ALAN M. ARAKAWA Mayor GILBERT S. COLOMA-AGARAN

Director MILTON M. ARAKAWA, A.I.C.P. Deputy Director



## COUNTY OF MAUI DEPARTMENT OF PUBLIC WORKS AND ENVIRONMENTAL MANAGEMENT

200 SOUTH HIGH STREET WAILUKU, MAUI, HAWAII 96793

December 1, 2004

RALPH NAGAMINE, L.S., P.E. Development Services Administration

TRACY TAKAMINE, P.E.
Wastewater Reclamation Division

CARY YAMASHITA, P.E. Engineering Division BRIAN HASHIRO, P.E.

Solid Waste Division

Highways Division

Certified Mail 7004 0550 0000 1446 5982 Return Receipt Requested

Ms. Laura Bose, Office Manager U.S. Environmental Protection Agency, Region 9 Office of Ground Water 75 Hawthorne Street San Francisco, CA 94105

Dear Ms. Bose:

SUBJECT:

LAHAINA WASTEWATER RECLAMATION FACILITY

U.I.C. PERMIT - PERMIT NO. HI596001 PERMIT RENEWAL APPLICATION

Submitted herewith is the application for renewal of the subject permit which expires on June 12, 2005. This application covers four Class V wells at the Lahaina Wastewater Reclamation Facility. We have reviewed our existing permit and have enclosed the permit application and Attachments A, B, C, F, H, M, P, Q, R and U as supplemental information for the renewal request.

Should you have any questions or require additional information, please contact Mr. Scott Rollins of our Wastewater Reclamation Division at the above address or you may call him at (808) 270-7417.

Sincerely,

Gilbert S. Coloma-Agaran Director of Public Works

and Environmental Management

encl.

cc. Jerry Morgan

GCA:sr(102804 WWRF EPA UIC Rpt)

United States Environmental Protection Agency

EPA ID Number		
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mo day	year	mo	day	year										***********************	***************************************
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County of Maui	- Waste	water Rec	lamati	on Divisio	on		200000000000	·	⁄Iaui - D	ept. of Pu	blic Works	& Environ	mental	Mgt.	***************************************
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For Classes I, II, III, required. List attac										(pp 2-6) as	appropriate	e. Attach ma	ps whe	re	
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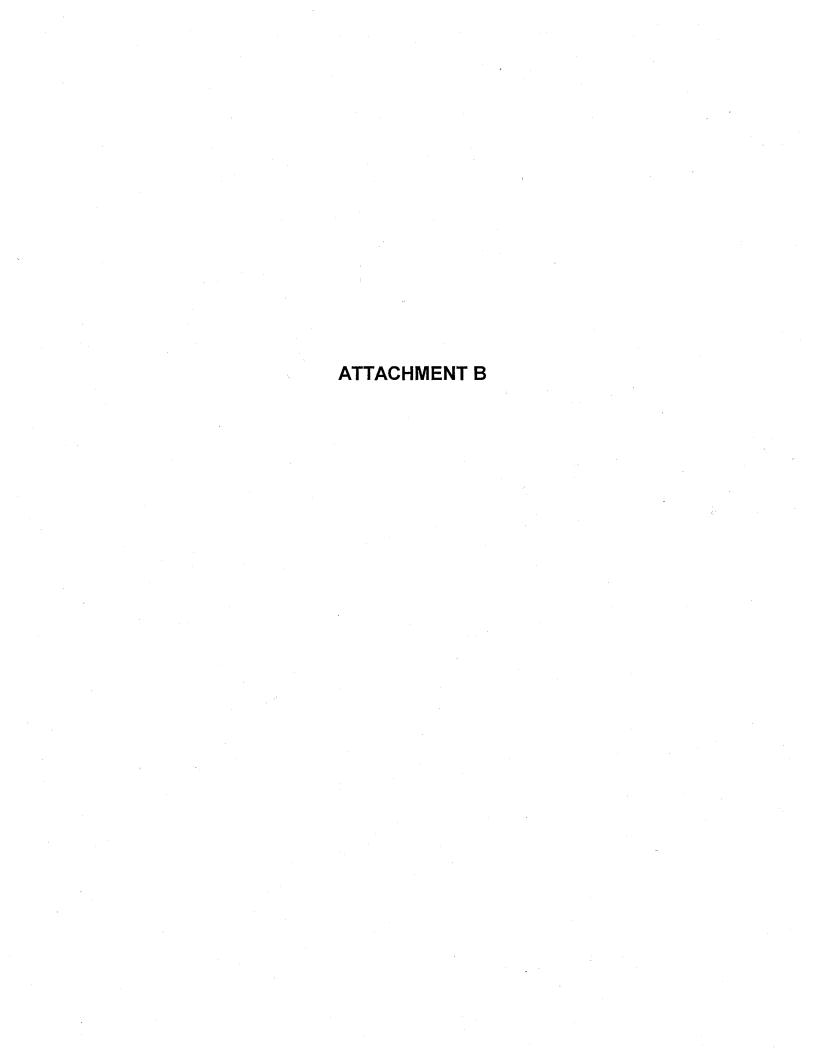
## ATTACHMENT A

## ATTACHMENT A

## Lahaina Wastewater Reclamation Facility UIC Permit Renewal - Permit No. HI596001

## **Area of Review Methods**

The Area of Review shall be a fixed radius of 1/4 mile from the well bore. Exhibit B-1 delineates this area.



## ATTACHMENT B

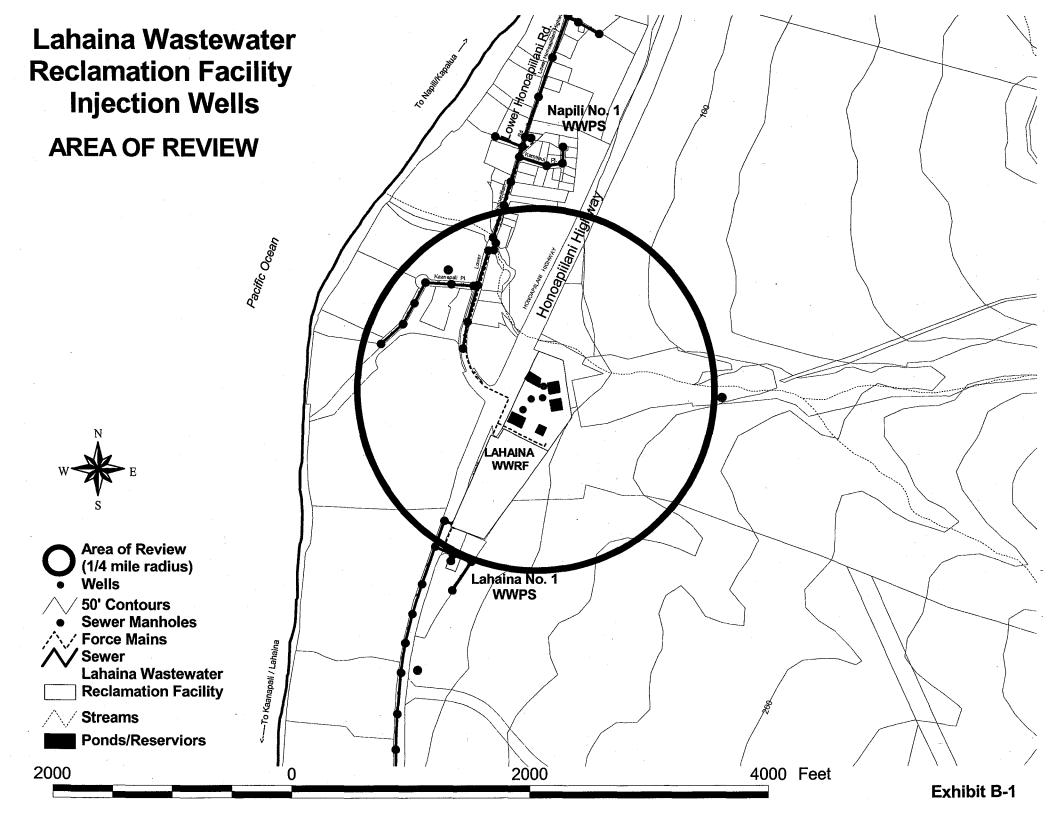
## Lahaina Wastewater Reclamation Facility UIC Permit Renewal - Permit No. HI596001

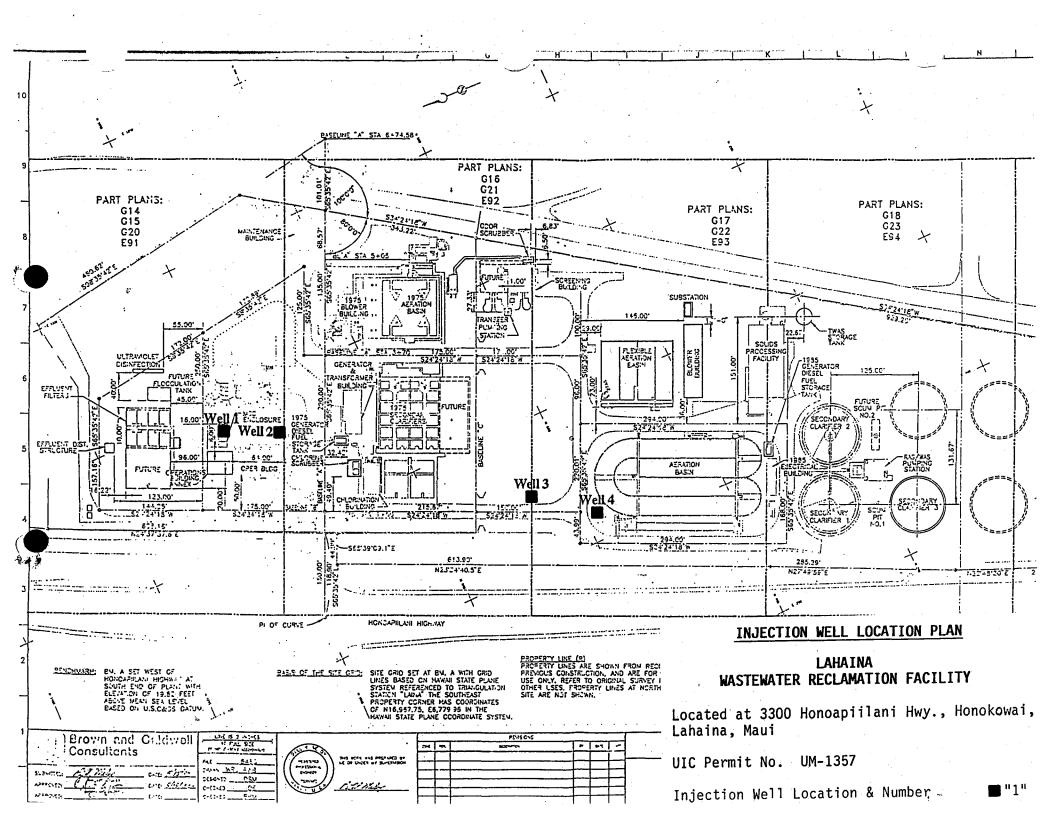
## Maps of Well/Area and Area of Review

Attached are the following exhibits:

Exhibit B-1: Area of Review

Exhibit B-2: Detail Map of Lahaina Wastewater Reclamation Facility





## ATTACHMENT C

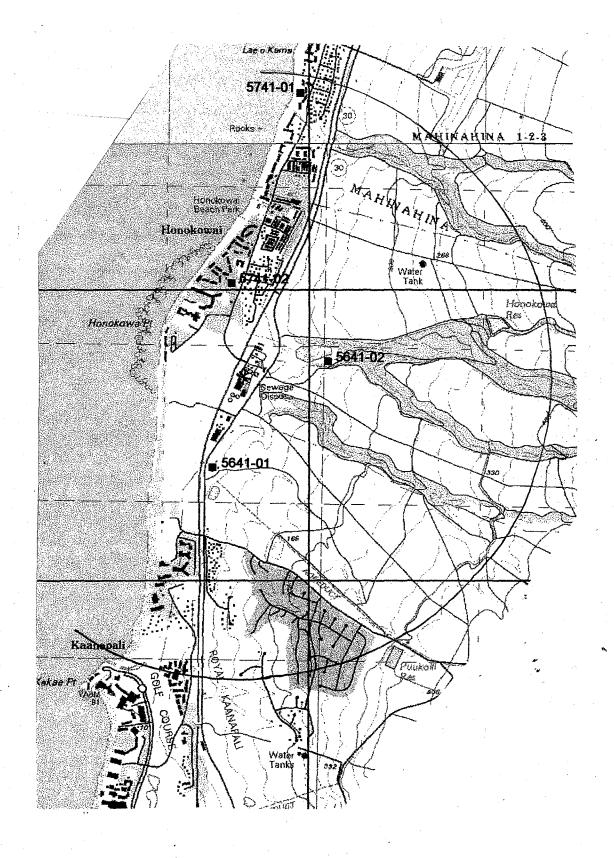
#### ATTACHMENT C

Lahaina Wastewater Reclamation Facility UIC Permit Renewal - Permit No. HI596001

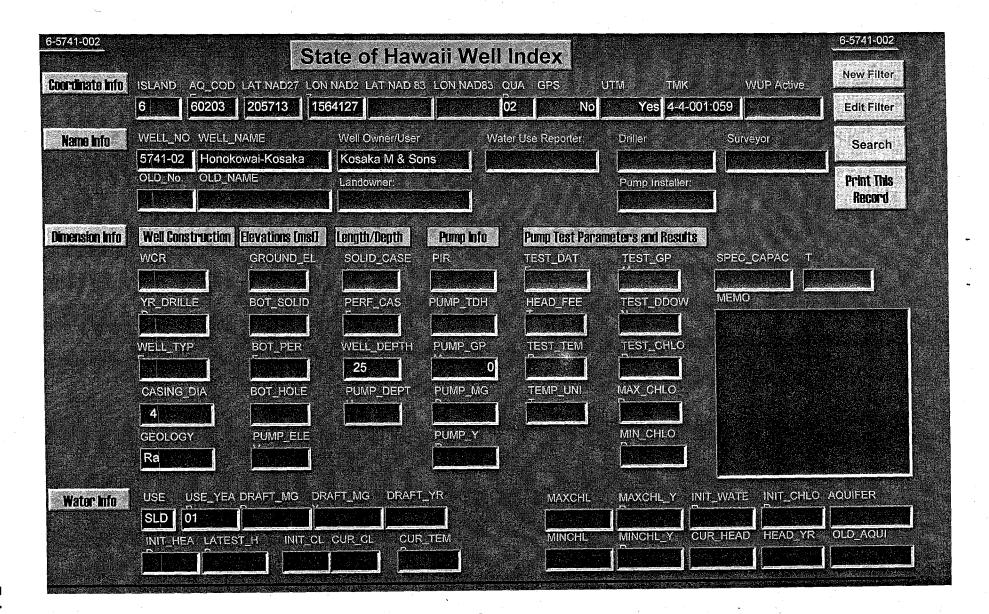
## **Corrective Action Plan and Well Data:**

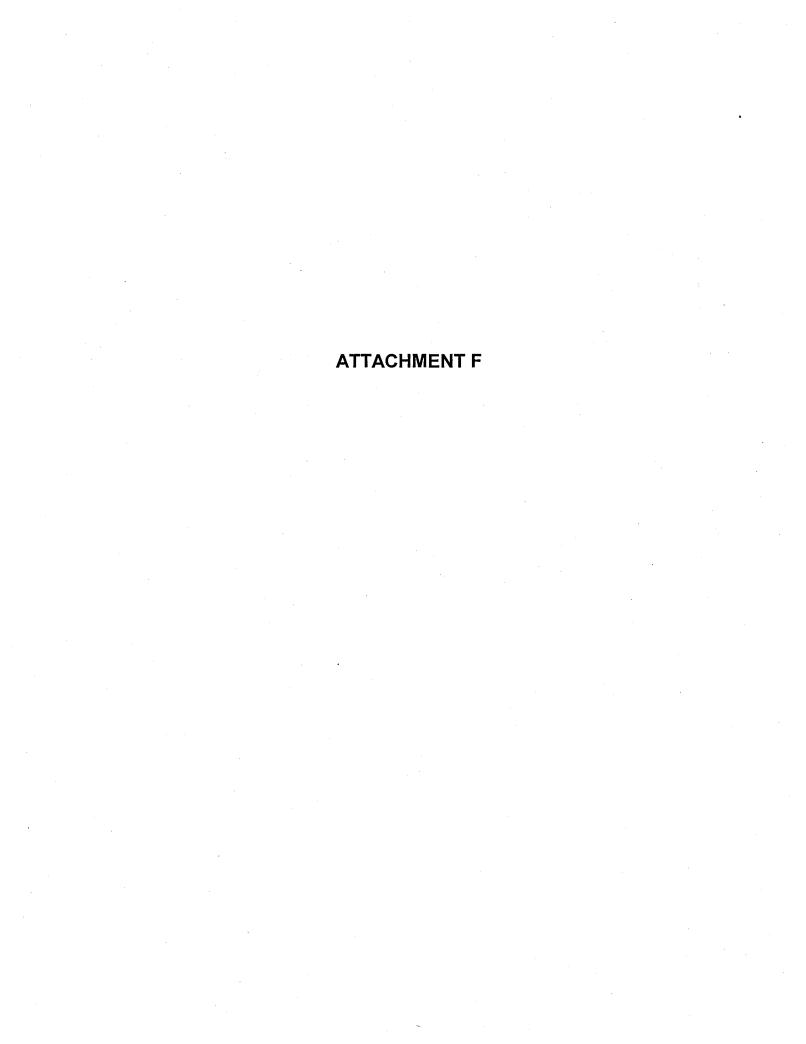
Attached as an exhibit is a copy of the map and well data obtained from the State of Hawaii Department of Land and Natural Resources in October 2004 showing 4 wells in the vicinity of the Lahaina WWRF. Note that these wells are for irrigation purposes and varyfrom 25 to 65 feet deep. A corrective action plan is not deemed necessary for this application.

Exhibit C-1: Other Wells in General Proximity



A Portion of the LAHAINA QUADRANGLE 7.5 minute series Scale 1:24000





#### ATTACHMENT F

Lahaina Wastewater Reclamation Facility UIC Permit Renewal - Permit No. HI596001

## Maps and Cross Sections of Geologic Structure of Area

The Lahaina Wastewater Reclamation Facility (WWRF) is located on the western side of the island and is situated approximately 1/3 mile from the Pacific Ocean. The injection wells are located below the UIC line designated by the State Department of Health. Attached are exhibits describing the geology of the area and showing the UIC line. Note the Lahaina WWRF is adjacent to the highway within the blue UIC zone.

Attached are the following Exhibits:

Exhibit F-1: Area Geology Description

Exhibit F-2: Underground Injection Control Areas

### **GEOLOGY**

The geology of West Maui is described in detail by Stearns and Macdonald (1942, p. 156-187). The Lahaina District lies on the west side of a deeply dissected dome of volcanic rocks called West Maui Mountain. West Maui Mountain is nearly circular in plan and is asymmetric in profile. The volcanic flows on the east and south sides dip more steeply than those on the north and west sides. The dome has been reduced by erosion from a summit altitude estimated to have been 7,000 feet (Stearns, 1942, p. 156) to 5,788 feet at Puu Kukui. Numerous steep-walled valley have been cut in the mountain.

Volcanic rocks of West Maui Mountain are lava flows, dikes, and pyroclastic deposits ranging from Pliocene (?) to late Pleistocene or Holocene in age (Davis and Macdonald, in Avias, Jacques, 1956). On the basis of lithology and stratigraphic position, these rocks are differentiated into the Wailuku, Honolua, and Lahaina Volcanic Series. Sedimentary rocks consist of consolidated marine, alluvial, and colluvial deposits of middle and late Pleistocene age and unconsolidated beach and alluvial deposits of Holocene age.

The areal distribution of rocks in the Lahaina District is shown on figure 5, and their lithology and water-bearing characteristics are summarized in table 1.

The great bulk of the rocks making up West Maui Mountain is primitive olivine basalt of the Wailuku Volcanic Series.

The Wailuku flows are thin-bedded and scoriaceous in the southern part of the Lahaina area, where they flowed on steep dip slopes, and are characterized by structural features such as interflow clinker beds, scoriaceous zones, lava tubes, and joints. Where they have never been covered by younger volcanic rocks, they are weathered as deep as 100 feet. Individual flows are as thick as 100 feet.

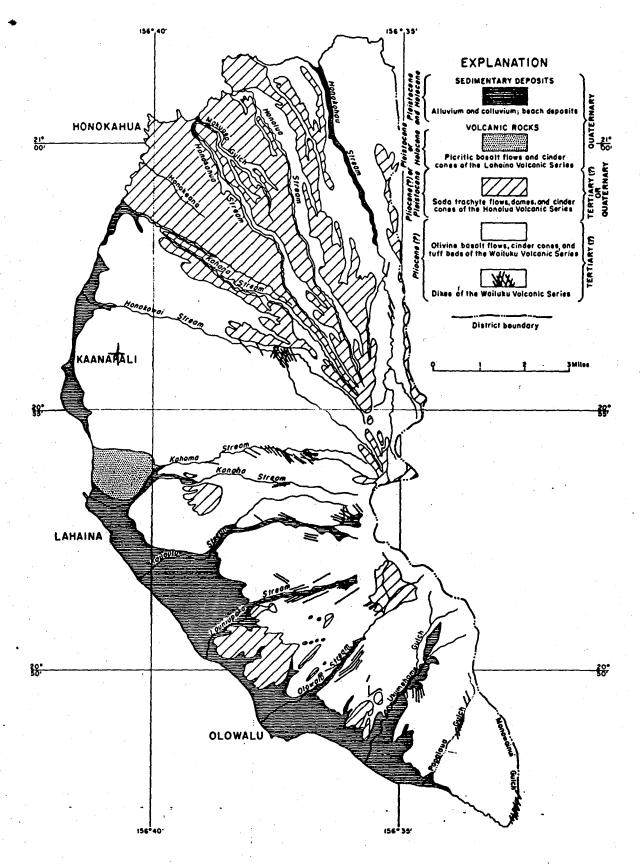
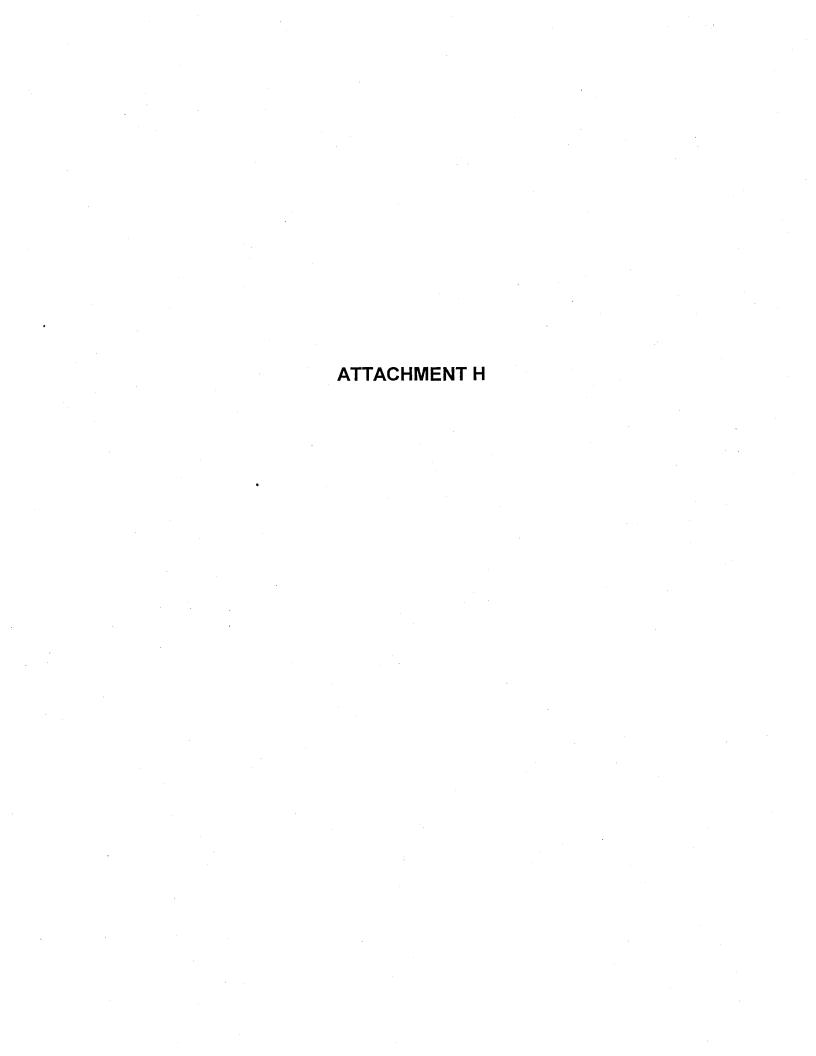


Figure 5. GENERALIZED GEOLOGIC MAP OF LAHAINA DISTRICT



#### ATTACHMENT H

### Lahaina Wastewater Reclamation Facility UIC Permit Renewal - Permit No. HI596001

#### **Operating Data:**

The treated wastewater is distributed via gravity to the four (4) injection wells covered under this permit. Typically only three wells are open at any given time. Generally, one well is closed per month.

