceptable impacts to surface water, sediments, or eco-systems at these concentrations)?

_____ If yes - skip to #7 (and enter "YE" status code in #8 if #7 = yes), after documenting: 1) the maximum known or reasonably suspected concentration[3] of key contaminants discharged above their groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) provide a statement of professional judgement/explanation (or reference documentation) supporting that the discharge of groundwater contaminants into the surface water is not anticipated to have unacceptable impacts to the receiving surface water, sediments, or eco-system.

_____ If no - (the discharge of "contaminated" groundwater into surface water is potentially significant) - continue after documenting: 1) the maximum known or reasonably suspected concentration[3] of each contaminant discharged above its groundwater "level," the value of the appropriate "level(s)," and if there is evidence that the concentrations are increasing; and 2) for any contaminants discharging into surface water in concentrations[3] greater than 100 times their appropriate groundwater "levels," the estimated total amount (mass in kg/yr) of each of these contaminants that are being discharged (loaded) into the surface water body (at the time of the determination), and identify if there is evidence that the amount of discharging contaminants is increasing.

_____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s):_____

[3] As measured in groundwater prior to entry to the groundwater-surface water/sediment interaction (e.g., hyporheic) zone.

6. Can the **discharge** of "contaminated" groundwater into surface water be shown to be "**currently acceptable**" (i.e., not cause impacts to surface water, sediments or eco-systems that should not be allowed to continue until a final remedy decision can be made and implemented[4])?

_____ If yes - continue after either: 1) identifying the Final Remedy decision incorporating these conditions, or other site-specific criteria (developed for the protection of the site's surface water, sediments, and eco-systems), and referencing supporting documentation demonstrating that these criteria are not exceeded by the discharging groundwater; OR 2) providing or referencing an interim-assessment,[5] appropriate to the potential for impact, that shows the discharge of groundwater contaminants into the surface water is (in the opinion of a trained specialists, including ecologist) adequately protective of receiving surface water, sediments, and eco-systems, until such time when a full assessment and final remedy decision can be made. Factors which should be considered in the interim-assessment (where appropriate to help identify the impact associated with discharging groundwater) include: surface water body size, flow, use/classification/habitats and contaminant loading limits, other sources of surface water/sediment contamination, surface water and sediment sample results and comparisons to available and appropriate surface water and sediment "levels," as well as any other factors, such as effects on ecological receptors (e.g., via bio-assays/benthic surveys or site-specific ecological Risk Assessments), that the overseeing regulatory agency would deem appropriate for making the EI determination.

_____ If no - (the discharge of "contaminated" groundwater can not be shown to be "**currently acceptable**") - skip to #8 and enter "NO" status code, after documenting the currently unacceptable impacts to the surface water body, sediments, and/or eco-systems.

_____ If unknown - skip to 8 and enter "IN" status code.

Rationale and Reference(s):_____

_____
_____
_____
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_____
_____
_____
_____
_____
_____

[4] Note, because areas of inflowing groundwater can be critical habitats (e.g., nurseries or thermal refugia) for many species, appropriate specialist (e.g., ecologist) should be included in management decisions that could eliminate these areas by significantly altering or reversing groundwater flow pathways near surface water bodies.

[5] The understanding of the impacts of contaminated groundwater discharges into surface water bodies is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration to be reasonably certain that discharges are not causing currently unacceptable impacts to the surface waters, sediments or eco-systems.

7. Will groundwater **monitoring** / measurement data (and surface water/sediment/ecological data, as necessary) be collected in the future to verify that contaminated groundwater has remained within the horizontal (or vertical, as necessary) dimensions of the "existing area of contaminated groundwater?"

   _x_ If yes - continue after providing or citing documentation for planned activities or future sampling/measurement events. Specifically identify the well/measurement locations which will be tested in the future to verify the expectation (identified in #3) that groundwater contamination will not be migrating horizontally (or vertically, as necessary) beyond the "existing area of groundwater contamination."

   _____ If no - enter "NO" status code in #8.

   _____ If unknown - enter "IN" status code in #8.

Rationale and Reference(s): For RCRA Post-Closure care, the former lagoons will continue to be monitored semi-annually until such time that they achieve Final Remedy. The well designations in that monitoring program are MW-2, MW-6S, MW-7 and MW-5S. However, future analyses will be performed on unfiltered groundwater samples. For the fuel oil release area, the wells that will be monitored (please note that these monitoring wells are distinct and separate from the monitoring wells for the RCRA Post-Closure area) going forward are MW-1, MW-2, MW-6 and MW-4 and MW-3. It is expected that these wells will be monitored quarterly for the next 3 quarters, and most likely annually thereafter until Final Remedy can be achieved.