(1) Flows to the wells are limited by the Department of Health UIC Permit as follows:

Average daily rate:

9.0 million gallons per day (mgd)

Maximum daily rate: 19.8 million gallons per day (mgd)

Currently actual flows average about 4.5 mgd.

(2) Average and Maximum pressure:

The wells are fed by gravity flow. Pressure is not utilized.

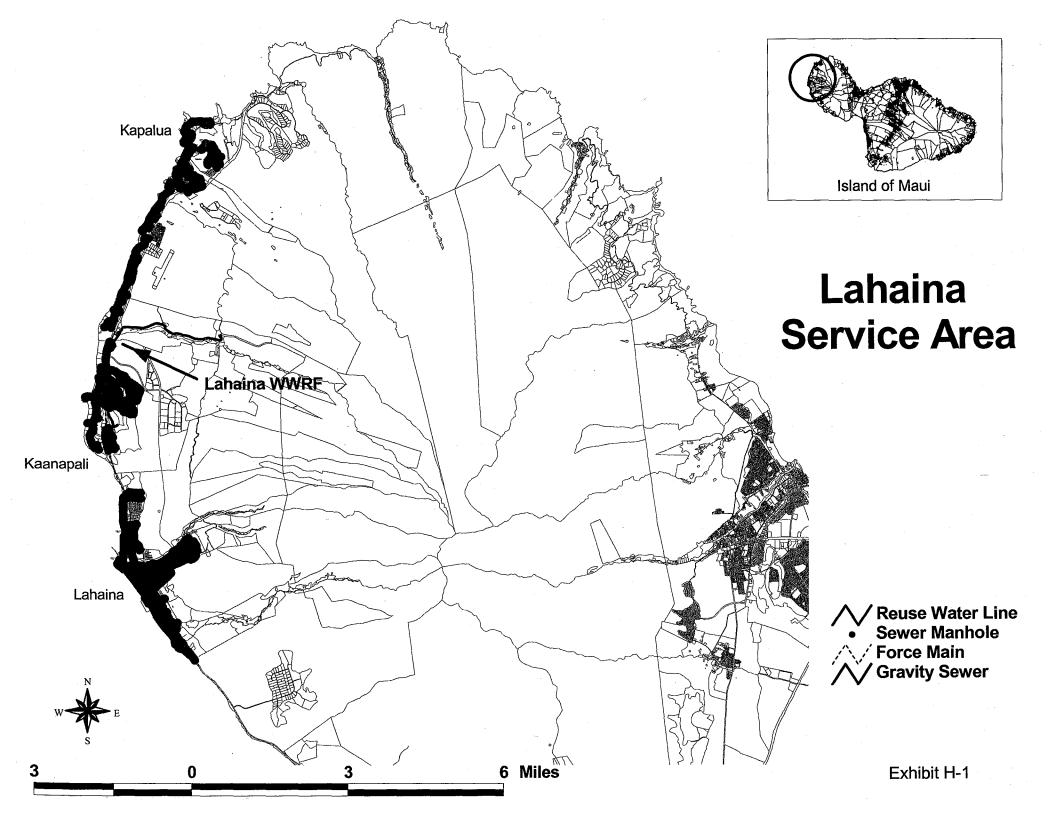
(3) Nature of annulus fluid:

The injected fluid is secondary treated domestic wastewater effluent that is generated by an estimated daily residential population of approximately 40,000 people in residential subdivisions and resort accommodations along with typical supportive light commercial businesses.

Attached are the following Exhibits:

Exhibit H-1: Limits of the service area for the Lahaina WWRF.

Exhibit H-2: Table: Actual flows to Injection wells



## LAHAINA WWRF INJECTION WELL FLOW SUMMARY November 2003 through October 2004

Million Gallons per Day (mgd)

				ſ	Willion Ga	alions per L	ay (mga)						
	2003			2004									
Date	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	August	Sept	Oct
1	4.075	5.020	4.126	8.836	4.478	4.956	4.287	3.983	5.079	3.759	4.508	3.194	4.155
2	3.816	4.219	5.791	10.556	4.247	5.924	4.118	4.320	3.599	3.847	4.345	3.782	3.306
3	3.313	4.260	5.086	8.666	4.075	5.665	4.322	3.746	4.033	3.956	4.552	3.873	3.764
. 4	3.622	4.290	4.799	7.367	4.140	5.702	3.700	4.485	3.917	4.514	4.670	3.853	4.605
5	3.893	4.000	4.393	6.404	4.366	5.201	5.630	3.976	3.512	3.992	4.183	4.060	3.267
6	3.797	3.961	3.789	6.444	4.277	5.710	4.583	4.617	3.803	4.662	4.275	3.857	3.106
7 .	3.844	3.788	3.825	5.493	4.462	4.706	4.413	4.192	3.956	3.769	4.447	3.956	3.643
8	4.063	3.825	3.529	5.187	3.957	5.223	4.370	4.141	4.253	4.001	4.853	3.376	3.784
9	3.893	3.698	3.775	5.474	4.239	4.941	4.661	4.573	3.924	4.194	5.028	2.796	3.482
10	4.032	3.587	3.672	5.174	4.359	4.619	5.353	4.785	4.368	4.097	3.654	3.530	4.627
11	4.102	3.587	4.198	5.018	4.285	4.354	5.422	3.481	3.977	4.257	4.465	4.860	3.368
12	4.279	3.899	3.561	5.450	4.947	4.685	5.246	3.722	4.147	3.947	4.203	3.846	4.167
13	4.118	3.543	3.690	4.675	4.170	5.210	4.034	3.834	4.261	4.409	4.102	3.511	3.680
14	4.004	3.586	3.586	5.501	4.772	4.662	5.532	4.044	4.435	4.010	4.373	3.963	3.814
15	4.055	3.662	3.412	5.462	4.685	4.306	4.491	4.979	4.128	4.100	4.635	3.903	4.429
16	3.914	4.493	3.505	4.447	4.663	4.465	4.166	5.044	4.449	5.321	4.112	3.517	3.717
17	4.030	4.044	3.374	4.284	4.526	4.266	4.975	4.691	3.876	2.602	4.674	3.499	3.874
18	3.952	3.704	3.999	4.593	4.861	4.465	3.947	4.106	4.027	4.073	4.107	3.499	4.120
19	4.331	4.415	3.629	4.736	4.557	4.266	4.975	3.711	4.365	4.070	4.470	4.413	3.923
20	3.823	4.413	3.956	4.730	4.181	4.637	3.606	4.353	4.171	4.070	4.445	4.009	3.820
21	4.276	3.441	3.712	4.561	4.490	4.491	4.108	3.548	4.171	4.630	4.445	4.443	3.620
22	4.038	4.206	3.982	5.318	4.640	5.869	4.108	4.725		3.901	4.416	4.095	4.348
23	4.036 3.879	3.877	3.962 4.136		4.521	5.072	4.094	4.725	3.928	3.689		4.095 3.267	4.346 3.318
				5.068					4.263		4.189		3.971
24	4.197	4.018	4.410	4.172	4.236	5.257	4.055	3.961	3.953	4.275	4.172	4.435	
25	4.644	4.560	3.859	4.661	5.033	4.678	4.432	4.060	4.214	4.344	3.768	3.602	4.010
26	4.977	4.616	4.677	4.160	3.980	4.403	4.762	3.864	4.320	3.806	3.928	3.962	4.227
27	3.951	4.956	4.810	4.229	8.407	4.739	4.066	4.097	4.390	4.043	4.032	3.519	4.167
28	4.642	4.024	4.987	3.981	5.911	4.468	4.128	3.926	4.374	3.786	4.065	3.214	3.844
29	4.650	4.226	5.168	3.700	6.946	4.627	3.965	4.149	3.948	4.068	4.047	4.274	3.715
30	4.632	4.126	5.749	6.874		4.287	4.125	4.276	3.778	4.066	3.603	4.155	3.754
31	5.501			4.230				3.910		4.305			4.058
Monthly				· · · · · · · · · · · · · · · · · · ·	<del> </del>			·				·	
Total - MG	128.343	122.050	125.185	169.41	136.41	145.854	133.727	129.51	124.095	126.564	128.38	114.139	119.754
Daily - MGD					·		<del></del>						
Maximum	5.501	5.020	5.791	10.556	8.407	5.924	5.63	5.044	5.079	5.321	5.028	4.860	4.627
Average	4.100	4.100	4.200	5.460	4.700	4.900	4.460	4.200	4.100	4.080	4.300	3.800	3.900
Minimum	3.313	3.441	3.374	3.700	3.957	4.266	3.606	3.481	3.512	2.602	3.603	2.796	3.106
GPM				<del> </del>							<del>,,</del>	···	
· Maximum	3,820	3,486	4,022	7,331	5,838	4,114	3,910	3,503	3,527	3,695	3,492	3,375	3,213
Average	2,847	2,847	2,917	3,792	3,264	3,403	3,097	2,917	2,847	2,833	2,986	2,639	2,708
Minimum	2,301	2,390	2,343	2,569	2,748	2,963	2,504	2,417	2,439	1,807	2,502	1,942	2,157
WARRETUITE	۱ ۵۰ ۲	2,330	2,545	2,509	40	۷,۶۵۵	4,504	4,417	2,438	1,007	2,002	1,344	2,107

## ATTACHMENT M

## ATTACHMENT M

## Lahaina Wastewater Reclamation Facility UIC Permit Renewal - Permit No. HI596001

## **Construction Details:**

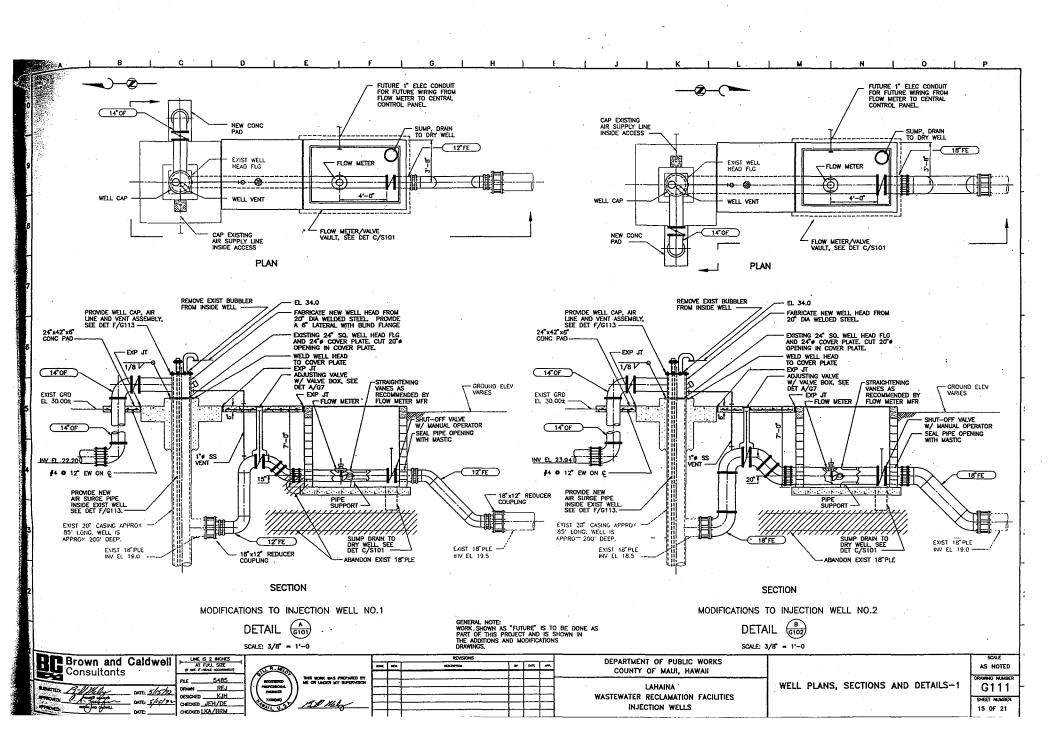
The following table outlines the parameters for each well.

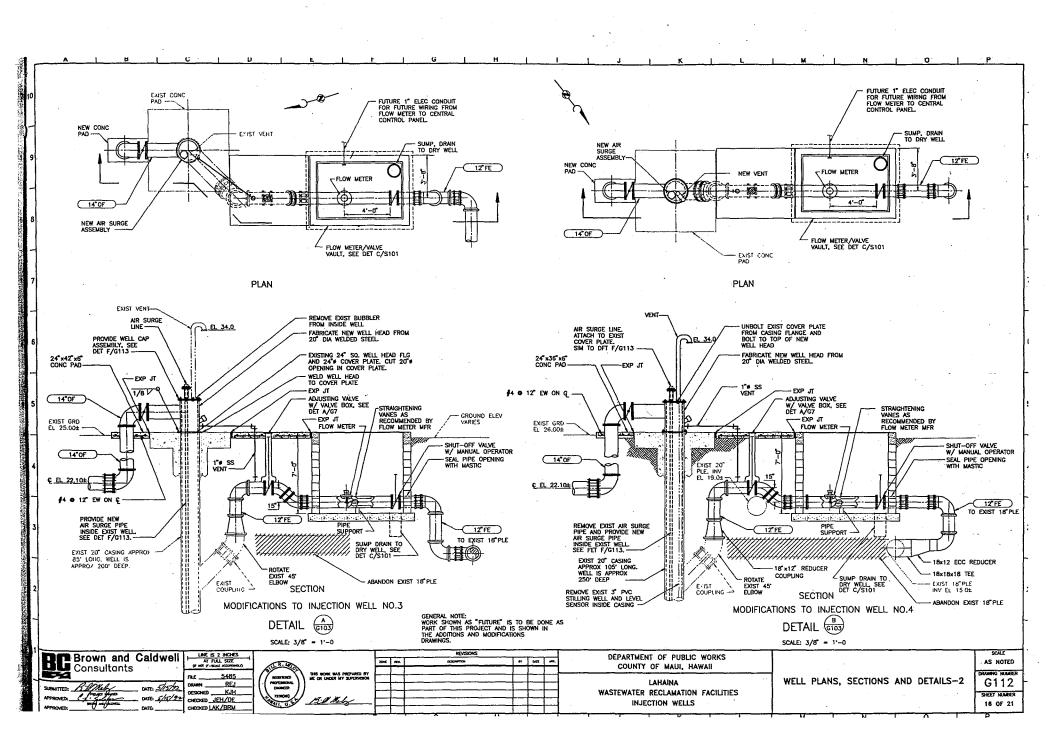
Injection Well No.	1	2	3	4
Construction date	1979	1979	1985	1985
Total depth of well (ft)	200	180	225	255
Bottom of well elev.(ft)	-168	-150	-200	-229
Flow meter	McCro	meter in-li	ne propel	ler type
Solid casing (w/3 ft. stick up)			•	
Length (ft)	88	88	108	108
Diameter (inches)	20	20	20	20
Material	steel	steel	steel	steel
Perforated casing				
Length (ft)	115	-	. <b>-</b>	150
Diameter (inches)	14	-	. <b>-</b>	14
Material	steel	_	<b>-</b>	steel
Open hole			,	
Length (ft)	***************************************	95	120	-

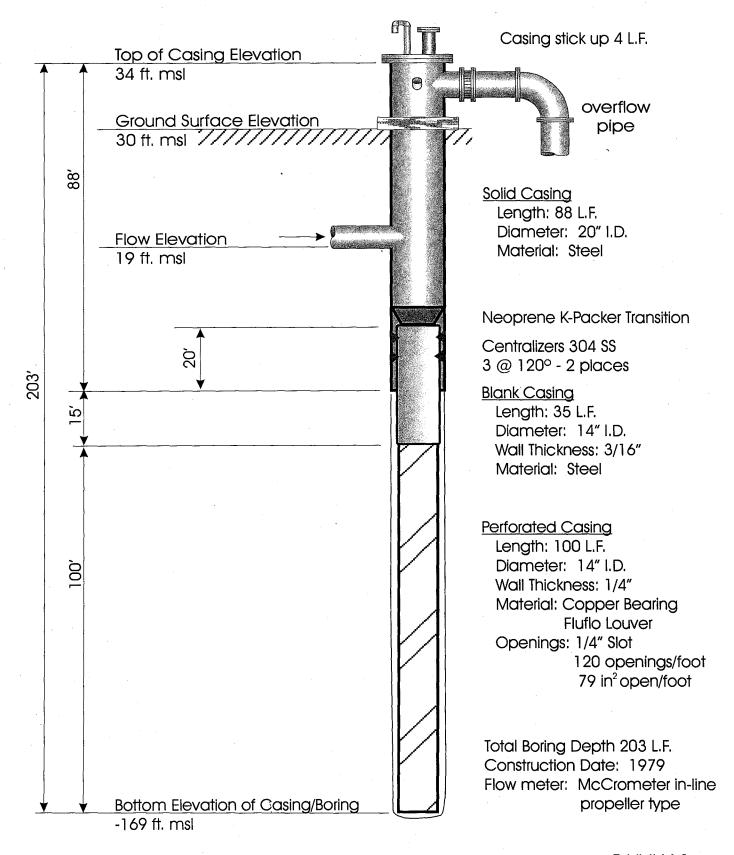
In addition, attached are the following exhibits:

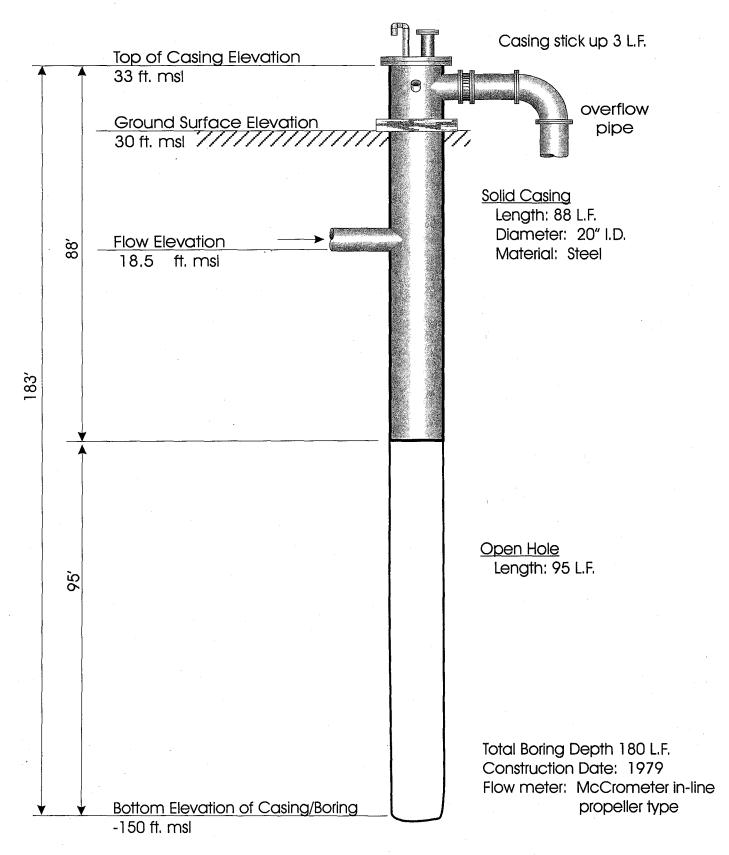
Exhibit M-1: Construction details for the well head construction

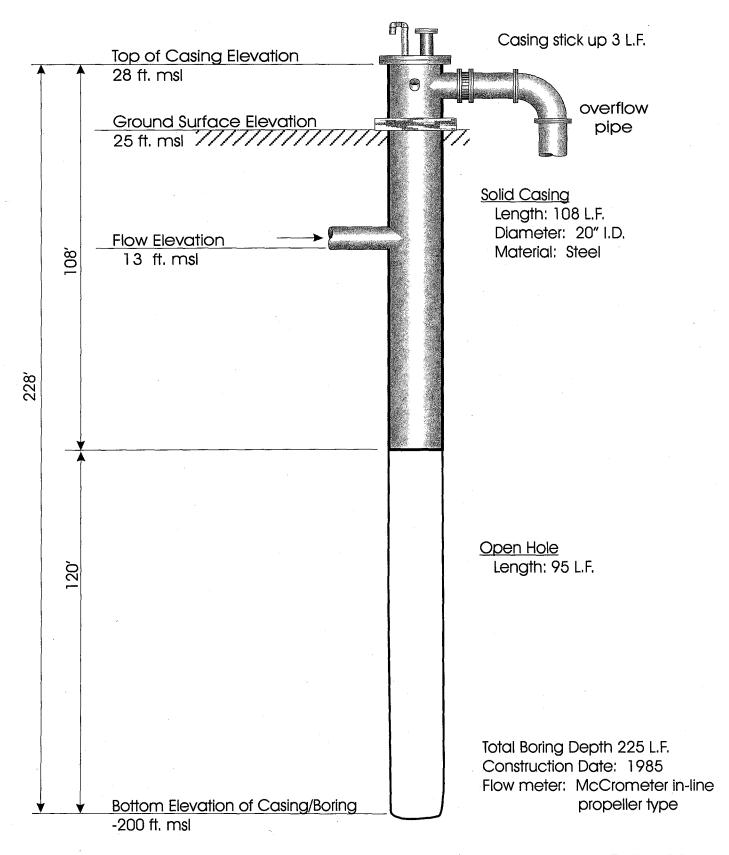
Exhibit M-2: Diagram of Well construction

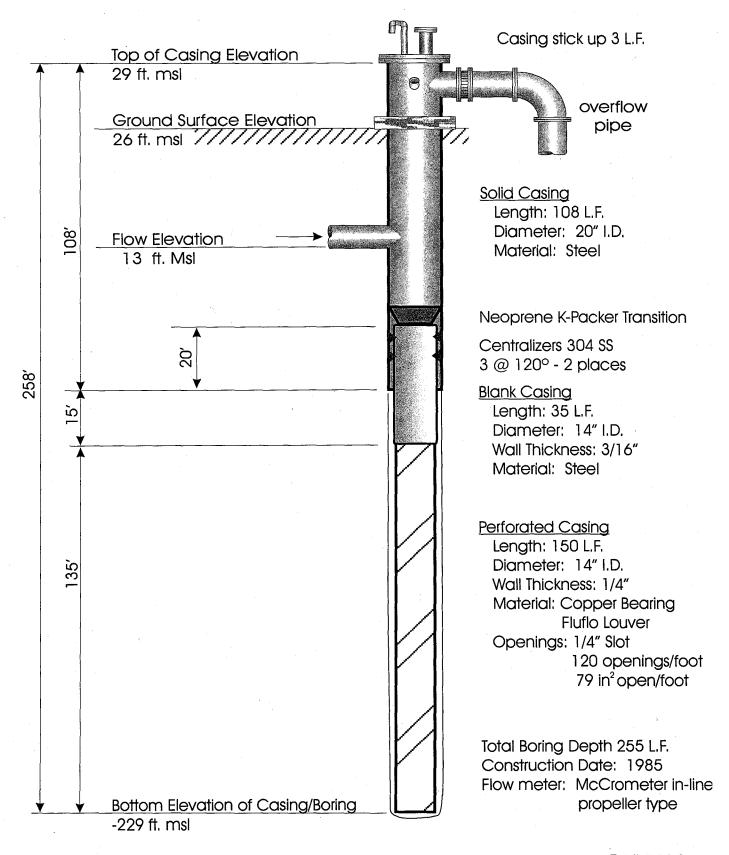


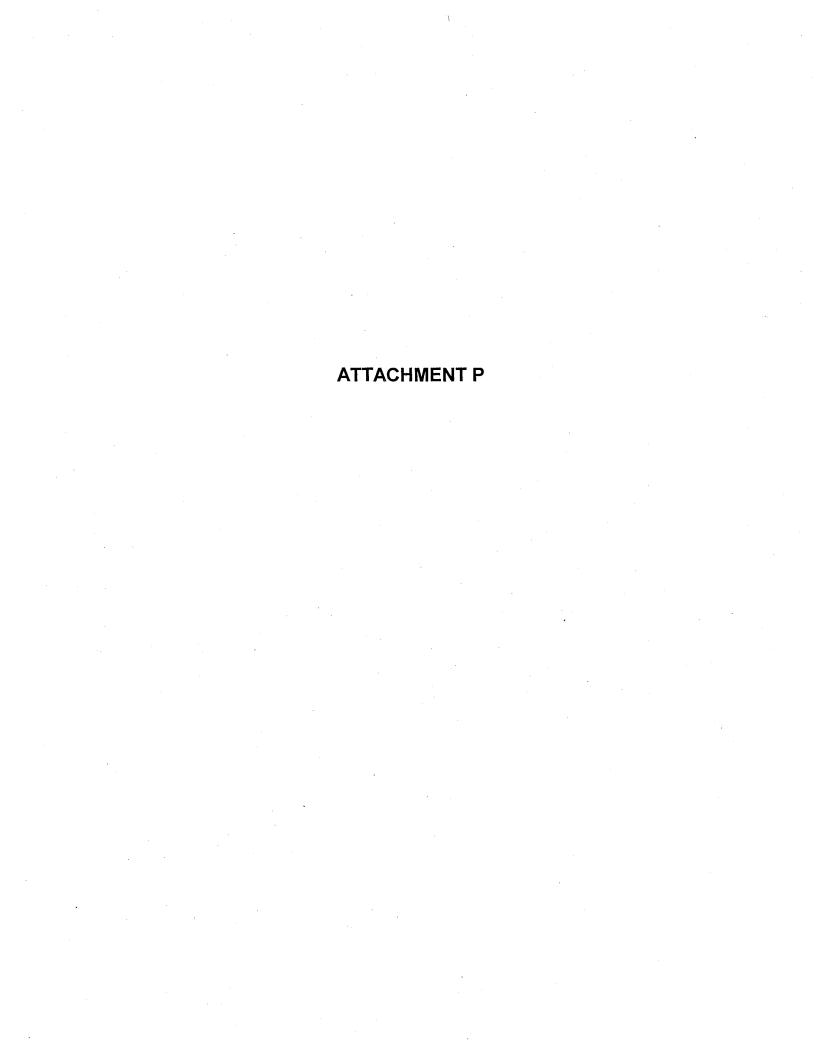












#### ATTACHMENT P

## Lahaina Wastewater Reclamation Facility UIC Permit Renewal - Permit No. HI596001

#### **Monitoring Program:**

The subject injection wells at the Lahaina Wastewater Reclamation Facility are subject to a permit issued by the Hawaii State Department of Health. This permit (No. UM-1357) was most recently renewed on March 29, 2004 and is valid through March 28, 2009. This permit requires monitoring of injection well injectant (Type I-IV tests), as well as, injection well performance monitoring on a semi annual basis.

In addition the existing EPA UIC permit requires weekly nitrogen analysis. Values have always been significantly below the permit limits.

The following exhibits are attached for your review:

Exhibit P-1: Copy of UIC Permit no. UM-1357

Exhibit P-2: Copy of last Type I-IV testing results

Exhibit P-3: Copy of last semi annual testing report

Exhibit P-4: Copy of last 12 months Nitrogen Analyses

**LINDA LINGLE** GOVERNOR OF HAWAII

'04 MAR 18 P2:34

COUNTY OF MAU! PUBLIC WORKS



### STATE OF HAWAII DEPARTMENT OF HEALTH

P.O.BOX 3378 HONOLULU, HAWAII 96801-3378

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CHIYOME L. FUKINO, M.D.

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CERTIFIED MAIL RETURN RECEIPT REQUESTED

Mr. Gilbert S. Coloma-Agaran Director of Public Works and Environmental Management

County of Maui 200 South High Street Wailuku, Hawai i 96793

Dear Mr. Coloma-Agaran:

SUBJECT:

LAHAINA WASTEWATER RECLAMATION FACILITY UNDERGROUND INJECTION CONTROL (UIC)

UIC PERMIT NO. UM-1357

We have completed the review of your UIC permit-renewal application and have determined that the conditions required for the approval to operate four (4) injection wells at the subject facility have been satisfied. Therefore, you are hereby granted approval to operate the four injection wells under the terms and conditions of the enclosed permit.

Your facility and injection wells have retained the following identification numbers:

> UIC Permit No. UM-1357 Facility ID No. 6-5641.01 Wells No. 1 through 4

Please refer to the UIC permit number in all future correspondence with this office.

Failure to comply with the terms and conditions of the permit will constitute a violation of the permit. Any person who violates the permit's terms and conditions or any provision of Hawai i Administrative Rules, Title 11, Chapter 23, Underground Injection Control, as amended, shall be subject to the penalties provided in Section 340E-8, Hawai'i Revised Statutes, as amended.

Mr. Gilbert S. Coloma-Agaran March 12, 2004 Page 2

A guidelines document for an injection well status report has been enclosed for your reference. The guidelines document shall be used as referenced in the UIC permit under "Part I B. Monitoring and Reporting Conditions 1. (g)."

Please review and pay special attention to Part I B. "Monitoring and Reporting Conditions." Under this section, you are responsible for monitoring, record keeping, and reporting conditions. Noncompliance with this section will result in a violation of the UIC permit. Please contact us if you have any questions pursuant to this section.

If you have any questions regarding your permit, or the UIC Program, please contact Norris Uehara of the Safe Drinking Water Branch (SDWB) at 586-4258 (Honolulu) or call from Maui the direct toll free number 984-2400, ext. 64258.

Sincerely,

THOMAS E. ARIZUMI, P.E. CHIEF

Environmental Management Division

NU:nbp

Enclosures: UIC Permit

UIC Injection Well Status Report Guidelines (10/99)

c: 1. Gordon Muraoka, SDWB Sanitarian, Maui (w/o encls.)

2. Shannon FitzGerald

Ground Water Office (WTR-9)

mas l'aisemi

U.S. EPA, Region 9

75 Hawthorne Street

San Francisco, CA 94105 (w/o encls.)



## STATE OF HAWAI'I DEPARTMENT OF HEALTH

# UNDERGROUND INJECTION CONTROL (UIC)

## PERMIT NO. UM-1357

## **FACILITY IDENTIFICATION NO. 6-5641.01**

for

## LAHAINA WASTEWATER RECLAMATION FACILITY

Operated By
Department of Public Works
and Environmental Management
County of Maui

## TABLE OF CONTENTS

Facility a	and Location
Part I A.	Operating Conditions
1.	Injectant Characteristics
2.	Injection Limitations and Prohibitions
Part I B.	Monitoring and Reporting Conditions 6
1.	Injectant and Injection Well Monitoring 6
2.	Accurate, Current, and Representative Information
3.	Reporting of Noncompliance of Injectant Concentrations
4.	Additional Monitoring and Reporting
5.	Records Retention
6.	Anticipated Changes
7.	Advance Notification of Change in Operator, Ownership, Control,
	or Facility Name
8.	Twenty-Four Hour Reporting
9.	Definitions
Part II A	Management Conditions
1.	Change in Discharge
2.	Signatory Statement
3.	Availability of Reports
4.	Proper Operation and Maintenance
5.	Permit Reapplication
6.	
	Permit Extension

Part II I	3. Ge:	neral	. Co	ndi	ltic	ns		•	•	•	• •	•	•	•	•		•	•	•	• ,	•	•		•		•	•	16
1.	. Op	erati	ng	Cor	ndit	ion	s.						•		•		•			•	•				•		•	16
2.	. Pe	rmit	Iss	uar	ice	•			.•		• •	•	•	•							•		•	• •	•		•	17
3.	. Pe	rmit	Mod	lifi	cat	ion	•	•		•	•, •	٠.	•						•		•				•	•		17
4.	. Ne	w Rul	es	anc	l Re	gul	ati	ons	s	•			•		•	· · .				•		•	•		•	•	•	18
5.	. Dut	ty to	Mi	tig	gate	•		•	•	•	· ·		•				•		•	. •	•	•	•	.•	•	•	•	18
6.	Pro	opert	уR	igh	its					•		•	•	• .	•		•		•	•				•		.•	•	18
7.	Rig	ght o	f E	ntr	у .	·				•		•	•		•		•			•		•		•	•	•	•	18
8.	Nee	ed to	На	lt	or	Red	uce	aı	n A	\ct	ivi	.ty	No	ot	a I	Def	en	se			.•	•	•	•	•	•		18
9.	Per	nalti	es		• •					•	• . •	•			•			•	٠	•	•		•			•		19
10	. Sev	verab	ili	ty		•	• •	•	•	•		•	•	•	•		•	•	•		•.		• :	•		•		19
Part III	A. Ot	her	Con	dit	ion	s																					ě	20
	Modi						ito	rir	ıa:																			
									,						<b>.</b> .												•	
List of T	ables	١.																										
Ta	ble 1					٠.		•	•		• •	•	•	•				•		•		•			•	•	2	& 3
Та	ble 2		• •					•	•	•			•	•	•		•	•	•	•	•	•	•	•	•	•	• .	21
Ta	ble 3			•			•	•		•	•	•	•,	•		•		•	•						•	•	•	22
Ta	ble 4	,	•	•			•		•		•	•		•	• .			•							•	•	• ,	23
Ta	ble 5	•		•							•	•	•	•	•										-			24
Monitorin	g and	Repo	orti	lng	Scł	nedu	ıle			•	•	•	•	•	•			•.	•		•		•	Æ	۱tt	ac	chm	ent
Injection	Well	Loca	atic	on I	Plar	ı.	•	•				•							•					P	\tt	ac	hn	ent

PERMIT NO. UM-1357 Issued March 29, 2004 Page 1 of 24

# AUTHORIZATION TO OPERATE UNDER THE UNDERGROUND INJECTION CONTROL PROGRAM

In compliance with the provisions of the Safe Drinking Water Act, Chapter 340E, Hawai i Revised Statutes (HRS), as amended, and Hawai i Administrative Rules, Title 11, Chapter 23, Underground Injection Control, as amended;

# LAHAINA WASTEWATER RECLAMATION FACILITY Operated by Department of Public Works and Environmental Management County of Maui

is authorized to operate a Class V, Subclass AB, injection well system consisting of four (4) injection wells as described in Table No. 1, pages 2 and 3;

to dispose of secondary treated domestic wastewater effluent;

located at 3300 HonoaPi ilani Highway, Honokowai, Lahaina, Maui;

at Tax Key Number: 2nd Division 4-4-02:029

at coordinates: Latitude 20° 56' 55" N and Longitude 156° 41' 25" W;

under Facility Identification Number: 6-5641.01

in accordance with monitoring conditions, and other terms and conditions set forth in Parts I, II, and III hereof.

This permit becomes effective upon issuance.

This permit and the authorization to operate the four (4) injection wells will expire at midnight, March 28, 2009.

Issued on the 29th day of March 2004.

Thomas a laterna

TABLE NO. 1

Injection Well No.	1	2
Latitude:	20° 56' 55" N	20° 56' 55" N
Longitude:	156° 41' 25" W	156° 41' 25" W
Elevations:		
Ground Surface	30 Feet	30 Feet
Bottom of Well	-170 Feet	-150 Feet
Total Depth of Well		
Below Ground Surface	200 Feet	180 Feet
Well Cellar:	,	. 1
Lateral Dimensions	<u></u>	
Depth		
Material		
Solid Casing:		!
Diameter	20 Inches	20 Inches
Stick Up	3 Feet	3 Feet
Total Length	88 Feet	88 Feet
Material	Steel	Steel
Perforated Casing:		
Diameter	14 inches	
Perforation	Slotted	
Stick Up		
Total Length	115 Feet	
Material	Steel	
Open Hole:		
Diameter		20 Inches
Total Length		95 Feet
		1 33 1000
Annular Backfill:		
Capping	Concrete	Concrete
Solid Casing	Cement	Cement
Separation	Unknown	Unknown
Perforated Casing		
Open Hole	None	None

TABLE NO. 1 (Continued)

Injection Well No.	3	4
Latitude:	20° 56' 55" N	20° 56' 55" N
Longitude:	156° 41' 25" W	156° 41' 25" W
Elevations:		
Ground Surface	25 Feet	26 Feet
Bottom of Well	-200 Feet	-229 Feet
Total Depth of Well		
Below Ground Surface	225 Feet	255 Feet
Well Cellar:		
Lateral Dimensions		
Depth		
Material		
Solid Casing:		
Diameter	20 Inches	20 Inches
Stick Up	3 Feet	3 Feet
Total Length	108 Feet	108 Feet
Material	Steel	Steel
Perforated Casing:		
Diameter		14 Inches
Perforation		Slotted
Stick Up		
Total Length		150 Feet
Material		Steel
Open Hole:		
Diameter	18 Inches	
Total Length	120 Feet	
Annular Backfill:		
Capping	Concrete	Concrete
Solid Casing	Cement	Cement
Separation	Unknown	Unknown
Perforated Casing		
Open Hole	None	None

PART I PERMIT NO. UM-1357 Issued March 29, 2004 Page 4 of 24

#### A. OPERATING CONDITIONS:

1. Injectant Characteristics

Injectant in this permit is limited to secondary treated domestic wastewater effluent, as described in Section 11-62-26 of Title 11, Chapter 62, "Wastewater Systems," from Lahaina Wastewater Reclamation Facility.

- 2. Injection Limitations and Prohibitions
  - (a) Injectant in this permit is exclusively limited to the injectant described in Part I A.1. above; furthermore, any injectant not described in Part I A.1. is explicitly prohibited unless the injectant characteristics of this permit are revised accordingly.
  - (b) No discharge of hazardous wastes as defined by Title 40, Code of Federal Regulations (CFR), Part 261.
  - (c) Injection Pressure:

Gravity flow of the injectant from Lahaina Wastewater Reclamation Facility into the injection wells.

(d) Disposal Quantity and Rate:

The design average flow of 9,000,000 gallons per day (gpd) for every calendar week shall not be exceeded.

The design maximum disposal quantity of 19,800,000 gallons per day (gpd) for every day shall not be exceeded.

PART I PERMIT NO. UM-1357 Issued March 29, 2004 Page 5 of 24

## (e) Concentrations of the Injectant

Chemical and physical analyses are required as detailed in Part I B. 1. (c) of this permit to determine the chemical concentration levels and/or the physical nature of the injectant. Furthermore, chemical and physical analyses include analyses that are used to determine compliance to secondary treatment as described in Section 11-62-26 of Title 11, Chapter 62, "Wastewater Systems." Chemical analyses in Part I B. 1. (c) may include analyses that are capable of analyzing the injectant for the characteristics of a hazardous waste, for volatile organic compounds, or for dissolved nutrients associated with the processes of eutrophication.

For the purposes of this section, the arithmetic average of the results of the analyses of composite samples shall be based upon one or more analyses made within a 30 consecutive calendar day period. The arithmetic average shall be the sum of the results of all analyses divided by the number of analyses made during the 30 consecutive calendar day period.

Biochemical Oxygen Demand (BOD $_5$ ) shall not exceed 30 milligrams per liter based on the arithmetic average of the results of the analyses of composite samples. In no case shall any grab sample exceed 60 milligrams per liter of BOD $_5$ .

Suspended Solids shall not exceed 30 milligrams per liter based on the arithmetic average of the results of the analyses of composite samples. In no case shall any grab sample exceed 60 milligrams per liter of suspended solids.

Residual chlorine for any grab sample shall not be less than 0.1 milligrams per liter.

Certain chemical and/or physical parameters may be specified in this permit with an Action Level, a Regulatory Level, or both. Regulatory Levels shall not be exceeded. Chemical and/or physical parameters with or without specified Action Levels or Regulatory Levels may be subject to revised concentration levels pursuant to changing concerns related to public or environmental health, safety, or relevant laws and regulations.

An Action Level category is referenced in Table No. 2. The exceeding of an Action Level shall trigger the activity described in Part I B. 1. (e).

PART I PERMIT NO. UM-1357 Issued March 29, 2004 Page 6 of 24

#### B. MONITORING AND REPORTING CONDITIONS:

- 1. Injectant and Injection Well Monitoring
  - (a) Injectant samples, measurements, and analyses taken or conducted as required by this permit shall be valid and representative of the volume and nature of the injectant. Pursuant to the monitoring and reporting conditions of this permit, detailed records of the operation of the injection wells shall be kept by the permittee. When applicable, records shall include at a minimum the following information:
    - (1) Type of injectant.
    - (2) Quantity of injectant.
    - (3) The method of injection.
    - (4) Injection pressure.
    - (5) The rate of injection.
    - (6) The operational status of the injection well.
    - (7) The exact date and time of the measurement or sampling.
    - (8) The person(s) who performed the measurement or sampling.
    - (9) The dates the analyses were performed.
    - (10) The person(s) who performed the analyses.
    - (11) The analytical techniques or methods used.
    - (12) The results of all required analyses and permit limits.
    - (13) Chain of Custody.
  - (b) A daily record of the injectant quantity (gpd) being discharged into each injection well shall be kept. Injectant quantity recordings shall be continuously made through a direct measurement of the wastestream.
  - (c) Representative composite and grab samples (four types) as specified on Table Nos. 2, 3, 4, and 5 of the injectant shall be collected from a collection point to be established by the permittee and approved by the Director. The permittee shall collect and analyze the samples and report the analytical results according to the conditions and the Monitoring and Reporting Schedule of this permit. The collection and analysis of the samples shall be conducted by a laboratory acceptable to the Director. If the laboratory is unable to perform the sample collection, the Director may allow the permittee to collect the sample under the direction of the laboratory.

All samples shall be collected, transported, preserved, stored, documented, analyzed, and reported in accordance with EPA or EPA equivalent methods or standards, and all such activities shall be performed properly and satisfactorily in order to produce valid samples and analytical results. The falsification, fabrication, tampering, or improper handling and management of the samples, chain-of-custody form, or analytical results shall be a violation of this permit.

PART I PERMIT NO. UM-1357 Issued March 29, 2004 Page 7 of 24

Methods of analysis shall be as stated herein or approved by the Director. The frequency of sample collection and the type of analyses are as described:

#### Type I Sample:

- (1) Type I samples, involving both composite and grab, shall be collected and analyzed at least once every month. A monitoring and reporting schedule is attached that outlines the schedule of analyses and reportings.
- (2) Type I samples shall be analyzed for the test parameters listed in Table No. 2.
- (3) Type I grab samples shall be collected within the time period of composite sample collection and between the hours of 9 a.m. and 3 p.m.
- (4) Type I composite sample procedures shall be established by the permittee and approved by the Director.
- (5) The analytical results (Type I) shall be submitted to the Department and a copy shall be kept on file at the facility. Analytical results are due within 60 days from the sampling date. If applicable, for a reporting schedule that indicates a group-of-months submittal of analytical results, the analytical results from the indicated group of months are due within 60 days from the last sampling date of the group.

### Type II Sample:

- (1) Type II samples, involving both composite and grab, shall be collected and analyzed at least once every six (6) months in conjunction with Type I samples. A monitoring and reporting schedule is attached that outlines the schedule of analyses and reportings.
- (2) Type II samples shall be analyzed for the test parameters listed in Table No. 3.
- (3) Type II grab samples shall be collected with Type I samples between the hours of 9 a.m. and 3 p.m.
- (4) Type II composite sample procedures shall be established by the permittee and approved by the Director.
- (5) The analytical results (Type II) shall be submitted to the Department and a copy shall be kept on file at the facility. Analytical results are due within 60 days from the sampling date.