8. Check the appropriate RCRIS status codes for the Migration of Contaminated Groundwater Under Control EI (event code CA750), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (attach appropriate supporting documentation as well as a map of the facility).

__X__ YE - Yes, "Migration of Contaminated Groundwater Under Control" has been verified. Based on a review of the information contained in this EI determination, it has been determined that the "Migration of Contaminated Groundwater" is "Under Control" at the Waring Products Division facility , EPA ID # CTD001157049 , located at 283 Main Street in New Hartford, Connecticut. Specifically, this determination indicates that the migration of "contaminated" groundwater is under control, and that monitoring will be conducted to confirm that contaminated groundwater remains within the "existing area of contaminated groundwater" This determination will be re-evaluated when the Agency becomes aware of significant changes at the facility.

_____ NO - Unacceptable migration of contaminated groundwater is observed or expected.

_____ IN - More information is needed to make a determination.

Completed by (signature) Stephanie Carr Date 3/7/02
(print) Stephanie Carr
(title) RCRA Facility Manager

Supervisor (signature) Matthew Hoagland Date 3/18/02
(print) Matthew Hoagland
(title) Chief, RCRA Corrective Action Section
(EPA Region or State) EPA New England

Locations where References may be found:

The following references may be found in the EPA RCRA Record Center at One Congress Street, Boston, MA:

- Groundwater Monitoring Report, September 2001 - November 2001, dated January 2, 2002, prepared by ATC Associates for CTS Corporation
- Waring Products Division, CTS Corporation, 2001 Spring SemiAnnual Report, Modified RCRA Groundwater Program, dated June 18, 2001, prepared by Environmetrix Research & Consulting
- Annual Report, RCRA Groundwater Monitoring Program,2000, DCA-Waring Products, dated November 17, 2000, prepared by Environmetrix Research & Consulting
- Report of Voluntary Corrective Action Program Environmental Investigation Activities, dated April 30, 1999, prepared by ATC Associates, Inc. for CTS Corporation
- Annual Report, RCRA Groundwater Monitoring Program, 1999, Waring Products/ DCA, dated December 7, 1999, prepared by Environmetrix Research & Consulting
- Annual Report, RCRA Groundwater Monitoring Program, 1998, Waring Products/ DCA, dated November 12, 1998, prepared by Environmetrix Research & Consulting

Contact telephone and e-mail numbers

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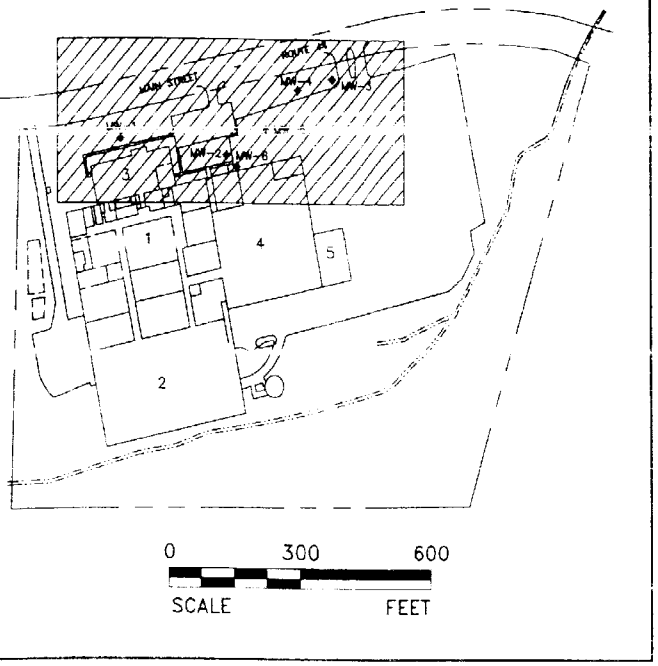
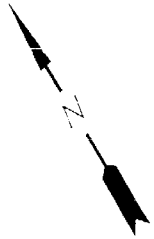