PART I
PERMIT NO. UM-1357
Issued March 29, 2004
Page 8 of 24

#### Type III Sample:

- (1) Type III samples, grab, shall be collected and analyzed at least once every 12 months in conjunction with Type I and Type II samples. A monitoring and reporting schedule is attached that outlines the schedule of analyses and reportings.
- (2) Type III samples shall be analyzed for Ignitability, Corrosivity, Reactivity, and Method 1311: Toxicity Characteristic Leaching Procedure (TCLP) as described in 40 CFR, Part 261, Appendix II. Reference is hereby made to Table No. 4 which lists the test parameters for which the analysis shall be conducted under Method 1311. Regulatory levels of the chemical parameters are listed for reference.
- (3) Type III samples shall be collected between the hours of 9 a.m. and 3 p.m.
- (4) The analytical results (Type III) shall be submitted to the Department and a copy shall be kept on file at the facility. Analytical results are due within 60 days from the sampling date.

#### Type IV Sample:

- (1) Type IV samples, grab, shall be collected and analyzed at least once every 12 months in conjunction with Type I, II and III samples. A monitoring and reporting schedule is attached that outlines the schedule of analyses and reportings.
- (2) Type IV samples shall be analyzed for volatile organic compounds as described in 40 CFR, Part 136, Appendix A, Method 624. Reference is hereby made to Table No. 5 which lists the test parameters and the analytical methods.
- (3) Type IV samples shall be collected between the hours of 9 a.m. and 3 p.m.
- (4) The analytical results (Type IV) shall be submitted to the Department and a copy shall be kept on file at the facility. Analytical results are due within 60 days from the sampling date.

PART I PERMIT NO. UM-1357 Issued March 29, 2004 Page 9 of 24

- (d) The collection of Type III and Type IV samples shall be witnessed by departmental personnel unless a waiver to this condition is granted by the Director. The permittee shall notify the Department at least seven (7) days prior to the date of sample collection for this phase of analysis. Any Type III and Type IV samples that are collected without the acknowledgement and inspection by departmental personnel, unless waived by the Director, will not serve to comply with the monitoring and reporting conditions of this permit.
- (e) As this condition may be applicable to this permit, whether specified now or specified later under a revision to this permit, every exceeding of an Action Level or Regulatory Level concentration shall prompt an immediate (within five days from the time of knowledge of the initial analytical results) resampling for and reanalysis of the particular exceeding test parameter. If a Risk-Based Corrective Action or an Oily Wastewater-related action level is exceeded, the reanalysis shall be conducted by using the same method. If a TCLP-related action level is exceeded, the reanalysis shall be conducted by using Method 1311: TCLP as described in 40 CFR, Part 261, Appendix II. If a TCLP regulatory level is exceeded, the reanalysis shall be conducted by using the same method.

The permittee shall immediately notify the Department of every exceeding of an Action Level or Regulatory Level concentration and shall submit the original and follow-up analytical results. The Department may impose additional conditions on resampling and reanalysis.

A periodic recorded inspection of the injection well system at least once every week shall be conducted by the permittee. inspection shall include the recordation of the operational status of the injection well system to detect any deterioration of the injection well system and associated operations that might lead to an injection well failure, and provide the opportunity to correct any occurrence of prohibited discharge activity. person conducting the periodic inspection shall be knowledgeable of what is unlawful disposal of chemical compounds, petroleum products and other hazardous substances into the injection well. If such activities are encountered, the permittee shall take immediate action to alleviate, correct, clean up, and record such The recorded inspection including any disposal incidents. disposal incidents shall be kept at the facility and be made available for inspection by departmental personnel.

PART I PERMIT NO. UM-1357 Issued March 29, 2004 Page 10 of 24

- (g) A periodic status report shall be completed at least once every 6 months regarding the condition and performance of the injection well system. The status report shall be made by a professional consultant, engineer, or geologist proficient in injection well performance. The status report shall document the condition and performance of the injection well system in accordance with the Department's guidelines for an injection well status report. Field inspections and observations for the status report shall be performed at least during the last month of the 6-month A monitoring and reporting schedule is monitoring period. attached that designates the last months of the monitoring periods. The status report shall be submitted to the Department for review within 45 days after the end of the designated monitoring period.
- (h) Under applicable conditions, the Director shall have the right to order and direct the permittee to collect and analyze special or unscheduled samples of the injectant or substance in the injection well, or to perform injection well performance or mechanical integrity assessments. Applicable conditions consist of, but are not limited to, accidental discharges, malicious discharges, and undefined discharges into the injection well, as well as indications that the injection well may be under performance or mechanical integrity deterioration. The permittee is required to maintain records of the sample collection, analysis, and assessment in conformance with Part I B. 1. (a) of this permit.

PART I PERMIT NO. UM-1357 Issued March 29, 2004 Page 11 of 24

#### 2. Accurate, Current, and Representative Information

The submission of records, analytical results, recorded inspections, status reports, and any other reportings as specified and required by this permit shall be truthful, accurate, current, and representative of the activity being monitored within the specified time frame for monitoring. The submission of false, inaccurate, noncurrent, and/or unrepresentative records, results, inspections, reports, and any other required information, or the nonsubmission of the required materials, is a violation of this permit.

#### 3. Reporting of Noncompliance of Injectant Concentrations

The permittee shall notify the Department of any exceedings of or noncompliance with the concentrations or limitations specified in Part I A. 2. Injection Limitations, as determined by the monitoring and analyses specified in this permit. The notification shall consist of a report that shall include the analytical results and an explanation for the exceeding or noncompliance. The report shall be submitted to the Department within fifteen (15) days of knowledge of the exceeding or noncompliance.

#### 4. Additional Monitoring and Reporting

If the operation of the injection wells is additionally regulated by other pollution control programs, e.g., National Pollutant Discharge Elimination System (NPDES), the adherence to those monitoring and reporting conditions shall not be circumvented by the terms and conditions of this permit.

#### 5. Records Retention

All records and information resulting from the monitoring activities required by this permit including all records of analyses performed, and the calibration and maintenance of applicable facility instrumentation, shall be retained on site for a minimum of three (3) years from the date of procurement and shall be made available for inspection by departmental personnel. This period may be extended by the request of the Director at any time.

### 6. Anticipated Changes

The permittee shall give notice a minimum of 60 days in advance to the Department of any planned changes in the facility or facility's activity which may significantly change any operating characteristics or specifications of the injection wells; or which may result in noncompliance with the permit conditions. Advance notice shall be of sufficient time to allow for the Department's evaluation of planned changes and revision, if necessary, of any term or condition of this permit. Changes, modifications, revisions or construction on the operating characteristics or specifications of the injection wells shall not be implemented unless approved by the Director.

PART I PERMIT NO. UM-1357 Issued March 29, 2004 Page 12 of 24

 Advance Notification of Change in Operator, Ownership, Control, or Facility Name

In the event of a pending change in operator (permittee), ownership, control, or facility name of the injection wells, the permittee shall report the pending change to the Department in writing at least 90 days prior to the closing. Until such time that this permit is revoked and/or reissued, the permittee of record shall be responsible for the injection wells and injection well operations, and for any damages resulting from the injection wells and operations.

The permittee of record shall notify the pending operator and/or owner in adequate time in order for the pending operator/owner to apply to the Department, using a change-of-operator application, to obtain this permit in coordination with closing. Upon satisfactory completion of the change-of-operator application, this permit may be reissued to the new operator of the injection well facility.

#### 8. Twenty-Four Hour Reporting

Under any of the following conditions, an oral report is required within 24 hours from the time the permittee becomes aware of the circumstances:

- (a) Monitoring, or other information, which indicates that the injection activity is causing or could cause an endangerment to a USDW;
- (b) Malfunction of the injection system which causes or could cause fluid migration into, out of, or between geologic formations via the well bore;
- (c) Overflow of the injection well;
- (d) Discharge into the injection well of prohibited chemical compounds, hazardous wastes, or unauthorized substances;
- (e) Impairment of the injection well including and not limited to a collapsed well casing or well bore, well bore obstruction, lost well, or damage to the well resulting in a loss of use; or
- (f) Unsafe working or public conditions resulting from the operation of the injection well.

A written report shall also be submitted within five (5) days of the time the permittee becomes aware of the circumstances. The written report shall contain a description of the incident and its cause, including exact dates and times, and if the incident has not been mitigated, the anticipated length of time that it is expected to continue; also, planned or accomplished measures to reduce, eliminate and prevent the reoccurrence of the incident.

PART I PERMIT NO. UM-1357 Issued March 29, 2004 Page 13 of 24

Oral reports during the weekday hours of 7:45 a.m. to 4:30 p.m. shall be made to the Safe Drinking Water Branch at (808)586-4258 (Honolulu) or call from Maui the direct toll free number 984-2400, ext. 64258. For on-island oral reports, the Safe Drinking Water Branch's district sanitarian may be notified at (808) 984-8234. For evenings, weekends and holidays, all calls shall be made to (808)247-2191 (Honolulu). The Director may waive the written report and/or the 5-day reporting time limit on a case-by-case basis if the oral report proves satisfactory in meeting the reporting requirements of the written report.

A record shall be kept by the permittee of all incidences subject to oral reporting under this section. Record keeping shall minimally include the nature and cause of the incident, date, time, duration, name of reporting person, and mitigative action.

#### 9. Definitions

- (a) The "Department" means the Department of Health, State of Hawai'i.
- (b) The "Director" means the Director of Health or a duly authorized representative.
- (c) "Facility or activity" means any UIC "injection well" or any other facility or activity that is subject to regulation under the UIC Program.
- (d) "Fluid" means any material or substance which flows or moves whether in a semisolid, liquid, sludge, gas or any other form or state.
- (e) "Injection Pressure" means the head increase in the well bore with respect to static groundwater level.
- (f) "Injection Well" means a well into which subsurface disposal of fluid or fluids occurs or is intended to occur by means of injection.
- (g) "USDW" means "underground source of drinking water" as defined in Chapter 11-23.
- (h) "Well" means a bored, drilled or driven shaft, or a dug hole, whose depth is greater than its widest surface dimension.

PART II
PERMIT NO. UM-1357
Issued March 29, 2004
Page 14 of 24

#### A. MANAGEMENT CONDITIONS:

#### 1. Change in Discharge

All operation of wells authorized herein shall be consistent with the terms and conditions of this permit. The operation of any well identified in this permit at volumes or concentrations in excess of that authorized shall constitute a violation of the permit conditions. Any anticipated facility changes including expansions, production increases, or process modifications which would result in new, different, or increased discharges of injectant shall be reported by submission of a UIC application. If such changes are not expected to violate the injection limitations specified in this permit, such changes may be submitted to the Department in writing instead of a UIC application, whereby the Department will determine if a UIC application would be necessary. Following the written submission of anticipated changes or the submission of a UIC application, this permit may be revoked or modified to specify and limit any injectant not previously authorized by this permit.

#### Signatory Statement

All reports or information submitted to the Department pursuant to this permit shall be signed by the permittee.

#### Availability of Reports

All reports prepared in accordance with the conditions of this permit shall be available for public inspection, with the approval of the Director, at appropriate offices of the Department. Permit applications, permits, and well operation data shall not be considered confidential.

#### 4. Proper Operation and Maintenance

The permittee shall at all times properly operate and maintain all systems of treatment and control, and related appurtenances, which are installed or used by the permittee to operate the injection wells and to achieve compliance with the conditions of this permit. Proper operation and maintenance include and are not limited to sound engineering principles and practices, effective performance, adequate funding, adequate operator staffing and training, adequate laboratory and process controls, and appropriate quality assurance procedures. Furthermore, effective performance means and is not limited to no contamination of a USDW, no unintended subsurface fluid migration, no injection well overflow, no prohibited discharges, no loss or excessive sedimentation of the injection well, and no creation of unsafe working or public conditions.

PART II PERMIT NO. UM-1357 Issued March 29, 2004 Page 15 of 24

#### 5. Permit Reapplication

If the permittee desires to continue an activity regulated by this permit after the expiration date of this permit, reapplication shall be made on appropriate application forms then in use. This reapplication shall be made not later than 180 days before this permit expires in order to facilitate processing of the renewal.

#### 6. Permit Extension

The Director may grant an administrative extension to this permit to authorize the continued operation of the injection wells beyond the permit's expiration date. The administrative extension will at a minimum describe the duration of the administrative extension and the conditions under which the administrative extension is granted.

#### 7. Injection Well Abandonment

Every injection well that is not performing its intended purpose or is determined to be a threat to the groundwater resource shall be abandoned when ordered by the Director.

The permittee who wishes or is ordered to abandon an injection well shall submit an application containing the details of the proposed abandonment at least 60 days before the anticipated start of backfilling work. The Department will review the application and may specify that the injection well be backfilled in a manner which would not allow the infiltration or movement of fluid into, out of, or throughout the well bore. The Department will specify abandonment procedures and provide information for the permittee to complete the Abandonment of Injection Well Summary Report upon completion of backfilling. Abandonment procedures shall also comply with any other applicable regulations including those of the Department of Land and Natural Resources.

PART II
PERMIT NO. UM-1357
Issued March 29, 2004
Page 16 of 24

#### B. GENERAL CONDITIONS

#### 1. Operating Conditions

- (a) No injection well shall be operated, kept, or otherwise utilized without an active UIC permit issued by the Department.
- (b) No person shall construct, operate, maintain, convert, backfill, seal, abandon or conduct any other injection activity in a manner which allows the movement of fluid containing a contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water rule or may otherwise adversely affect the health of one or more persons.
- (c) The injection wells shall be operated in such a manner that they do not violate any of Hawai`i Administrative Rules, Title 11, regulating various aspects of water quality and pollution, and Chapter 342, HRS. The rules include:
  - (1) Chapter 11-20, Potable Water Systems.
  - (2) Chapter 11-55, Water Pollution Control.
  - (3) Chapter 11-62, Wastewater Systems.
- (d) If at any time the Department learns that an injection well may cause a violation of primary drinking water rules, the Director shall order the permittee to take such actions as may be necessary to prevent the violation, including, where required, cessation of operation of the injection well.
- (e) Notwithstanding any other condition of this section, the Director will issue an order to immediately cease and desist injection upon receipt of factual information that the injectant has caused or is likely to cause imminent and substantial danger to the health of a person or persons due to contamination of a drinking water source.

PART II
PERMIT NO. UM-1357
Issued March 29, 2004
Page 17 of 24

#### 2. Permit Issuance

A copy of this permit shall be retained by the permittee and shall be made available for inspection by departmental personnel.

This UIC permit shall not be transferable from the permittee to any other person.

This UIC permit shall be subject to revocation, suspension or revision by the Director if, after notice and opportunity for a contested hearing, it is determined that:

- (a) There is a violation of any term or condition of the UIC permit; or
- (b) The UIC permit was obtained by misrepresentation, or failure to fully disclose all relevant facts; or
- (c) The UIC permit was willfully defaced, altered, forged or falsified; or
- (d) There exists a legal, environmental, or public health condition that requires either a temporary or permanent reduction or elimination of the permitted injection; or
- (e) There is a failure to comply with Chapter 11-23 or any other applicable rules or laws.

All permit conditions will remain in effect despite the filing of a request by the permittee for a permit revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance.

#### 3. Permit Modification

Any modification, alteration, or change to this permit shall be made only by written supplement or reissuance of the permit by the Department.

PART II
PERMIT NO. UM-1357
Issued March 29, 2004
Page 18 of 24

#### 4. New Rules and Regulations

The occurrence of new rules and regulations affecting underground injection, typically occurring as amendments to existing rules and regulations, may require that limitations or conditions within the permit be revised accordingly. Revisions to the permit, depending on the nature of the revision, may occur as a written supplement or an administrative reissuance of the permit, or it may require that the permit be reopened, via an application, before reissuance is accomplished.

Existing limitations and conditions within the permit shall not be grounds for superseding new rules and regulations that would otherwise warrant a revision of the permit. The responsibility for knowing about and understanding new, as well as existing, rules and regulations that affect the permit is upon the permittee.

#### 5. Duty to Mitigate

The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.

#### 6. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

#### 7. Right of Entry

Departmental personnel shall have the right to enter premises on which any injection well system is located; to inspect any equipment, operation, or sampling of any injection well system; to take effluent or injectant samples from any injection well system; and to have access to and copy any record required to be kept pursuant to this permit.

#### 8. Need to Halt or Reduce an Activity Not a Defense

It shall not be a defense for a permittee to claim in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

PART II
PERMIT NO. UM-1357
Issued March 29, 2004
Page 19 of 24

#### 9. Penalties

It shall be a violation of Chapter 11-23 for any person, owner or operator of an injection well to construct, operate, maintain or abandon that injection well unless authorized in writing by the Director. It shall also be a violation of Chapter 11-23 for any permittee to fail to comply with the terms and conditions of this permit including those relating to inspection, monitoring, record keeping, and reporting. Compliance with a corrective order shall not excuse the basic violation. Any person who violates any provision of Chapter 11-23 or the terms and conditions of this permit shall be subject to the penalties provided in section 340E-8, HRS or section 11-23-22, HAR.

#### 10. Severability

The conditions of this permit are severable; if any condition of this permit or the application of any condition of this permit to any circumstance is held invalid, the application of such condition to other circumstances and the remainder of this permit shall not be affected thereby.

PART III
PERMIT NO. UM-1357
Issued March 29, 2004
Page 20 of 24

#### A. OTHER CONDITIONS:

1. Modifications to Monitoring and Reporting

This permit herein acknowledges that environmental and facility operating conditions affecting the monitoring and reporting conditions of this permit could warrant the Department's reevaluation of permit conditions in order to address changing concerns and to establish relevant analyses. Modifications to the monitoring and reporting conditions, resulting from reevaluations, shall be approved by the Director before implementation.

PERMIT NO. UM-1357 Issued March 29, 2004 Page 21 of 24

# TABLE NO. 2

## TEST PARAMETERS FOR TYPE I SAMPLE

	Regulatory Level (mg/l)	EPA Method	Sample Type
(BOD <sub>5</sub> )	30	405	Composite
		150	Grab
	0.1 minimum	330	Grab
	30	160	Composite
		180	Composite
		(BOD <sub>5</sub> ) 30 0.1 minimum	150 0.1 minimum 330 30 160

TABLE NO. 3

## TEST PARAMETERS FOR TYPE II SAMPLE

Parameter	Action Level	EPA Method	Sample Type
Ammonia (as N)		350	Composite
Dissolved Oxygen	•	360	Grab
Fecal Coliform		MPN or MF	Grab
Field Temperature		170	Grab
Nitrate-Nitrite (as N)	*	353	Composite
Oil and Grease		413 or 1664	Grab
Orthophosphate (as P)		365	Composite
Total Dissolved Solids		160	Composite
Total Kjeldahl Nitrogen	(as N) *	351	Composite
Total Phosphorous		365	Composite

 $<sup>\</sup>star$  10 mg/l Total Nitrogen where Total Nitrogen equals Total Kjeldahl Nitrogen plus Nitrate-Nitrite Nitrogen.

TABLE NO. 4

# TEST PARAMETERS FOR TYPE III SAMPLE

	Damama tan	<b>.</b>		( /3.)	Wath a d	g
	Parameter	<u>kegulate</u>	ory Level	(mg/I)	Method  As described in	Sample Type
				· ·	40 CFR (1998):	
				•	40 CFR (1996):	
Tanit	ability				Part 261.21	Grab
-	sivity				Part 261.22	Grab
	ivity				Part 261.23	Grab
Roago	1,13,			,		0100
Inorg	anics:			*	Method 1311 (TCI	P), Grab
J	arsenic		5.0		with appropriate	
	barium		100.0		methods of analy	
	cadmium		1.0		contained in SW-	846
	chromium		5.0			
	lead		5.0			
•	mercury		0.2			
	selenium		1.0		1	
	silver		5.0		· ·	
	·			•		
Organ				.*	1311	
	benzene		0.5		!	
	carbon tetrachloride		0.5			
	chlordane		0.03			
	chlorobenzene		100.0			
	chloroform		6.0			
	o-cresol		200.0			
	m-cresol		200.0			
	p-cresol	•	200.0		 	
	1,4-dichlorobenzene		7.5	•		
	1,2-dichloroethane		0.5			
	1,1-dichloroethylene		0.7		.	
	2,4-dinitrotoluene		0.13	•		•
	heptachlor		0.008			
	hexachlorobenzene		0.13			
	hexachloro-1,3-butadien	ie .	0.5			
	hexachloroethane		3.0			
	methyl ethyl ketone nitrobenzene		200.0	•		
	pentachlorophenol		2.0 100.0			
	pyridine		5.0			
	tetrachloroethylene		0.7			
i.	trichloroethylene		0.7			
	2,4,5-trichlorophenol		400.0			
	2,4,6-trichlorophenol		2.0			
	vinyl chloride		0.2		· · ·	
	endrin		0.2			
	lindane		0.02			
	methoxychlor		10.0			
	toxaphene	•	0.5			
	CONAPHEHE		0.5			

10.0

1.0

2,4,5-TP (silvex)

## TABLE NO. 5

#### TEST PARAMETERS FOR TYPE IV SAMPLE

<u>Parameter</u>	Method	Sample Action Level (mg/l) Type
Volatile Organics	524/624/8240/8260	Grab
Acetone		
Benzene	1	
Bromodichloromethane		
Bromoform		
Bromomethane		
Carbon Tetrachloride		
Chlorobenzene		0.10 (a)
Chloroethane	[	
2-Chloroethylvinyl eth	ner	
Chloroform	. [	
Chloromethane		
Dibromochloromethane	.	
1,2-Dichlorobenzene		
1,3-Dichlorobenzene		
1,4-Dichlorobenzene	·	
1,1-Dichloroethane	· ·	
1,2-Dichloroethane		
1,1 Dichloroethylene	1	
trans-1,2-Dichloroethe	ene	
1,2-Dichloropropane		
cis-1,3-Dichloropropen	ıe	
trans-1,3-Dichloroprop	ene	
Ethyl benzene		0.14 (a)
Methylene chloride		0.0043 (a)
1,1,2,2-Tetrachloroeth	ane	
Tetrachloroethene		0.145 (a)
Toluene		2.1 (a)
1,1,1-Trichloroethane	Ì	6.0 (a)
1,1,2-Trichloroethane		
Trichloroethene		0.70 (a)
Trichlorofluoromethane		
Vinyl Chloride	Ì	0.002 (a)
Xylene		10.0 (a)
• • • • • • • • • • • • • • • • • • •	•	

- (a) Risk-Based Corrective Action
- (b) Oily Wastewater Related

	MONITORING AND REPORTING SCHEDULE											
UIC PERMIT NO. :	MONTH	TYPE I	TYPE II	TYPE III/IV	REPORT OF ANALYTICAL RESULTS ★	STATUS REPORT	MONTH	TYPEI	TYPE II	TYPE III/IV	REPORT OF ANALYTICAL RESULTS ★	STATUS REPORT
UM-1357	04/04	١					04/07	\				
	05/04	1					05/07	١				
PERMIT ISSUED:	06/04	1					06/07	\				
	07/04					1	07/07					1
03/29/2004	08/04	1					08/07	١				
	09/04	١.				_	09/07	1				
PERMIT EXPIRES:	10/04	\				,	10/07	\				
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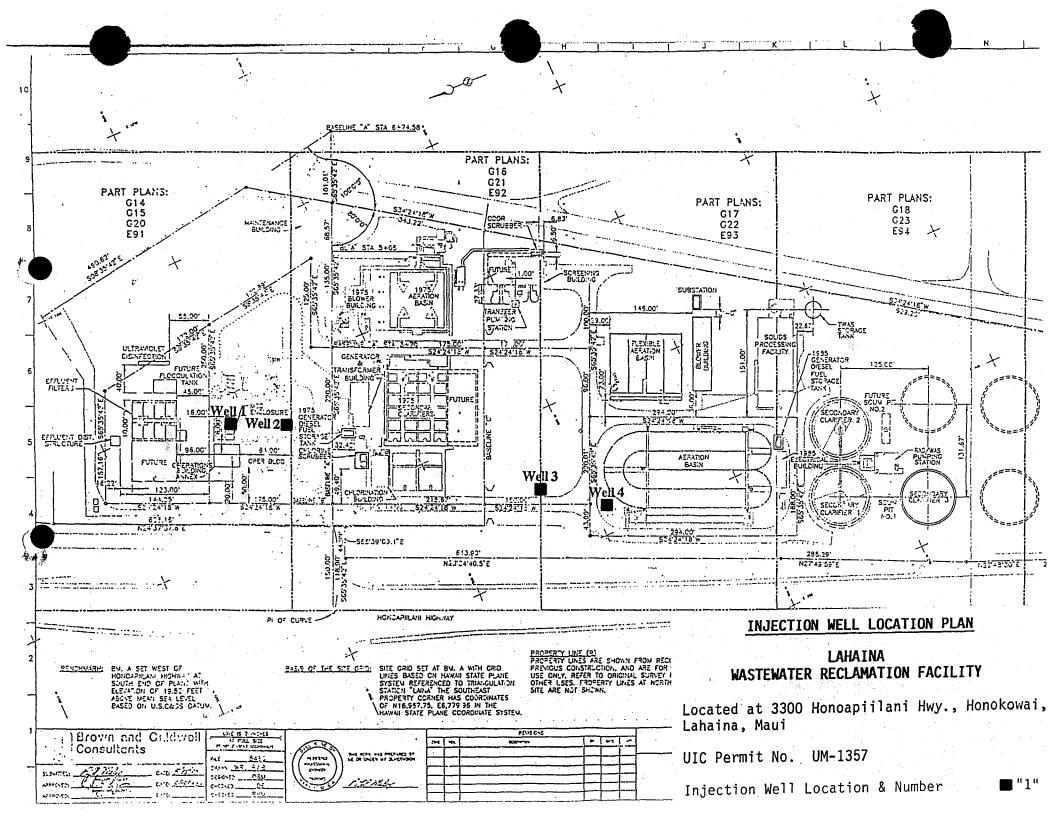
<sup>★</sup> Submit original laboratory report with chain of custody form for the scheduled month's analyses within 60 days after the end of the designated monitoring period.

#### UIC INJECTION WELL STATUS REPORT GUIDELINES

#### October 1999

The following guidelines have been established to provide the consulting engineer, geologist, or qualified specialist with information for the preparation of an injection well status report. The primary purpose of the status report is to provide the owner, the operator, and the regulatory agency with information regarding the performance of the injection well and to prevent adverse public health effects from an injection well failure. Every injection well of an injection well system shall be evaluated. Field inspections and observations for the status report shall be performed at least during the last month of a designated monitoring period. A typical designated monitoring period is 6 months. The reporting of data in the status report is preferred using tables and graphs. The status report must be signed by the preparer.

- 1. The status report shall state the monitoring period for which the report applies. The monitoring period is designated in the Underground Injection Control (UIC) permit issued to an injection well facility.
- 2. The status report shall contain an evaluation of the flow versus head build-up or injection pressure for every injection well in use. The evaluation should also include, when relevant, correlations using other well-performance parameters that would enhance the evaluation of well performance. Other well-performance parameters include the amount of sedimentation in a well, injectant quality, and duration of well use. Well-performance trends and projections should be sought.
- 3. The status report shall contain the current field-measured well depth of each injection well. A table shall be used to compile and compare well depth measurements of current and previous measurements taken.
- injection well cleaning events (rehabilitation), a description of the cleaning method, and the results of the cleaning effort.





# RECEIVED

2004 JUN 10 AM 7: 57

PUBLIC

DIRECTOR DEP. DIR

STAFF CE LUCA

WW RECL.

PERS.

CHIYOME L. FUKINO, M.D. DIRECTOR OF HEALTH

04 JUN -2 P2:43

COUNTY OF MAU! PUBLIC WORKS

STATE OF HAWAII WASTEWATER DEPARTMENT OF HEALTHAMATION DIVISION COUNTY O

P.O.BOX 3378 HONOLULU, HAWAII 96801-3378

May 26, 2004

Mr. Gilbert S. Coloma-Agaran, Director Department of Public Works and Environmental Management County of Maui 200 South High Street Wailuku, Hawai`i

ATTENTION: Mr. Scott R. Rollins

Dear Mr. Coloma-Agaran:

APPROVAL OF YOUR MAY 7, 2004 REQUEST TO CHANCE THE Date;

SCHEDULING OF TYPES III & IV SAMPLING EVENTS AT

LAHAINA WWRF

UNDERGROUND INJECTION CONTROL (UIC)

UIC PERMIT NO. UM-1357

Enclosed is the revised Monitoring & Reporting Schedule of UIC Permit No. UM-1357 which changes the scheduling of the facility's Types III and IV wastewater sampling events. Replace the The effective date original schedule with the revised schedule. of this modification is May 31, 2004.

If you have any questions on this matter, please contact Norris Uehara of the Safe Drinking Water Branch (SDWB) at 586-4258 (Honolulu) or call from Maui the direct toll free number 984-2400, ext. 64258.

Sincerely,

SUBJECT:

FOR THOMAS E. ARIZUMI, P.E., CHIEF Environmental Management Division

NU:nbp

Enclosure: Revised Monitoring & Reporting Schedule f8 Monitoring Schedule f8 Mon

Gordon Muraoka, SDWB Sanitarian, Maui (w/o encl.)

SOLID W. ENGR. HWYS. SECTY. Return to Ref. No.

**W**WRD

DESIGN

	MONITORING AND REPORTING SCHEDULE											
UIC PERMIT NO. :	MONTH	TYPE I	TYPE II	TYPE III/IV	REPORT OF ANALYTICAL RESULTS ★	STATUS REPORT	MONTH	ТҮРЕ І	TYPE II	TYPE III/IV	REPORT OF ANALYTICAL RESULTS ★	STATUS REPORT
UM-1357	04/04	1					04/07	1.				
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	09/04	1.					09/07	\				
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	09/05	1					09/08	1				
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<sup>★</sup> Submit the original laboratory results and the original chain-of-custodies. When applicable, also submit the prior months' unsubmitted results, thus representing a group-of-months submittal.

ALAN M. ARAKAWA Mayor SILBERT S. COLOMA-AGARAN Director **MILTON M. ARAKAWA, A.I.C.P. Deputy Director** 



# **COUNTY OF MAUI** DEPARTMENT OF PUBLIC WORKS AND ENVIRONMENTAL MANAGEMENT

200 SOUTH HIGH STREET WAILUKU, MAUI, HAWAII 96793

July 16, 2004

RALPH NAGAMINE, L.S., P.E. **Development Services Administration** 

TRACY TAKAMINE, P.E. Wastewater Reclamation Division

**Engineering Division** 

Solid Waste Division BRIAN HASHIRO, P.E. Highways Division



Certified Mail 7003 2260 0006 9843 7263 Return Receipt Requested

Mr. Thomas E. Arizumi, P.E., Chief **Environmental Management Division** State Department of Health P.O. Box 3378 Honolulu, HI 96801

Attn: Mr. Norris Uehara

Dear Mr. Arizumi,

SUBJECT: **LAHAINA UIC PERMIT, UM-1357** 

TYPE I-IV TESTING RESULTS

Enclosed is the subject matter reporting requirements for County of Maui, Wailuku/Kahului Wastewater Reclamation Facility.

Laboratory sample dates are 6/08/2004 and 6/09/20043.

Should you have any questions, please contact Mr. Scott Rollins at 270-7417. 1806) 270-7425

Sincerely,

Gilbert S. Coloma-Agaran Director of Public Works &

**Environmental Management** 

Enclosure:

CC:

Jerry Morgan Lahaina WWRF

SR:sr(Lahaina UIC Type I IV test)

# UIC ANALYTICAL REPORTING SUMMARY SHEETS

Facility:

Lahaina Wastewater Reclamation Facility

UIC Permit No.:

UM-1357

Type of Analysis:

UIC Type I & II

Sample Date:

6/8/04 - 6/9/04

Parameters	Туре	Result	Regulatory Level
Biochemical Oxygen Demand	I	3 mg/L	30 mg/L (composite)
Field pH	I	6.1 S.U.	
Total Residual Chlorine	I	0.2 mg/L	0.1 mg/L
Total Suspended Solids	i I	3 mg/L	30 mg/L (composite)
Turbidity	I	1.7 NTU	
Ammonia (as N)	П		
Dissolved Oxygen	П	6.6 mg/L	
Fecal Coliform	п	110 MPN/100mL	
Field Temperature	П	28.4 ° C	
Kjeldahl Nitrogen	п		
Nitrate - Nitrite	п		
Oil and Grease	. II		
Orthophosphate	II		
Total Dissolved Solids	п		
Total Phosphorus	П		

# Food Quality Lab 3375 Koapaka St. Suite G-314

3375 Koapaka St. Suite G-314 Honolulu, Hawaii 96819 1-808-535-6066 Fax 1-808-535-6069

# **Method Blank Report**

Sample ID: County of Maui 150 Matrix: Liquid

Preparation Date: 06-09-04

		Reporting		Analysis
Parameter	Result	Limit	Method	Date
Ammonia -NH <sub>3</sub> -N	ND	0.1 mg/L	EPA 350.2	6/14/2004
Nitrate-Nitrite-N	ND	0.01 mg/L	EPA 353.3	6/23/2004
Total Kjeldahl Nitrogen	ND	0.1 mg/L	EPA 351.3	6/14/2004
Total Dissolved Solids	ND	1.0 mg/L	SM 20, 2540C	6/18/2004
Ortho Phosphate	ND	0.1 mg/L	EPA 365.2	6/10/2004
Total Phosphorus	ND	0.1 mg/L	EPA 365.2	6/14/2004
Oil and Grease	ND	1.0 mg/L	EPA 413.2	6/18/2004
Chloride	ND	1.0 mg/L	SM 20, 4500-CI-C	6/16/2004
Fluoride	ND	0.1 mg/L	EPA 300	6/18/2004
Total Alkalinity	ND	1.0 mg/L	EPA 310.1	6/9/2004
Silica	ND	1.0 mg/L	EPA 370.1	6/21/2004
Sulfate	ND	10 mg/L	EPA 375.3	6/14/2004

# Food Quality Lab 3375 Koapaka St. Suite G-314

Honolulu, Hawaii 96819 1-808-535-6066 Fax 1-808-535-6069

# Laboratory Control Sample

Sample ID: County of Maui 150 Matrix: Liquid Preparation Date: 06-09-04

Matrix: Liquid

	Amount	Measured	rept	Percent	Reporting		Analysis
Parameter	Spiked	Amount	Units	Recovery	Limit	Method	Date
Ammonia -NH <sub>3</sub> -N	9.36	8.74	mg/L	93%	80-120%	EPA 350.2	6/14/2004
Nitrate-Nitrite-N	1	0.97	mg/L	97%	80-120%	EPA 353.3	6/23/2004
Total Kjeldahl Nitrogen	8	7.64	mg/L	96%	80-120%	EPA 351.3	6/14/2004
Total Dissolved Solids	100	95	mg/L	95%	80-120%	SM 20, 2540C	6/18/2004
Ortho Phosphate	.2	1.95	mg/L	98%	80-120%	EPA 365.2	6/10/2004
Total Phosphorus	2	1.91	mg/L	96%	80-120%	EPA 365.2	6/14/2004
Oil and Grease	20	19.1	mg/L	96%	80-120%	EPA 413.2	6/18/2004
Chloride	200	190	mg/L	95%	80-120%	SM 20, 4500-CI-C	6/16/2004
Fluoride	1	0.93	mg/L	93%	80-120%	EPA 300	6/18/2004
Total Alkalinity	100	97/5	mg/L as CaCO <sub>3</sub>	98%	80-120%	EPA 310.1	6/9/2004
Silica	10.0	10.4	mg/L	104%	80-120%	EPA 370.1	6/21/2004
Gulfate	100	92	mg/L	92%	80-120%	EPA 375.3	6/14/2004

# Food Quality Lab 3375 Koapaka St. Suite G-314

3375 Koapaka St. Suite G-314 Honolulu, Hawaii 96819 1-808-535-6066 Fax 1-808-535-6069

# **Laboratory Control Sample**

Sample ID: County of Maui 150

Matrix: Liquid

Preparation Date: 06-09-04

	Percent	Reporting		Analysis
Parameter	Recovery	Limit	Method	Date
Ammonia -NH₃-N	93%	0.1 mg/L	EPA 350.2	6/14/2004
Nitrate-Nitrite-N	97%	0.01 mg/L	EPA 353.3	6/23/2004
Total Kjeldahl Nitrogen	96%	0.1 mg/L	EPA 351.3	6/14/2004
Total Dissolved Solids	95%	1.0 mg/L	SM 20, 2540C	6/18/2004
Ortho Phosphate	98%	0.1 mg/L	EPA 365.2	6/10/2004
Total Phosphorus	96%	0.1 mg/L	EPA 365.2	6/14/2004
Oil and Grease	96%	1.0 mg/L	EPA 413.2	6/18/2004
Chloride	95%	1.0 mg/L	SM 20, 4500-CI-C	6/16/2004
Fluoride	93%	0.1 mg/L	EPA 300	6/18/2004
Total Alkalinity	98%	1.0 mg/L	EPA 310.1	6/9/2004
Silica	104%	1.0 mg/L	EPA 370.1	6/21/2004
Sulfate	92%	10 mg/L	EPA 375.3	6/14/2004

### Food Quality Lab

3375 Koapaka St. Suite G-314 Honolulu, Hawaii 96819 1-808-535-6066 Fax 1-808-535-6069

Client:

County of Maui/Wastewater Division

480 Welakahao Road

Kihei, HI 96753

Attn:

Anita Fernandez

Project Name: UIC Lahaina

DATE: June 28, 2004

Date Received:

06-09-04

Date Tested:

06-09-04

Date Completed:

06-23-04

The following pages present the analytical data as received directly from Positive Lab Service.

Analysis performed by a certified sub-contracted laboratory.

Approved By: Helani Olfen

Date:

06-28-04



**Food Quality Lab** 

06/18/04

File# 73580

3375 Koapaka Street, Suite G314

Honolulu,

ΗI 96819

Attn: Tai Khan

Phone: (808) 839-9444 Fax: (808) 839-9744

Sample#: 20041535-001

Collector: Client Method: Via: Fed-Ex

Received: 06/11/2004

Sampling Date/Time: 06/09/2004

Type: Water

I.D.: Lahaina WWRF						
Parameter	*	.Prep/1	Test Method	Result	Unit	PQL
		te: 06/15/200	04 Analysis Date:			
Flash Point			ASTM 93	ND TO 212	degrees F	
•	Prep Da	te: 06/11/20(	•			* *
pН			EPA 150.1	7.3	Units	0.1
	Prep Dat	te: 06/11/200	•			
Cyanide, Reactive			SM-4500-CN-I	ND	mg/l	0.2
	Prep Dat	e: 06/11/200				
ulfide, Reactive			EPA 376.2	ND	mg/l	0.04
	Prep Dat	e: 06/16/200	•			
Phenols, Total			EPA 420.1	ND	mg/l	0.05
	Prep Dat	e: 06/14/200	. •			
Arsenic, TCLP		EPA 1311	EPA 6010B	ND	mg/l	0.01
Barium, TCLP		EPA 1311	EPA 6010B	ND	mg/l	0.01
Cadmium, TCLP		EPA 1311	EPA 6010B	ND	mg/l	0.01
Calcium, TCLP		EPA 1311	EPA 6010B	30	mg/l	1
Chromium, TCLP	•	EPA 1311	EPA 6010B	ND	mg/l	0.01
Copper, TCLP		EPA 1311	EPA 6010B	ND	mg/l	0.01
Lead, TCLP		EPA 1311	EPA 6010B	0.0050	mg/l	0.005
Magnesium, TCLP		EPA 1311	EPA 6010B	27	mg/l	1
Potassium, TCLP		EPA 1311	EPA 6010B	26	mg/l	. 1
Selenium, TCLP		EPA 1311	EPA 6010B	ND	mg/l	0.01
Silver, TCLP		EPA 1311	EPA 6010B	ND	mg/l	0.01
Sodium, TCLP		EPA 1311	EPA 6010B	170	mg/l	. 1
Vanadium, TCLP		EPA 1311	EPA 6010B	ND	mg/l	0.01
Zinc, TCLP		EPA 1311	EPA 6010B	0.47	mg/l	0.05
	Prep Date:	06/14/2004	Analysis Date:	06/15/2004		
Mercury,TCLP		EPA 1311	EPA 245.1	ND	mg/l	0.001
	Prep Date:	06/14/2004	Analysis Date: (	06/14/2004		
Benzene, TCLP		EPA 1311	EPA 8260B	ND	ug/l	1
Bromodichloromethane, TCLP		EPA 1311	EPA 8260B	1.2	ug/l	1
Bromoform, TCLP		EPA 1311	EPA 8260B	1.6	ug/l	1
Bromomethane, TCLP		EPA 1311	EPA 8260B	ND	ug/l	1
Carbon Tetrachloride, TCLP		EPA 1311	EPA 8260B	ND	ug/l	. 1
Chlorobenzene, TCLP		EPA 1311	EPA 8260B	ND	ug/l	1
Chloroethane, TCLP		EPA 1311	EPA 8260B	ND	ug/l	1
2-Chloroethylvinyl ether, TCLP		EPA 1311	EPA 8260B	ND	ug/l	1 .
Chloroform, TCLP		EPA 1311	EPA 8260B	ND	ug/I	1
Chloromethane, TCLP		EPA 1311	EPA 8260B	ND	ug/l	1



**Food Quality Lab** 

06/18/04

File# 73580

3375 Koapaka Street, Suite G314

Honolulu,

HI 96819

Attn: Tai Khan

Phone: (808) 839-9444 Fa	x: (808) 839	9744			
Dibromochloromethane, TCLP	EPA 1311	EPA 8260B	2.2	ug/l	1
1,2-Dichlorobenzene, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
1,3-Dichlorobenzene, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
1,4-Dichlorobenzene, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
1,1-Dichloroethane, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
1,2-Dibromoethane, TCLP	EPA 1311	EPA 8260B	ND	ug/l	. 1
1,1-Dichloroethylene, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
trans-1,2-dichloroethene, TCLP	EPA 1311	EPA 8260B	ND	ug/I	1
1,2-Dichloropropane, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
cis-1,3-Dichloropropene, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
trans-1,3-Dichloropropene, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
Ethyl benzene, TCLP	EPA 1311	EPA 8260B	ND	ug/i	1
Methylene chloride, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
Methyl Ethyl Ketone, TCLP	EPA 1311	EPA-8260B	ND	ug/l	-1
MTBE, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
1,1,2,2-Tetrachloroethane, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
Tetrachloroethene, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
Toluene, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
1,1,1-Trichloroethane, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1 .
1,1,2-Trichloroethane, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
Trichloroethene, TCLP	EPA 1311	EPA 8260B	ND	ug/i	1
Trichlorofluoromethane, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
Vinyl chloride, TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
Xylene (Total), TCLP	EPA 1311	EPA 8260B	ND	ug/l	1
Surrogates	EPA 1311	EPA 8260B	*	* .	
Dibromofluoromethane, TCLP	EPA 1311	EPA 8260B	99	Percent	
Toluene D-8, TCLP	EPA 1311	EPA 8260B	107	Percent	
4-Bromofluorobenzene, TCLP	EPA 1311	EPA 8260B	105	Percent	
Prep Dat	e: 06/16/2004	Analysis Date:			
o-Cresol, TCLP	EPA 1311	EPA 8270C	ND	ug/l	5
m-Cresol, TCLP	EPA 1311	EPA 8270C	ND	ug/l	5
p-Cresol, TCLP	EPA 1311	EPA 8270C	ND	ug/l	5
Hexachlorobenzene, TCLP	EPA 1311	EPA 8270C	ND:	ug/l	5
2,4-Dinitrotoluene	EPA 1311	EPA 8270C	ND	ug/	5 12
Hexachloro-1, 3-butadiene, TCLP	EPA 1311	EPA 8270C	ND	ug/i	5
Hexachloroethane, TCLP	EPA 1311	EPA 8270C	ND	ug/l	5.,70
Nitrobenzene, TCLP	EPA 1314	EPA 8270C	ND	ug/l	5
Pentachlorophenol, TCLP	EPA 1311	EPA 8270C	ND	u <b>g/l</b>	5
Pyridine, TCLP	EPA 1311	EPA 8270C	ND	ug/l	5
2,4,5-Trichlorophenol, TCLP	EPA 1311	EPA 8270C	ND	ug/l	
2,4,6-Trichlorophenol, TCLP		EPA 8270C	ND	ug/I	
Surrogates		EPA 8270C	*	*	
2-Fluorophenol, TCLP	* *	EPA 8270C	26	Percent	
Phenol D-5, TCLP		EPA 8270C	18	Percent	



**Food Quality Lab** 

06/18/04

File# 73580

3375 Koapaka Street, Suite G314

Honolulu,

HI 96819

Attn: Tai Khan

Phone: (808) 839-9444

	Nitrobenzene-D-5, TCLP		EPA 1311	EPA 8270C	57	Percent	
	2-Fluorobiphenyl, TCLP		EPA 1311	EPA 8270C	54	Percent	
•	2,4,6-Tribromophenol, TCLP	· .	EPA 1311	EPA 8270C	68	Percent	,
	Terphenyl D-14, TCLP		EPA 1311	EPA 8270C	35	Percent	
		Prep Date:	06/15/2004	Analysis Date:	06/15/2004		
	Chlordane, TCLP		EPA 1311	EPA 8081A	ND	ug/l	0.1
	Heptachlor, TCLP		EPA 1311	EPA 8081A	ND	ug/l	0.05
	Endrin, TCLP		EPA 1311	EPA 8081A	ND	ug/l	0.1
	Lindane, TCLP		EPA 1311	EPA 8081A	ND	ug/l	0.05
	Methoxychlor, TCLP		EPA 1311	EPA 8081A	ND	ug/l	0.5
	Toxaphene, TCLP		EPA 1311	EPA 8081A	ND	ug/l	0.5
	Surrogates		EPA 1311	EPA 8081A	*	_	