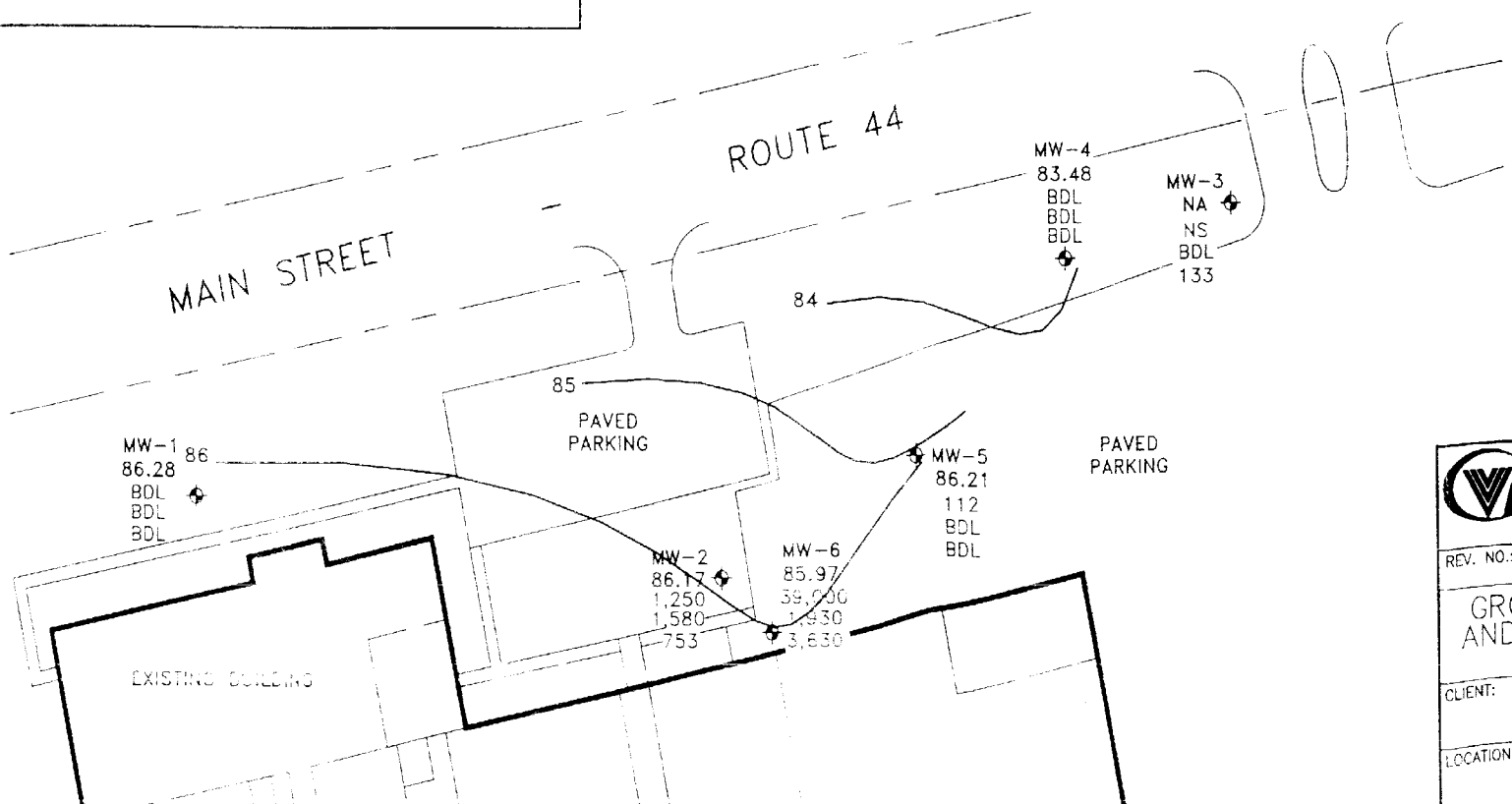
86 — GROUN

MONITOR
EX.: MW
86.17 GROUND
1,250 ETPH (07
1,580 ETPH (8
753 ETPH (1

BDL - BELOW
NS - NOT SA

NOTES:
1) SCALE IS APPROXIMA
2) GROUNDWATER ELEVA
3) ETPH CONCENTRATION
MICROGRAMS PER LI
4) 07/03/01 PRE INJEC

0 60
SCALE



VATC ASSOCIATES INC.

REV. NO.:	DRAWING DATE: 12/14/01	1201-GWQ-MAP

GROUNDWATER CONTOUR AND WATER QUALITY MAP
NOVEMBER 2001

CLIENT: CTS CORPORATION FORMER WARING CITY	PM: EDH
LOCATION: 283 MAIN STREET NEW HARTFORD, CT	PE:

DESIGNED:	DETAILED:	PROJECT NO.:	FIGURE:
EDH	GRA	61.13966.0005	2

Summary of Groundwater Monitoring Results

CTS Corporation
Former Waring Facility
283 Main Street
New Hartford, Connecticut

Well ID	Sampling Date	Depth to Water (feet)	Carbon Dioxide (ppm)	Conductivity (umohs/cm)	Oxygen (ppm)	Oxidation-Reduction Potential (mV)	pH	Temperature (C)	2-Butanone (MEK) (ug/L)	n-Butylbenzene (ug/L)	sec-Butylbenzene (ug/L)	Ethylbenzene (ug/L)	Isopropylbenzene (ug/L)	p-Isopropyltoluene (ug/L)	Naphthalene (ug/L)	n-Propylbenzene (ug/L)	Toluene (ug/L)	1,2,4-Trimethylbenzene (ug/L)	1,3,5-Trimethylbenzene (ug/L)	Xylenes (ug/L)	Extractable TPH (ug/L)
Groundwater Protection Criteria			NE	NE	NE	NE	NE	NE	400.0	61.0	61.0	700.0	30.0	70.0	280.0	61.0	1000.0	350.0	350.0	530.0	100.0
MW1	07/03/01	13.40	5.0	0.047	7.0	322	6.11	11.0	<0.7	<0.7	<0.6	<0.6	<0.6	<0.7	<1.0	<0.8	<0.7	<0.7	<1.0	<1.3	<75.0
MW1	08/14/01	15.08	2.5	0.079	8.4	168	6.40	11.2	<0.7	<0.7	<0.6	<0.6	<0.6	<0.7	<1.0	<0.8	<0.7	<0.7	<1.0	<1.3	<75.0
MW1	11/14/01	15.97	4.5	0.108	12.4	252	6.91	11.5	<0.7	<0.7	<0.6	<0.6	<0.6	<0.7	<1.0	<0.8	<0.7	<0.7	<1.0	<1.3	<75.0
MW2	07/03/01	11.63	46.0	0.343	0.0	-11	5.91	12.8	<0.7	<0.7	<0.6	<0.6	<0.6	<0.7	<1.0	<0.8	<0.7	<0.7	<1.0	<1.3	1,250.0
MW2	08/14/01	13.69	36.5	0.290	20.0	375	4.04	16.3	<0.7	<0.7	<0.6	<0.6	<0.6	<0.7	<1.0	<0.8	<0.7	<0.7	<1.0	<1.3	1,580.0
MW2	11/14/14	14.65	14.5	0.187	20.0	281	6.39	16.3	<0.7	<0.7	<0.6	<0.6	<0.6	<0.7	<1.0	<0.8	0.8	<0.7	<1.0	<1.3	753.0
MW3	07/03/01	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
MW3	08/14/01	11.12	ns	ns	ns	ns	ns	ns	<0.7	<0.7	<0.6	<0.6	<0.6	<0.7	<1.0	<0.8	<0.7	<0.7	<1.0	<1.3	<75.0
MW3	11/14/01	12.54	ns	ns	ns	ns	ns	ns	<0.7	<0.7	<0.6	<0.6	<0.6	<0.7	<1.0	<0.8	<0.7	<0.7	<1.0	<1.3	133.0
MW4	07/03/01	11.58	10.5	0.104	4.3	253	5.74	12.3	<0.7	<0.7	<0.6	<0.6	<0.6	<0.7	<1.0	<0.8	<0.7	<0.7	<1.0	<1.3	<75.0
MW4	08/14/01	15.31	11.5	0.166	4.5	177	6.02	14.5	<0.7	<0.7	<0.6	<0.6	<0.6	<0.7	<1.0	<0.8	<0.7	<0.7	<1.0	<1.3	<75.0
MW4	11/14/01	14.04	12.0	0.146	9.0	262	6.35	15.2	<0.7	<0.7	<0.6	<0.6	<0.6	<0.7	<1.0	<0.8	2.6	<0.7	<1.0	2.9	<75.0
MW5	07/03/01	7.71	29.5	0.561	1.6	161	6.62	16.2	<0.7	<0.7	<0.6	<0.6	<0.6	<0.7	<1.0	<0.8	<0.7	<0.7	<1.0	<1.3	<112.0
MW5	08/14/01	9.81	7.0	0.830	20.0	206	7.23	16.7	<0.7	<0.7	<0.6	<0.6	<0.6	<0.7	<1.0	<0.8	<0.7	<0.7	<1.0	<1.3	<75.0
MW5	11/14/01	11.17	11.5	0.468	20.0	220	7.80	17.5	<0.7	<0.7	<0.6	<0.6	<0.6	<0.7	<1.0	<0.8	1.3	<0.7	<1.0	<1.3	<75.0
MW6	07/03/01	9.39	39.0	0.374	0.0	-59	6.22	14.9	<12.0	31.7	18.7	46.0	25.8	16.9	225.0	65.8	<0.7	185.0	60.0	26.6	39,000.0
MW6	08/14/01	11.43	<100.0	1.210	1.9	-91	5.70	32.4	13.3	3.9	3.9	19.2	5.4	2.4	140.0	7.5	<0.7	70.7	7.1	16.1	1,930.0
MW6	11/14/01	12.53	84.5	0.508	7.7	-52	6.26	20.0	<0.7	<0.7	0.8	7.3	1.7	<0.7	<1.0	2.3	<0.7	9.6	1.6	2.5	3,630.0

NOTES: Initial hydrogen peroxide injection conducted between 07/16/01-07/24/01.

F:\Data2001\CTS-Waring\Tables\gwtable