Fax: (808) 839-9744

4,5,6-Tetrachloro-m-Xylene, TCLP **EPA 8081A** EPA 1311 82 Percent EPA 1311 **EPA 8081A** 36 Percent cachiorobiphenyl, TCLP Prep Date: Analysis Date: EPA 1311 EPA 8151 See 2,4-D, TCLP Attachment 0.2 EPA 1311 **EPA 8151** See 2,4,5-TP (Silvex), TCLP Attachment 0.075

Sample#: 20041535-002 Received: 06/11/2004 Collector: Method:

Sampling Date/Time:

Type: Water

I.D.: Method Blank

	Prep/.ie	st Method	Result	Unit	PQL
Prep Date:	06/11/2004	Analysis Date:	06/11/2004		
		SM-4500-CN-I	ND	mg/l	0.2
Prep Date:	06/11/2004	Analysis Date:	06/11/2004		
		EPA 376.2	ND	mg/l	0.04
Prep Date:	06/16/2004	Analysis Date:	06/16/2004		
		EPA 420.1	ND	mg/l	0.05
Prep Date:	06/14/2004	Analysis Date:	06/15/2004		•
	EPA 1311	EPA 6010B	ND	mg/l	0.01
	EPA 1311	EPA 6010B	ND	mg/l	0.01
	EPA 1311	EPA 6010B	ND	mg/l	0.01
	EPA 1311	EPA 6010B	ND	mg/l	1
	EPA 1311	EPA 6010B	ND	mg/l	0.01
	EPA 1311	EPA 6010B	ND	mg/l	0.01
•	EPA 1311	EPA 6010B	ND	mg/l	0.005
	EPA 1311	EPA 6010B	ND	mg/l	1.
	EPA 1311	EPA 6010B	ND	mg/I	1
1	EPA 1311	EPA 6010B	ND	mg/l	0.01
1	EPA 1311	EPA 6010B	ND	mg/l	0.01
I	EPA 1311	EPA 6010B	ND	mg/l	1 -
·	EPA 1311	EPA 6010B	ND	mg/l	0.01
E	EPA 1311	EPA 6010B	ND	mg/l	0.05
	Prep Date: Prep Date:	Prep Date: 06/11/2004 Prep Date: 06/16/2004 Prep Date: 06/16/2004 Prep Date: 06/14/2004 EPA 1311	Prep Date: 06/11/2004	Prep Date:         06/11/2004         Analysis Date:         06/11/2004           Prep Date:         06/11/2004         SM-4500-CN-I         ND           Prep Date:         06/11/2004         EPA 376.2         ND           Prep Date:         06/16/2004         Analysis Date:         06/16/2004           EPA 420.1         ND         ND           Prep Date:         06/14/2004         Analysis Date:         06/15/2004           EPA 1311         EPA 6010B         ND           EPA 1311         EPA 6010B         ND	Prep Date:         06/11/2004         Analysis Date:         06/11/2004         mg/l           Prep Date:         06/11/2004         Analysis Date:         06/11/2004         mg/l           Prep Date:         06/16/2004         Analysis Date:         06/16/2004         mg/l           Prep Date:         06/14/2004         Analysis Date:         06/15/2004         mg/l           Prep Date:         06/14/2004         Analysis Date:         06/15/2004         mg/l           EPA 1311         EPA 6010B         ND         mg/l      <



Food Quality Lab 06/18/04

File# 73580

3375 Koapaka Street, Suite G314

Honolulu,

HI 96819

Attn: Tai Khan 🗯

Phone: (808) 839-9444 Fax: (808) 839-9744

Manual TCI P	Prep Date:	06/14/20 EPA 1311		e: 06/15/2004 ND	ma/l	0.001
Mercury, TCLP	Prep Date:				mg/l	0.001
Danier TCI D	Frep Date:	EPA 1311		e: 06/14/2004 ND	na/1	. 1
Benzene, TCLP		EPA 1311		ND ND	ug/l	-
Bromodichloromethane, TCLP		EPA 1311		ND	ug/l	1
Bromoform, TCLP				ND ND	ug/l	- 1
Bromomethane, TCLP		EPA 1311			ug/l	1
Carbon Tetrachloride, TCLP		EPA 1311	EPA 8260B	ND	ug/l	1
Chlorobenzene, TCLP		EPA 1311	EPA 8260B	ND	ug/l	1
Chloroethane, TCLP		EPA 1311	EPA 8260B	ND	ug/l	. 1
2-Chloroethylvinyl ether, TCLP		EPA 1311	EPA 8260B	ND	ug/l	1
Chloroform, TCLP		EPA 1311	EPA 8260B	ND:	ug/l	1
Chloromethane, TCLP		EPA 1311	EPA 8260B	ND	ug/l	1
Dibromochloromethane, TCLP		EPA 1311	EPA 8260B	ND	ug/l	1
1,2-Dichlorobenzene, TCLP		EPA 1311	EPA 8260B	ND.	ug/l	1
1,3-Dichlorobenzene, TCLP		EPA 1311	EPA 8260B	ND.	ug/l	1
1,4-Dichlorobenzene, TCLP		EPA 1311	EPA 8260B	ND	ug/l	I
1,1-Dichloroethane, TCLP		EPA 1311	EPA 8260B	ND	ug/l	1
1,2-Dibromoethane, TCLP		EPA 1311	EPA 8260B	ND	ug/l	.1
1,1-Dichleroethylene, TCLP		EPA 1311	EPA 8260B	ND	ug/l	1
trans-1,2-dichloroethene, TCLP		EPA 1311	EPA 8260B	ND.	ug/l	1
1,2-Dichloropropane, TCLP		EPA 1311	EPA 8260B	ND .	ug/l	1
cis-1,3-Dichloropropene, TCLP		EPA 1311	EPA 8260B	ND	ug/l	1
trans-1,3-Dichloropropene, TCLP		PA 1311	EPA 8260B	ND	ug/i	1
Ethyl benzene, TCLP		PA 1311	EPA 8260B	ND	ug/l	1
Methylene chloride, TCLP		PA 1311	EPA 8260B	ND	ug/l	1
Methyl Ethyl Ketone, TCLP		PA 1311	EPA 8260B	ND	ug/l	1.
MTBE, TCLP		PA 1311	EPA 8260B	ИD	ug/l	1
1,1,2,2-Tetrachloroethane, TCLP	E	PA 1311	EPA 8260B	ND	ug/l	1
Tetrachloroethene, TCLP	E	PA 1311	EPA 8260B	ND	ug/l	1
Toluene, TCLP	Ė	PA 1311	EPA 8260B	ND	ug/l	1
,1,1-Trichloroethane, TCLP	El	PA 1311	EPA 8260B	ND	ug/l	1
,1,2-Trichloroethane, TCLP	El	PA 1311	EPA 8260B	ND	ug/l	. 1
richloroethene, TCLP	EI	A 4311	EPA 8260B	ND	ug/l⇔	1
richlorofluoromethane, TCLP	EF	A 1311	EPA 8260B	ND	ug/l	1
inyl chloride, TCLP	EF	A 1311	EPA 8260B	ND	u <b>g/l</b>	1
ylene (Total), TCLP	EP	A 1311	EPA 8260B	ND	u <b>g/l</b>	1
urrogates		A 1311	EPA 8260B	* **	* **	
ibromofluoromethane, TCLP		A 1311	EPA 8260B	99	Percent	
oluene D-8, TCLP		A 1311	EPA 8260B	104	Percent	
Bromofluorobenzene, TCLP			EPA 8260B	103	Percent	
	p Date: 06/		Analysis Date:			
Cresol, TCLP			EPA 8270C	ND	ug/l	5
C10001, 1 OLD	21.4				~~	<i>-</i>



781 East Washington Blvd., Los Angeles, CA 90021 (213) 745-5312 FAX (213) 745-6372

#### **CERTIFICATE OF ANALYSIS**

**Food Quality Lab** 

06/18/04

File# 73580

3375 Koapaka Street, Suite G314

Honolulu,

HI 96819

Attn: Tai Khan

Phone: (808) 839-9444	Fax: (808) 839	-9744		Various and succession of the	
p-Cresol, TCLP	EPA 1311	EPA 8270C	ND	ug/l	5
Hexachlorobenzene, TCLP	EPA 1311	EPA 8270C	ND	ug/i	5
2,4-Dinitrotoluene	EPA 1311	EPA 8270C	ND	ug/l	5
Hexachloro-1, 3-butadiene, TCLP	EPA 1311	EPA 8270C	ND	ug/l	5
Hexachloroethane, TCLP	EPA 1311	EPA 8270C	ND	ug/l	5
Nitrobenzene, TCLP	· EPA 1311	EPA 8270C	ND	ug/l	5
Pentachlorophenol, TCLP	EPA 1311	EPA 8270C	ND	ug/l	· 5
Pyridine, TCLP	EPA 1311	EPA 8270C	ND	ug/l	5
2,4,5-Trichlorophenol, TCLP	EPA 1311	EPA 8270C	ND	ug/l	
2,4,6-Trichlorophenol, TCLP	EPA 1311	EPA 8270C	ND	ug/i	
Surrogates	EPA 1311	EPA 8270C	*	*	*
2-Fluorophenol, TCLP	EPA 1311	EPA 8270C	24	Percent	
Phenol D-5, TCLP	EPA 1311	EPA 8270C	18	Percent	
itrobenzene-D-5, TCLP	EPA 1311	EPA 8270C	51	Percent	
2-Fluorobiphenyl, TCLP	EPA 1311	EPA 8270C	44	Percent	
2,4,6-Tribromophenol, TCLP	EPA 1311	EPA 8270C	45	Percent	**
Terphenyl D-14, TCLP	EPA 1311	EPA 8270C	40	Percent	
Prep D	ate: 06/15/2004	Analysis Date:			
Chlordane, TCLP	EPA 1311	EPA 8081A	ND	ug/I	0.1
Heptachlor, TCLP	EPA 1311	EPA 8081A	ND	ug/l	0.05
Endrin, TCLP	EPA 1311	EPA 8081A	ND	ug/l	0.1
Lindane, TCLP	EPA 1311	EPA 8081A	ND	ug/l	0.05
Methoxychlor, TCLP	EPA 1311	EPA 8081A	ND	ug/i	0.5
Toxaphene, TCLP	EPA 1311	EPA-8081A	ND	ug/l	0.5
Surrogates	EPA 1311	EPA 8081A	*	•	
2,4,5,6-Tetrachloro-m-Xylene, TCLP	EPA 1311	EPA 8081A	. 68	Percent	
Decachlorobiphenyl, TCLP	EPA 1311	EPA 8081A	56	Percent	,
Prep Da		Analysis Date:			
2,4-D, TCLP	EPA 1311	EPA 8151	See	Attachment	0.2
2,4,5-TP (Silvex), TCLP	EPA 1311	EPA 8151	See See	Attachment	0.075
		$\alpha$		//	

ND = Not Detected

NA = Not Applicable

PQL = Practical Quantitation Limit

Authorized Signature(s)

Environmental Laboratory Accreditation Program Certificate No. 1131, LACSD No. 10138
Any remaining sample(s) for testing will be disposed of 30 days from receipt date unless notified.



### Weck Laboratories, Inc.

Environmental and Analytical Services - Since 1964

Report Date: Friday, June 18, 2004 Received Date: Monday, June 14, 2004

Received Time: 3:15 pm

Turnaround Time: 5 days

Positive Lab Service

781 East Washington Blvd. Los Angeles, CA 90021

Phone: (213) 745-5312 FAX: (213) 745-6372 /

Attn:

Client:

John Schmidt

Project: 20041535 P.O.#: 6302

#### Certificate of Analysis

Work Order No: 4061421-01 Sampled by: Client

Sample ID: 20041535-001

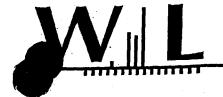
Matrix: TCLP

Sampled: 06/09/04 00:00

Sample Note:

Reporting

				reporting						
Analyte	Result	Qualifier	Units	Limit	Dilution	Method	Prepared	Analyzed	Batch	
Soluble 2,4-D on TCLP Extract	ND		ug/l⊹	2.0	1	EPA 8151A	06/15/04	06/17/04 h	n W406439	7
Soluble 2,4,5-TP on TCLP Extra	ct ND		ug/l	0.50	1 :	EPA 8151A	06/15/04	06/17/04 h	n W406439	
Surrogate: 2,4-DCAA			87.5%	60-15	7		06/15/04	06/17/04 h	n <i>W406439</i>	i
								and the second second		



### Weck Laboratories, Inc.

Environmental and Analytical Services - Since 1964

#### **Quality Control Report** Weck Laboratories, Inc

#### Chlorinated Herbicides by EPA Method 8151A - Quality Control

	ample Lesult	QC Result		Qualifier	Units	Spike Level	%REC	%REC Limits	RPD	RPD Limit
Batch W406439 - EPA 3510C										•
Batch W406439 - EPA 3510C										
Blank (W406439-BLK1)		····		<u> </u>		Prepared	: 06/15/04	Analyzed	l: 06/17/04	
Soluble 2,4-D on TCLP Extract		ND		•	ug/l					
Soluble 2,4,5-TP on TCLP Extract		ND		1	ug/l					
Surrogate: 2,4-DCAA			18.8		·ug/l	20.0	94.0	60-157		
LCS (W406439-BS1)			-			Prepared	: 06/15/04	Analyzed	l: 06/17/04	
Soluble 2,4-D on TCLP Extract	_	4.61		•	ug/l	5.00	.92.2	49-1.69		•
Soluble 2,4,5-TP on TCLP Extract		2.49			ug/l	2.50	99.6	37-183		
Soluble 2,4,5-11 on 10th Daniellinia Surrogate: 2,4-DCAA	±		15.5		ug/l	20.0	77.5	60-157		
LCS Dup (W406439-BSD1)	·			· ·		Prepared	06/15/04	Analyzed	: 06/17/04	
Soluble 2,4-D on TCLP Extract		3.43		QR-02	ug/l	5.00	68.6	49-169	29.4	25
2,4,5-TP-on TCLP Extract		1.93		OR-02	ug/l	2.50	77.2	37-183	25.3	25
2: 2,4-DCAA			14.0		ug/l	20.0	70.0	60-157		
					•				Y	• ,



Authorized Signature

Contact Jayna Kostura

(Project Manager)

ELAP #1132 LACSD # 10143

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

The Chain of Custody document is part of the analytical report.

any remaining sample(s) for testing will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

ND=Not detected, below the reporting limit.

hub=Subcontracted analysis, original report enclosed.

f sample collected by Weck Laboratories, sampled in accordance to SOPMIS002

#### lags for Data Qualifiers:

)R-02 = The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent ecoveries and completeness of QC data.

Page 2 of 2

#### iality Lab -Food

CHAIN OF STODY & ANALYSIS REQ

3375 Koapaka St., Suite G314 Honolulu, Hawaii 96819 Tel: (808) 535-6066/Fax: (808) 535-6069

Report to:	Anos teenmoer	Contact Person: Any France
Address:	COM CENTRAL LAB	Phone #: 849 6 109 2-13
-	450 WELSCHAO RO	Fax #: 579 6369
<del>-</del>	1146 11 91753	Cell #:

Project Name:	UIC LAYANA
Job No./P.O.#:	124383
Sampled By:	Roser Rosener
Temp. Control:	

				1.5	ž.		â. ,	at 1	·	
	Lab #	Sample Location/Description	Date	Time	Grab	Comp.	On-site pH	On-site Cl2	On-site Temp.	Analysis Requested
D	1	Laharna hurt	विद्यविद्	OFTO	and the same	مر				NH3. NO3-NOZ. TW
ì	2	•	٧.			م	,			Callek, Na.V. Zn
	3	s legister was	ધ			×	横。			TDS OCONO P
	4	The state of the s	4			×				Specke from CI-, FI, S T-ALK, SILLAGE
	5	Y San San	٩			ص	18			Pheno (
	6	u e			P		2 × 1977 ×			Ignitability Consoruty
J	17	u Silver significant			×		- 100 B			0+6
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RELINQUISHED BY SIGNATURE	DATE	SIGNATURE Helani Olsen	G/a/o4
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## Food Quality Lab

# CHAIN OF CUSTODY & ANALYSIS REQUEST

3375 Koapaka St., Suite G314 Honolulu, Hawaii 96819

Tel: (808) 535-6066/Fax: (808) 535-6069

Report to:	Ania Fearmore	Contact Person:	Andre ferral
Address:	MM CENTRAL LAS	Phone #:	8796109 213
	KHEN HI 96753	Fax #:	879.6369
	elso Weight HAO PD	Cell #:	

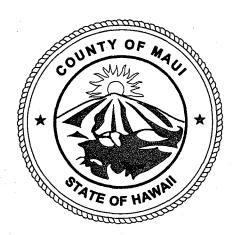
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Job No./P.O.#:	128 383
Sampled By:	Rogert Rycuinsas
Temp. Control:	

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# County of Maui

Wastewater Reclamation Division

# LAHAINA WASTEWATER RECLAMATION FACILITY

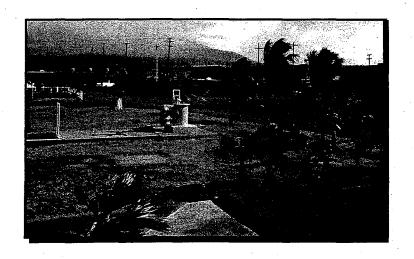
Underground Injection Control (UIC) Injection Well Status Report Number 18

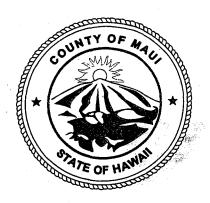
July 2004

UIC Permit No. UH-1357 Facility I.D. No. 6 - 5641.01

Submitted to:

State of Hawai'i Department of Health Safe Drinking Water Branch





### **COUNTY OF MAUI**

WASTEWATER RECLAMATION DIVISION

# LAHAINA WASTEWATER RECLAMATION FACILITY

Underground Injection Control (UIC)
Injection Well Status Report Number 18

July 2004

UIC Permit No. UH-1357 Facility I.D. Number 6 - 5641.01

Submitted to:

State of Hawai'i Department of Health Safe Drinking Water Branch

This work was prepared by me or under my supervision:

Scott R. Retlins, P. E. Lic. Number 8067 County of Maui

# UIC INJECTION WELL STATUS Report No. 18 County of Maui

#### Wastewater Reclamation Division

# LAHAINA WASTEWATER RECLAMATION FACILITY July 2004

#### **List of Contents**

	Hydrologic, Geologic, and Environmental Setting
	Well Operation and UIC Permit Requirements
	Well Construction
	Well Modifications
LAH	AINA WWRF INJECTION WELL SYSTEM STATUS
	Overall Well Operation
	Flow and head build-up measurement
	Well cleaning and maintenance
	Injection Well Test and Data Analysis Methodology
	Well Depth Measurements
	LWWRF Well 1 Performance Evaluation
	Injection wellhead and ground surface conditions
	Injection capacity
	Injection well failures
	LWWRF Well 2 Performance Evaluation
	Injection wellhead and ground surface conditions
	Injection capacity
	Injection well failures
	Injection wellhead and ground surface conditions
	Injection capacity
	Injection well failures
	LWWRF Well 4 Performance Evaluation
	Injection wellhead and ground surface conditions
	Injection capacity
	Injection well failures
	injocaton won fantatos
CONC	LUSIONS AND RECOMMENDATIONS

### List of Figures and Tables

Figure 1. Schematic of LWWRF effluent distribution system	7
Figure 2. Water level in LWWRF Well 1 during injection evaluation	12
Figure 3. Linear extrapolation of Well 1 injection test data	13
Figure 4. Water level in LWWRF Well 2 during injection evaluation	15
Figure 5. Linear extrapolation of Well 2 injection test data	18
Figure 6. Water level in LWWRF Well 3 during injection evaluation	
Figure 7. Linear extrapolation of Well 3 injection test data	23
Figure 8. Water level in LWWRF Well 4 during injection evaluation	. 27
Figure 9. Linear extrapolation of Well 4 injection test data	. 28
Figure 10. Lahaina WWRF Historical Injection Well Capacity	. 30
	: '
Table 1. Summary of well depth measurements	9
Table 2. Flow rate versus water surface elevation at LWWRF Well 1	. 10
Table 3. Historical injection capacity summary for LWWRF Well 1	. 11
Table 4. Flow rate versus water surface elevation at LWWRF Well 2	
Table 5. Historical injection capacity summary for LWWRF Well 2	. 17
Table 6. Flow rate versus water surface elevation at LWWRF Well 3	
Table 7. Historical injection capacity summary for LWWRF Well 3	
Table 8. Flow rate versus water surface elevation at LWWRF Well 4	
Table 9. Historical injection capacity summary for LWWRF Well 4	
Table 10. Injection capacity test results	. 29

#### **BACKGROUND**

The County of Maui Wastewater Reclamation Division (County) operates a Class V, Subclass AB, injection well system consisting of four injection wells (Wells 1 - 4) at the Lahaina Wastewater Reclamation Facility (LWWRF). Operation is in accordance with **Underground Injection Control (UIC) Permit No. UM-1357**, first issued October 2, 1992 and renewed most recently on March 29, 2000 by the State of Hawaii Department of Health (DOH). This UIC status report covers the period January, 2003 through July 2004 and summarizes the County of Maui's July 2004 site investigations and assessment of well performance.

Following is a summary of LWWRF injection well background information. For a more detailed description, please refer to LWWRF UIC Status Report Nos. 1-3.

#### **Plant Location**

Address:

3300 Honoapiilani Hwy., Honokowai, Lahaina, Maui

Tax Map Key Number:

4-4-02:29

Geographical Coordinates:

Latitude 20° 56' 55" North;

Longitude 156° 41' 25" West

#### Hydrologic, Geologic, and Environmental Setting

Site Elevation:

Between 26 and 32 feet mean sea level (msl)

Geology:

[0 to 30 ft below ground surface (bgs)] - Ewa silty clay

loam

[30 to 75 ft bgs] - limestone

[> 75 ft bgs] - fractured layers of Wailuku lava basalt

Soil Permeability:

Moderate

Groundwater Recharge:

Low due to low rainfall

Static Water Elevation:

Approximately 1 foot msl

Tidal Effects:

Negligible

#### Climate

Average Annual Rainfall:

Approximately 20 inches

Temperature Range:

50 - 95 degrees Fahrenheit

#### Well Operation and UIC Permit Requirements

Primary Discharge:

Secondary treated domestic sewage effluent with advanced

effluent filtration and disinfection to R-1 standards

Max. Ave. Wkly Discharge: 9.0 million gallons per day (mgd)

Max. Daily Discharge:

19.8 mgd

Injectate Requirements:

Arithmetical Average (BOD/TSS):

Biochemical oxygen demand (BOD): < 30 mg/L

Total suspended solids (TSS): < 30 mg/L

Residual chlorine: > 0.1 mg/L

#### **Well Construction**

Injection Well No.	1	2	3	4
Construction date	1979	1979	1985	1985
Total depth of well (ft)	200	180	225	255
Bottom of well elev.(ft)	-168	-150	-200	-229
Flow meter	McCro	ometer in-l	ine propel	ler type
Solid casing (w/3 ft. stick up)				
Length (ft)	88	88	108	108
Diameter (inches)	20	20	20	20
Material	steel	steel	steel	steel
Perforated casing				
Length (ft)	115	<u>-</u>	· <b>-</b>	150
Diameter (inches)	14	-	-	14
Material	steel	-	-	steel
Open hole				
Length (ft)		95	120	-

#### Well Modifications

Date of Modification	Description
1994	Wells 1 - 4: Consolidation of effluent
	disposal scheme; incorporation to SCADA
	system; addition of surge air supply piping,
	overflow line, chemical access port, flow
	meter, and valve/flow meter vault
1999	Well 1: Installation of 115 feet of perforated
	casing in the open bore section of the well

#### LAHAINA WWRF INJECTION WELL SYSTEM STATUS

#### **July 2004**

In accordance with the October 1999 UIC Injection Well Status Report Guidelines, the County of Maui WRD personnel conducted an onsite inspection and performance assessment of LWWRF Injection Wells 1 through 4 on January 22 and 30, 2004. Activities associated with the wells that have transpired since the last UIC status report and summaries of the results and recommendations from this most recent UIC inspection are bulletized below. The comprehensive UIC status report follows this summary section.

#### Activities/Actions Since Previous UIC Status Report

- Monthly well inspections and standard well head maintenance
- Cleaning of all Wells in July 2004
- Weekly effluent quality analyses
- Completed replacement of control valve stem at Well No. 2 in January 2004
- Replaced bolts on flange in meter box for Well No. 2
- Bailed debris from the bottom of Well No. 2

#### Results and Recommendations for UIC Status Report No. 18

- Continue current operating and maintenance procedures with an extra emphasis on corrosion control
- Monitor the performance of Wells No. 3 and 4 for any significant capacity reduction
- Continue quarterly well cleaning and closely monitor performance
- Consider Scheduling Well No. 3 for air-burst cleaning

#### **Overall Well Operation**

The current average dry-weather flow to LWWRF is approximately 5.0 million gallons per day (mgd). The plant provides secondary treatment using the activated sludge biological process without primary sedimentation. Preliminary treatment includes mechanical bar screens and grit removal at the headworks. Advanced treatment to the State Department of Health R-1 effluent

quality was achieved in 1995 by the addition of filtration, UV disinfection, nutrient removal, and improved sludge handling capabilities.

The concentration of the monthly average effluent discharge is typically less than 5 mg/l for both biochemical oxygen demand (BOD) and total suspended solids (TSS). These concentrations are well below the maximum allowed in the UIC permit.

All four injection wells are fed by gravity from the effluent distribution structure located just north of the effluent filters. Three of the eight filter cells are designed to route filtered effluent (FE) to the UV system for reuse purposes, but can also be directed to the effluent distribution structure.

Effluent from the remaining five cells flows directly to the effluent distribution structure. All effluent routed to the wells is chlorinated at the effluent distribution structure to meet a 0.1 mg/L residual. The effluent distribution structure provides hydraulic control of the majority of the flow to the injection well system. An adjustable weir gate in this structure ranges from minimum elevation 29 feet msl to a maximum of 34.5 feet msl. Downstream of the weir, effluent is transported to all the wells via a 36-inch diameter ductile iron FE pipe network. Smaller diameter piping which branch from the 36-inch pipe serve the individual wells.

Alternate routes for FE to pass to Wells 1 and 2 include the reclaimed water clearwell, located downstream of the UV structure in the reuse system and the 1985 pump station. Although these disposal methods will rarely be used, they demonstrate the flexibility and operational latitude in the LWWRF effluent distribution system. A schematic of the effluent distribution network is presented in Figure 1.

Flow and head build-up measurement. Flow can be monitored at each wellhead using the McCrometer in-line propeller meters. All wells have digital display units. Flowrates are monitored and recorded by SCADA. Head build-up measurement is currently not measured at the injection wells.

Well cleaning and maintenance. Well cleaning procedures are now performed quarterly, or as needed. The last well cleanings were performed during July 19, 2004. The standard cleaning process involves connecting a 140 psi (pounds per square inch) compressor to the air surge line in each well. For each well, the influent line preceding the well is closed and the overflow line

opened to receive the surged water from the well. Cleaning has helped to reduce plugging of the wells and to maximize the injection capacities of the wells.

In addition to the standard air surging method, Well No.'s 1 and 2 were cleaned in August 2002 using an air-burst technology method. This method tends to clean the wells better than the usual method, but at a much higher cost. Future consideration should be given to cleaning well 3 via this method. Bailing of debris from the bottom of Well No. 2 was completed on June 8, 2004 thus restoring most of the original depth.

Monthly well inspections are completed by plant staff and include documentation of leaks, corrosion, equipment changes or repairs, well level changes, and wellhead maintenance work.

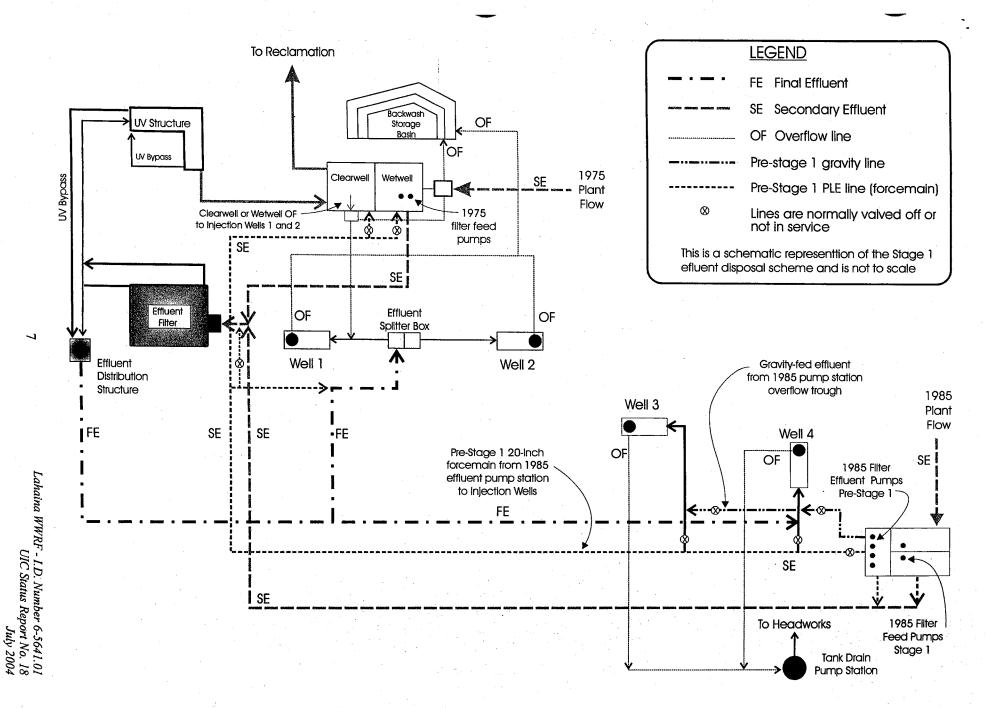


Figure 1. Schematic of LWWRF effluent distribution system

#### Injection Well Test and Data Analysis Methodology

County of Maui WRD personnel made a site visit to LWWRF on July 9, 2004 and again on July 22, 2004. Each wellhead, related appurtenances, and surrounding area were visually inspected to assess the operational and structural condition of the well system. In addition, current well depths were measured and wellhead photographs were taken.

Access to each well was achieved through the 3-inch diameter chemical feed port in the wellhead casing. The bottom lip of the port is a useful datum because it is both the lowest elevation point of the well that can be opened to the atmosphere and the point of access used for evaluation of the well. Therefore, when extrapolating the test data to estimate maximum well capacity, the elevation of the port at each well was used as the maximum allowable water level that could be attained without leakage from the well. Elevations of the ports were calculated based on ground surface elevations from the UIC permit. An In-Situ Inc. Troll pressure transducer/data logger was installed to monitor water levels in each well for the duration of the test. A transducer was set in each well to provide direct readings of the head of water above the unit. These head values were used to calculate approximate water surface elevations with respect to mean sea level. Injection tests were performed at a minimum of three different injection rates. Each injection rate was achieved by adjusting the butterfly valve at the well being tested and/or closing the butterfly valves at the other wells. Each flow rate was maintained for a minimum of 12 minutes to ensure that a stable water level was attained. The injection rates were progressively increased with the final injection rate corresponding to the maximum well capacity, the total available plant flow or that flowrate that could be reliably maintained for the duration of each step.

The data obtained from the injection tests were analyzed to estimate the injection and well capacities of each well. Injection capacity, which is the ratio of injection rate to head build-up, is a valuable measure of well performance. A significant decrease in injection capacity may suggest clogging of the well. Theoretical well capacity, which is the maximum injection rate that the well can receive without overflowing, is also a good measure of well performance, but is not as reliable. Because the theoretical well capacity is based on the amount of head available in the well, environmental effects on the static water elevation can cause fluctuation in the calculated theoretical well capacity. The injection and theoretical well capacities of each well were compared to previous UIC evaluations to identify potential trends in well performance.

However, results from two previous evaluations, performed by R. M. Towill and GeoLabs, can not be correlated accurately to either Brown and Caldwell results or the County of Maui's because of differing methodology in data analysis. This is discussed in greater detail in Kihei WWRF UIC Status Report No. 5.

#### Well Depth Measurements

Sounding of the injection well was performed with a weighted 3/8 inch rope test line marked in one foot increments. The depth of each well was measured and compared to the depth specified by the UIC permit. Depth measurements are useful to identify possible obstructions or excessive sediment build-up in the well. Wells 1, 3 and 4 showed little change in depth from the initial construction measurements. Videotape of the wells in December 2001 showed considerable debris in Well No. 2. This leads to the belief that the well depth has not changed but merely the ability of the weighted rope to pass through to the bottom has been hampered. Table 1 below presents the depth measurements of each well in comparison with the depths stated in the UIC permit.

Table 1. Summary of well depth measurements

Well	UIC Permit	Field-measured	Field-measured	
No.	Depth (ft.)	Depth (ft.) 1/04	Depth (ft.) 7/04	
1	200	197	209	
2	180	167	173	
3	225	224	226	
4	255	258	258	

#### **LWWRF Well 1 Performance Evaluation**

Well 1 was closed for approximately 0 .5 hours prior to testing on July 9, 2004. At 12:29 PM, the static water level was measured by a Solinst depth sounder to be approximately 4.8 feet msl. Starting at about 12:32 PM, Well 1 was tested at three different flowrates. These flowrates and their corresponding water levels are shown in Table 2.

Table 2. Flow rate versus water surface elevation at LWWRF Well 1

Flow rate	Flow rate	Water surface
(gpm)	(mgd)	elevation (ft msl)
300	0.43	6.85
600	0.86	15.67
900	1.30	25.11

The peak water elevation of 25.11 feet msl was about 7.2 feet below the elevation of the chemical injection port. To achieve the flowrate of 900 gpm at Well 1, Well 2 was closed completely while Well 3 and 4 were partially open to accept excess flow that could not be accommodated by Well 1. At 1:20 PM, flow to Well 1 was terminated, and full recovery was achieved within 5 minutes. In Figure 2, a graphic illustration of the approximate water surface elevation during testing and recovery of Well 1 is presented.

Injection wellhead and ground surface conditions. Well 1 is located just east of the operations building in the north half of the plant. The WWRD inspection team saw no indication of leaking from the well or in the flow meter vault. The wellhead and adjacent flow meter vault appeared to be well maintained. Minor corrosion of the wellhead flanges and associated bolts were evident at the time of inspection. The wellhead slab is free of cracks and no intrusive vegetation or ponding water was observed.

Injection capacity. The maximum injection rate could not be attained during the test due to the instability of the plant to supply flow at higher injection rates. Using the elevation of the injection port (32.3 ft msl) as the maximum allowable water elevation, a theoretical well capacity was developed by extrapolating known data points. This linear extrapolation is presented in Figure 3. The estimated injection capacity for this test round was calculated to be approximately 39 gpm/ft (0.06 mgd/ft). This injection capacity is 1% less than the last evaluation in January 2004. Results have been fairly consistent since January 2002.

The theoretical well capacity was determined to be 1,138 gpm. The theoretical well capacity is simply an estimate based on the available head in the well, and does not accurately reflect hydraulic constraints in the flow distribution network.

Table 3 below summarizes the injection capacities in previous UIC evaluations for Well 1 (theoretical well capacities were not calculated prior to the June 1998 UIC evaluation).

Table 3. Historical injection capacity summary for LWWRF Well 1

UIC	Test	Max Flow Rate	Estimated Injection	Theoretica	ıl Well Cap.ª
Report	Date	Achieved (gpm)	Capacity (gpm/ft)	gpm	mgd
1	July-94	1,000	50	N/A	N/A
2	Jun-95	1,300	65	N/A	N/A
3	Apr-96	900	40	N/A	N/A
4 b	Mar-97	N/A	N/A	N/A	N/A
5 b	Sept-97	1,400	70	N/A	N/A
6	Jun-98	2,000	100	2,600	3.7
7	Dec-98	1,500	75	2,000	2.9
8	Jun-99	1,600	70	2,100	3.0
9	Jan-00	1,300	57	1,637	2.4
10	Aug-00	1,100	65	1,892	2.7
11	Jan-01	1,020	47	1,371	2.0
12	July-01	1,100	55	1,598	2.3
13	Jan-02	870	37	1,064	1.5
14	July-02	980	42	1,215	1.7
15	Jan-03	1,050	52	1,504	2.2
16	July-03	1,000	51	1,461	2.1
17	Jan-04	900	40	1,085	1.6
18	July-04	900	39	1,138	1.6

<sup>\*</sup> theoretical well capacities were extrapolated using known data point, if available head existed at the maximum flow rate achieved during testing.

Injection well failures. There have been no documented failures of Well 1. Based on the July 2004 inspection and performance evaluation, well failure is unlikely in the near future.

bevaluation performed by R. M. Towill/GeoLabs - values shown only for added perspective

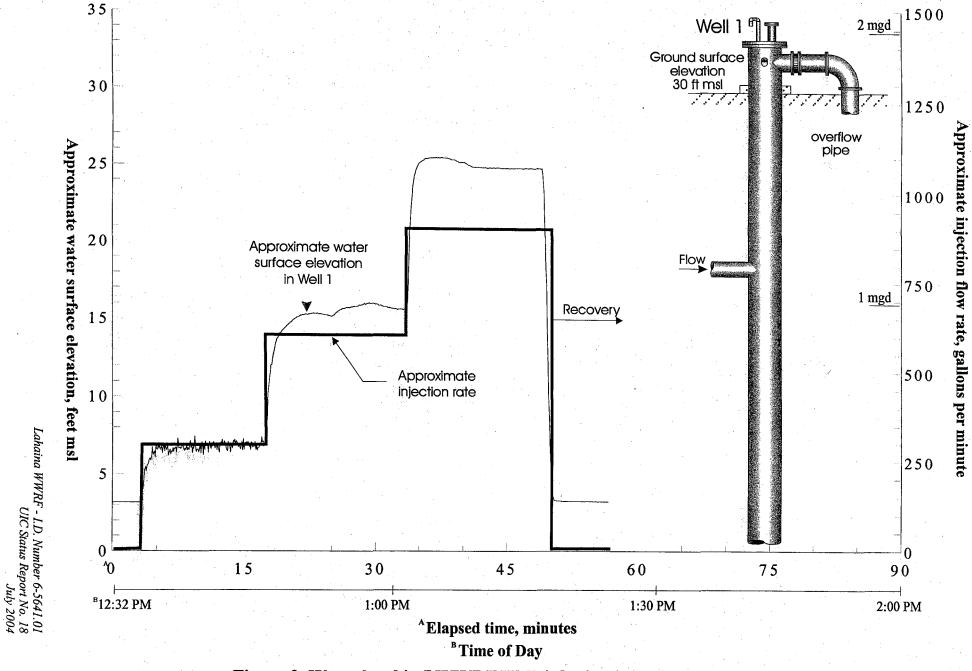


Figure 2. Water level in LWWRF Well 1 during injection evaluation

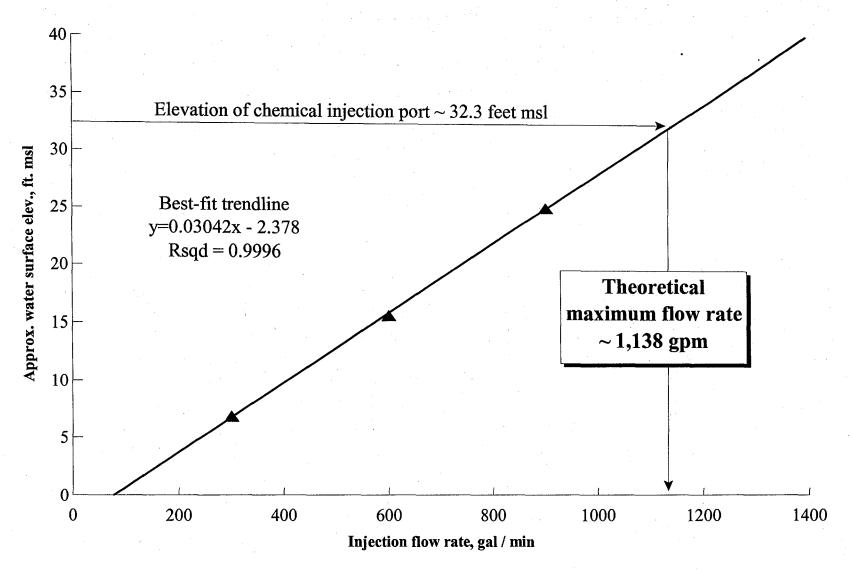


Figure 3. Linear Extrapolation of LWWRF Well 1 Injection Test Data

#### **LWWRF Well 2 Performance Evaluation**

Well 2 was closed for approximately 0.5 hours prior to testing on July 22, 2004 At 9:00 AM the static water level was measured by a Solinst depth sounder to be approximately 3.03 feet msl. Starting at about 9:10 AM, Well 2 was tested at three different flowrates. These flowrates and their corresponding water levels are shown in Table 4.

Table 4. Flow rate versus water surface elevation at LWWRF Well 2

Flow rate	Flow rate	Water surface	
(gpm)	(mgd)	elevation (ft msl)	
1,000	1.44	9.63	
1,500	2.16	11.97	
2,300	3.31	12.58	
3,400	4.98	11.76	

To achieve the desired flow rates used during the test, Wells 1 and 3 were closed completely. During the third step Well 4 was partially closed. At the highest flow rate there was about 19.7 feet of freeboard in the well. It was observed during the difficult adjustment of the injection rate to the third step that injection rates approaching 7.0 mgd for short durations of time did not show a great increase in well level. Upon termination of injection at 10:36 AM, the well recovered fully in approximately 8 minutes. . In Figure 4, a graphic illustration of the approximate water surface elevation during testing and recovery of Well 2 is presented.

Injection wellhead and ground surface conditions. Well 2 is located just east of the operations building, about 120 feet south of Well 1. The inspection group saw no indication or evidence of leaking from the well or vault. The wellhead and adjacent flow meter vault appeared to be in good condition. Minor corrosion of the wellhead flanges and associated bolts was evident at the time of inspection. The wellhead slab is free of cracks. The flow control valve locate at the well head was recently replaced due to a broken stem. No intrusive vegetation or ponding water was observed. It was noted that the several bolts on pipe flanges within the meter vault that were observed to be experiencing significant corrosion were replaced. Photos of the well and vault can be found in the appendix.

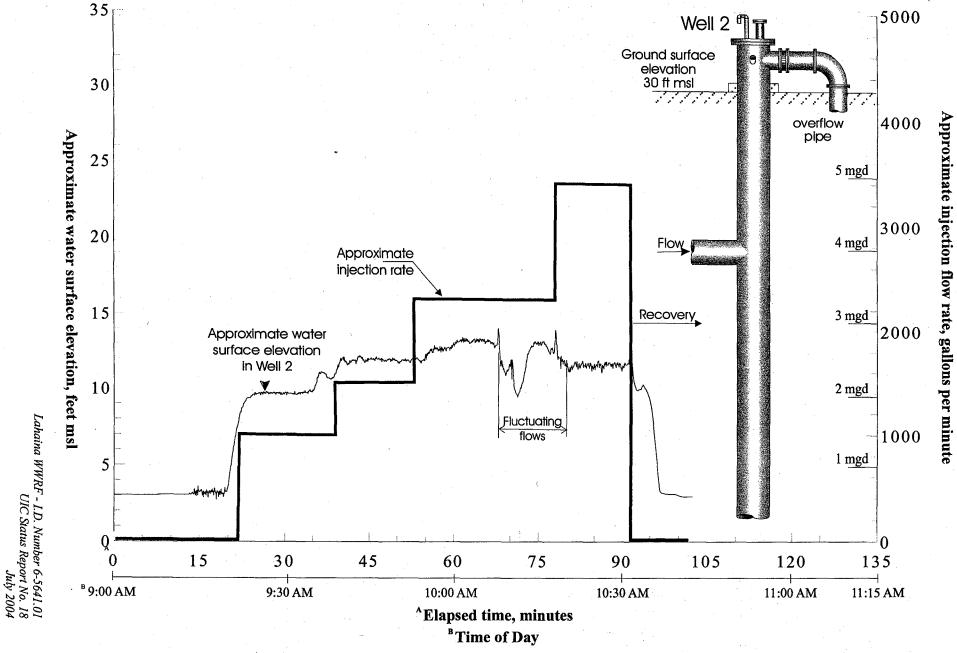


Figure 4. Water level in LWWRF Well 2 during injection evaluation

**Injection capacity.** The maximum injection rate could not be attained during the test because of limitations in available plant flow and the high capacity of the well. Using the elevation of the injection port (32.3 ft msl) as the maximum allowable water elevation, a theoretical well capacity was developed by extrapolating the test data. This linear extrapolation is presented in Figure 5.

The estimated injection capacity for this test round was calculated using regression analysis to be approximately 1,076 gpm/ft (1.55 mgd/ft). The estimated injection capacity represents an increase of approximately 25% over the last evaluation. The theoretical well capacity was found to be about 31,483 gpm (45.3 mgd). The theoretical capacity is simply an estimate derived from the available head in the well, and does not accurately reflect hydraulic constraints in the flow distribution network. The results are further skewed by the narrow range of testing due to a lack of available plant flow (well testing is performed at the minimum injection capacity). The staff did note short duration (approx. 1 minute) flows approaching 7,000 gpm with little increase in well height over the maximum achieved during testing. We can also note that the theoretical capacity of the well is very similar to that recorded when the well was originally constructed, and is at about six times greater than the daily plant flows. Table 5 below summarizes the injection capacities and theoretical well capacity of Well 2.

Table 5. Historical injection and well capacity summary for LWWRF Well 2

UIC	Test	Max Flow Rate	Estimated Injection	Theoretical Well Cap.a	
Report	Date	Achieved (gpm)	Capacity (gpm/ft)	gpm	mgd
1	July-94	4,200	700	N/A	N/A
2	Jun-95	4,200	500	>6,300	>9.0
3	Apr-96	4,200	510	>6,600	>9.5
4 <sup>b</sup>	Mar-97	3,100	240	3,100	4.4
. 5 <sup>b</sup>	Sept-97	6,200	<b>560</b>	>6,300	>9.0
6	Jun-98	7,000	750	22,400	32.2
7	Dec-98	4,200	940	22,500	32.4
8	Jun-99	7,600	1,035	30,800	44.4
9	Jan-00	6,000	4,985	146,429	210.9
10	Aug-00	4,200	7,044	206,684	297.6
11	Jan-01	5,500	4,741	139,308	200.6
12	July-01	5,700	2,425	70,601	101.7
13	Jan-02	6,000	1,652	48,219	69.4
14	July-02	4,000	917	26,985	38.9
15	Jan-03	5,000	971	28,191	40.6
16	July-03	3,300	648	18,790	27.1
17	Jan-04	4,200	858	25,116	36.2
18	July-04	3,400	1,076	31,483	45.3

<sup>\*</sup>theoretical well capacities were extrapolated using known data point, if available head existed at the maximum flow rate achieved during testing.

**Injection well failures.** There have been no documented failures of Well 2. Based on the July 2004 inspection and performance evaluation, well failure is unlikely in the near future.

bevaluation performed by R. M. Towill/GeoLabs - values shown only for added perspective

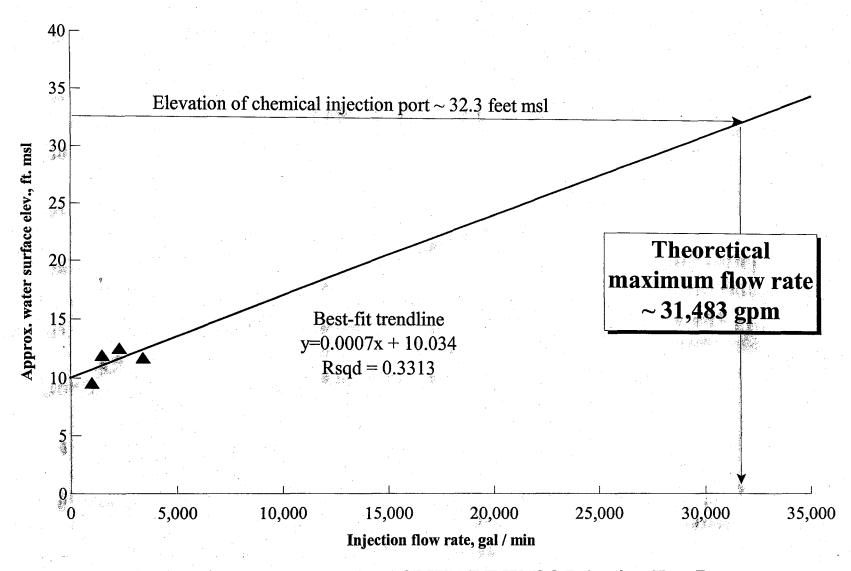


Figure 5. Linear Extrapolation of LWWRF Well 2 Injection Test Data

#### **LWWRF Well 3 Performance Evaluation**

Well 3 had not received effluent for approximately 45 minutes prior to testing, ensuring a static water level had been attained. At 10:28AM on July 9, 2004, the static water level was measured by a Solinst depth sounder to be approximately 3.11 feet msl. Starting at 10:38 AM, Well 3 was tested at three different flow rates. These flow rates and their corresponding water levels are shown below in Table 6.

Table 6. Flow rate versus water surface elevation at LWWRF Well 3

Flow rate	Flow rate	Water surface
(gpm)	mgd	elevation (ft msl)
400	0.58	9.98
600	0.87	15.98
950	1.37	25.10

To achieve the maximum flowrate Well 2 was closed, directing the majority of plan flow to Wells 3 and 4. The peak water elevation of 25.10 feet msl was about six inches below the elevation of the chemical injection port. Upon termination of injection at 10:51 AM, the well recovered fully within 5 minutes. In Figure 6, a graphic illustration of the approximate water surface elevation during testing and recovery of Well 3 is presented. Note that the meter readings were somewhat erratic and a constant flow value was difficult to maintain. The flow rates are best estimates of the average of meter values during the test. Additionally, the well level was at the port level at the highest flow rate, indicting this to be the maximum capacity of the well.

Injection wellhead and ground surface conditions. Well 3 is located in the southern portion of LWWRF. County inspection staff saw no indication of malfunction or leaking from the wellhead. Minimal corrosion was observed near the chemical injection access port. The wellhead and flow meter vault appeared to be very well maintained. The wellhead slab is free of cracks in the concrete, and no vegetation or ponding water was observed.

Injection capacity. The maximum injection rate was again attained during the test, as indicated by the water level being at the port elevation and verified by the data reduction. Using the elevation of the injection port (26.6 ft msl) as the maximum allowable water elevation, a theoretical well capacity was developed by extrapolating the test data. This linear extrapolation is presented in Figure 7. The well capacity was determined to be about 1,000 gpm (1.44 mgd).

This well capacity is an estimate based on the available head in the well, and does not accurately reflect hydraulic constraints in the flow distribution network. The estimated injection capacity for this test round was calculated to be approximately 43 gpm/ft (0.06 mgd/ft). This represents a increased of 17% from the last evaluation. This value is slightly beeter than the last test but still maintains a below par performance when compared to original capacity values. Table 7 summarizes the injection capacities and overall estimated capacity of Well 3.

Injection well failures. There have been no documented failures of Well 3. Based on the July, 2004 inspection and performance evaluation, well deterioration is apparent and measures such as air burst cleaning should be scheduled to check the trend. Although flow capacity remains a current issue, it seems to have stabilized and total failure is unlikely in the near future.

Table 7. Historical injection capacity summary for LWWRF Well 3

UIC	Test	Max Flow Rate	Estimated Injection	Theoretical Well Cap.a	
Report	Date	Achieved (gpm)	Capacity (gpm/ft)	gpm	mgd
1	July-94	200	50	200	0.3
2	Jun-95	2,700	150	3,500	5.0
3	Apr-96	2,400	110	2,400	3.5
4 <sup>b</sup>	Mar-97	N/A	410	2,800	4.0
5 <sup>b</sup>	Sept-97	3,300	420	N/A	N/A
6	Jun-98	3,100	270	6,500	9.4
7	Dec-98	2,900	185	4,200	6.0
8	Jun-99	3,000	155	3,700	5.4
9	Jan-00	2,500	124	2,900	4.2
10	Aug-00	3,100	248	5,887	8.5
11	Jan-01	2,180	129	3,076	4.4
12	July-01	1,725	78	1,831	2.6
13	Jan-02	1,550	73	1,715	2.5
14	July-02	1,450	72	1,714	2.5
15	Jan-03	1,200	57	1,337	1.9
16	July-03	1,050	46	1,057	1.5
17	Jan-04	840	36	850	1.2
18	July-04	950	43	1,000	1.4

<sup>\*</sup> theoretical well capacities were extrapolated using known data point, if available head existed at the maximum flow rate achieved during testing.

bevaluation performed by R. M. Towill/GeoLabs - values shown only for added perspective

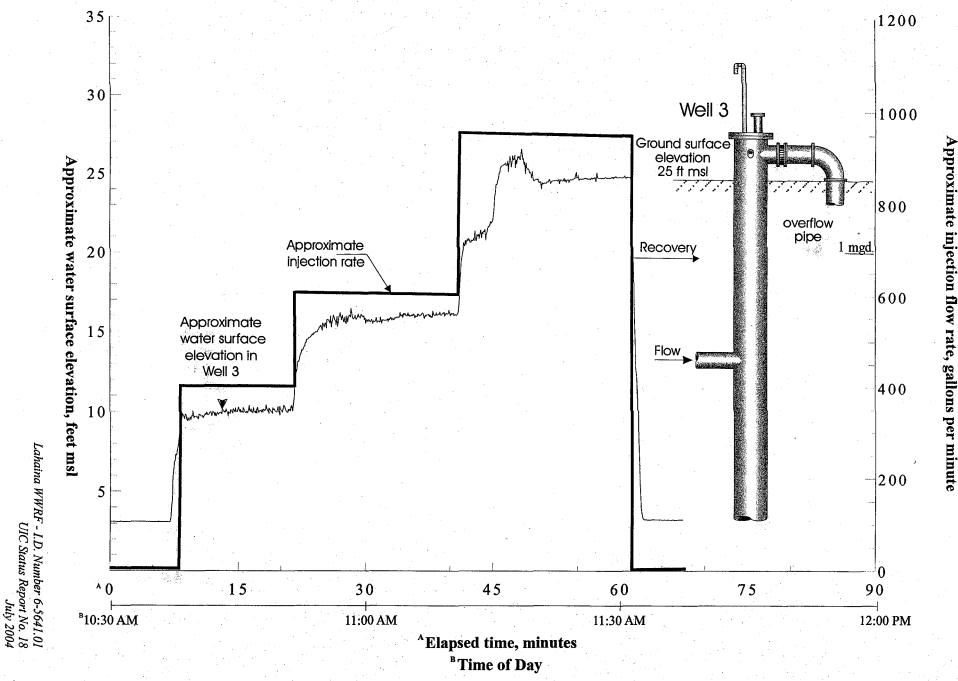


Figure 6. Water level in LWWRF Well 3 during injection evaluation

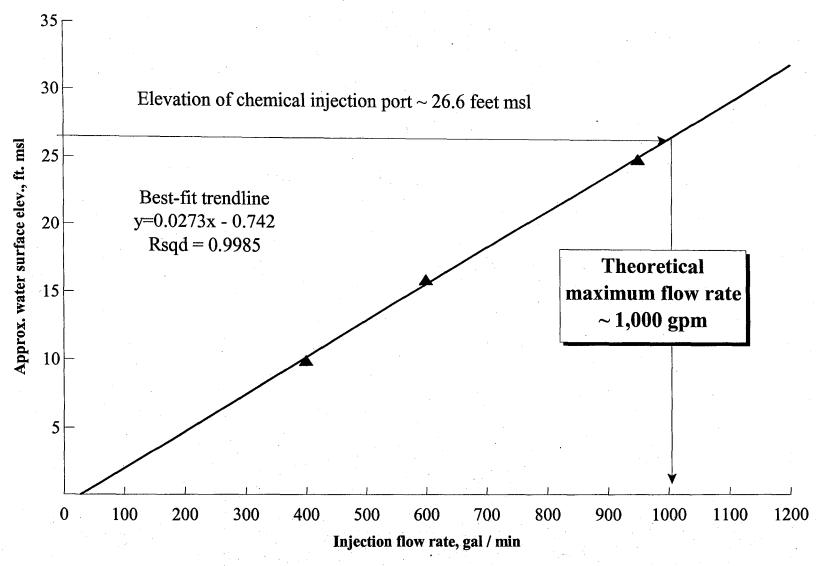


Figure 7. Linear Extrapolation of LWWRF Well 3 Injection Test Data

#### **LWWRF Well 4 Performance Evaluation**

Well 4 was closed approximately one half hour prior to testing on July 22, 2004. At 11:20 AM, the static water level was measured by a Solinst depth sounder to be approximately 3.39 feet msl. Starting at about 11:30 AM, Well 4 was tested at four different flowrates. These flowrates and their corresponding water levels are shown in Table 8.

Table 8. Flow rate versus water surface elevation at LWWRF Well 4

Flow rate	Flow rate	Water surface
(gpm)	(mgd)	elevation (ft msl)
700	1.01	10.79
1,400	2.02	17.78
1,900	2.74	22.26
2,000	2.88	22.90

To achieve the maximum flow rate, Well 3 was completely closed and well 2 was partially closed, directing the plant flow to Well 4. The peak water elevation of 22.90 feet msl was about 5.3 feet below the elevation of the chemical injection port. Upon termination of injection at 12:30 PM, the well recovered completely in approximately five minutes. In Figure 8, a graphic illustration of the approximate water surface elevation during testing and recovery of Well 4 is presented.

**Injection wellhead and ground surface conditions.** Well 4 is located in the southern portion of LWWRF. The wellhead and flow meter vault appeared to be well maintained, and the County personnel saw no indication of leaking from the well. Some minor corrosion was observed on the wellhead. The wellhead slab was free of cracks in the concrete and no ponding water was observed.

Injection capacity. The maximum injection rate could not be attained during the test because of limitations in total plant flow and the high capacity of the well. Using the elevation of the injection port (27.5 ft msl) as the maximum allowable water elevation, a theoretical well capacity of 2,471 (3.56 mgd) was estimated by extrapolating the test data. This linear extrapolation is presented in Figure 9. The estimated injection capacity for this test round was calculated to be approximately 102 gpm/ft (0.15 mgd/ft). This injection capacity represents a 6 percent increase since the last evaluation. The theoretical well capacity is simply an estimate derived from the

available head in the well, and does not accurately reflect hydraulic constraints in the flow distribution network. Table 9 below summarizes the injection capacities and overall estimated capacity of Well 4.

Table 9. Historical injection capacity summary for LWWRF Well 4

UIC	Test	Max Flow Rate	Estimated Injection	Theoretica	l Well Cap.ª
Report	Date	Achieved (gpm)	Capacity (gpm/ft)	gpm	mgd
1	July-94	200	N/A	200	0.3
2	Jun-95	3,300	220	4,900	7.0
3	Apr-96	3,800	250	6,250	9.0
4 <sup>b</sup>	Mar-97	3,000	N/A	5,100	7.3
5 <sup>b</sup>	Sept-97	3,100	280	7,500	10.8
6	Jun-98	6,700	500	12,400	17.9
7	Dec-98	2,350	245	5,600	8.0
8	Jun-99	2,600	160	3,900	5.7
9	Jan-00	3,000	217	5,300	7.6
10	Aug-00	3,200	259	6,244	9.0
11	Jan-01	2,750	248	6,131	8.8
12	July-01	2,600	145	3,526	5.1
13	Jan-02	2,550	131	3,180	4.6
14	July-02	2,600	148	3,630	5.2
15	Jan-03	2,600	187	4,550	6.6
16	July-03	2,300	156	3,800	5.5
17	Jan-04	2,000	97	2,334	3.4
18	July-04	2,000	102	2,471	3.56

<sup>\*</sup> theoretical well capacities were extrapolated using known data point, if available head existed at the maximum flow rate achieved during testing.

<sup>&</sup>lt;sup>b</sup> evaluation performed by R. M. Towill/GeoLabs - values shown only for added perspective

Injection well failures. There have been no documented failures of Well 4. Based on the July 2004 inspection and performance evaluation it appears that there is a slight downward trend in the well capacity. Future tests should be closely monitored to verify this trend and recommend corrective actions if necessary. Based on the most recent tests we would not anticipate that well failure is likely in the near future.

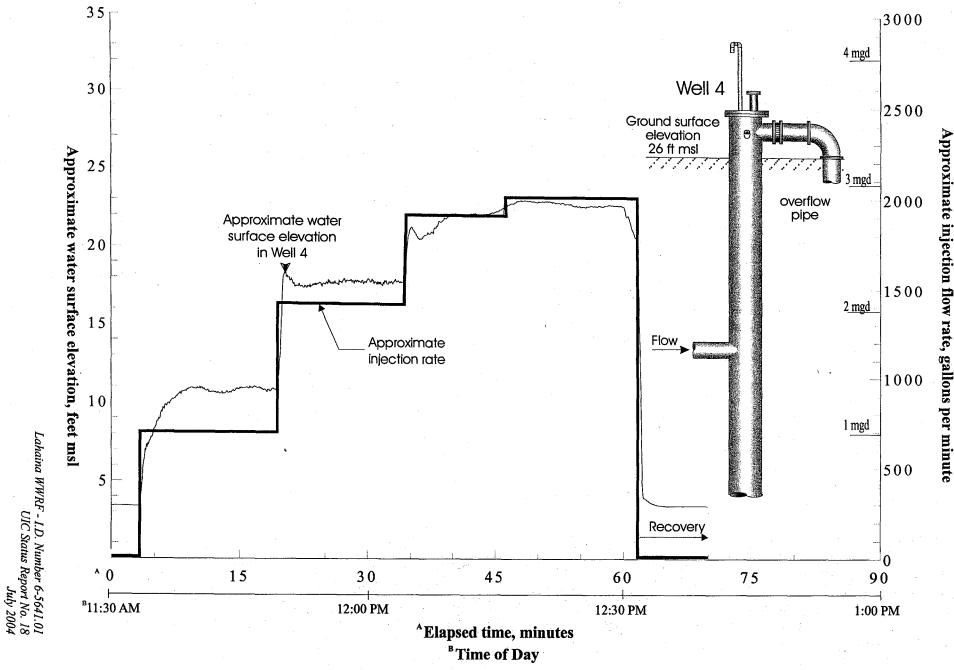


Figure 8. Water level in LWWRF Well 4 during injection evaluation

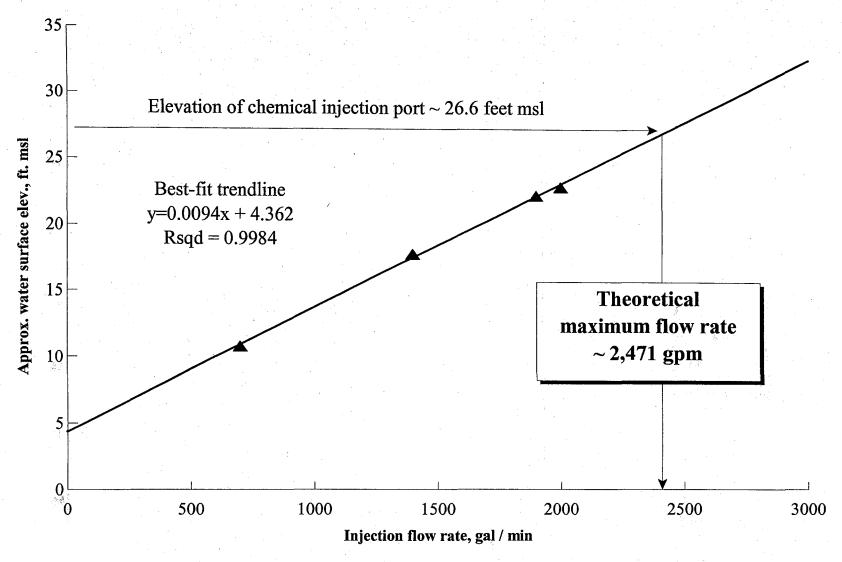


Figure 9. Linear Extrapolation of LWWRF Well 4 Injection Test Data

#### CONCLUSIONS AND RECOMMENDATIONS

Except where noted, maintenance of the wells has been adequate. Once again the evaluation staff recommends the continuation of the current maintenance program with an emphasis on corrosion control and well cleaning. The wellheads did not exhibit any significant signs of cracks in the concrete and were free of debris. Minor corrosion at the flanges, bolts, and chemical injection access ports was once again noted and warrants touch-up work. The meter vaults were relatively clean and were free of standing water.

During this evaluation the maximum injection capacity was only reached on Well No. 3. Consequently, maximum injection capacities were estimated by linearly extrapolating data collected during testing for the other three wells. It is recommended that the low capacity in Well 3 be closely monitored and cleaning with the airbust method be scheduled in the near future. Based on the data collected, Well 4 may need a similar cleaning in the foreseeable future.

A summary of the injection capacities of each well is presented in Table 10 below.

Table 10. Injection capacity test results

Well	Estimated Injection	Theoretical Injection
No.	Capacity (gpm/ft.)	Capacity (mgd)
1	39	1.64
2	1,076	45.34
3	43	1.44
4	102	3.56
TOTAL	1,260	51.98

It was determined that the theoretical well capacity of the injection well system as a whole was estimated at approximately 52 mgd. This represents an increase in well capacity of approximately 23% over the estimate of the previous tests. Figure 10 shows the historical theoretical well system capacity. It is noted that the majority of the flow capacity rests with Well No. 2. This well

has historically demonstrated large fluctuations (due to high capacity and limited testing rates) thus skewing the graph. The relatively stable capacities exhibited in Wells 1, 3 and 4

#### Lahaina WWRF

Injection Well Capacity (mgd)

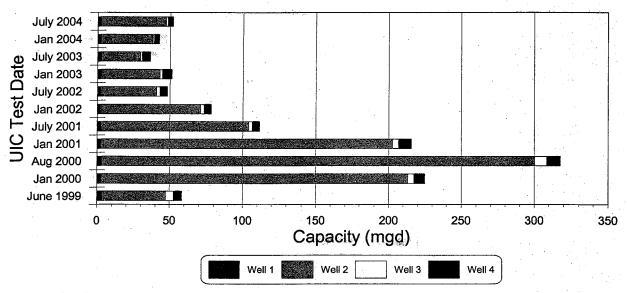
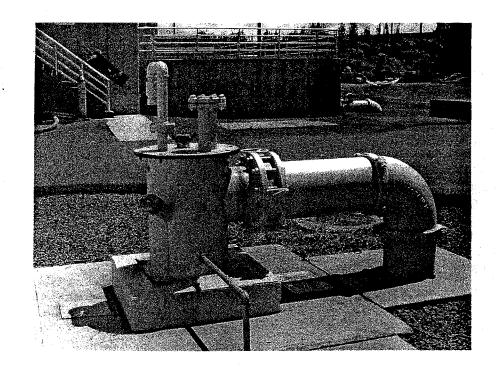


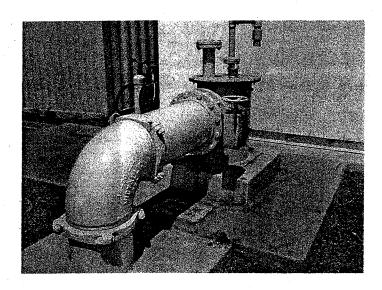
Figure 10: Lahaina WWRF Historical Injection Capacity

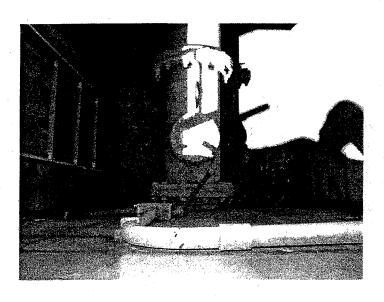
demonstrates that current cleaning procedures and water quality are helping to maintain well integrity and not degrading capacity potential. It is noted that the overall capacity remains considerably higher than the potential flow to the facility (over ten times the daily average flow, over five times the plant capacity.) These wells should, however, be observed for any new capacity variations. It must be recognized that the redundancy of the well system greatly diminishes the possibility of a failure of the effluent distribution system.

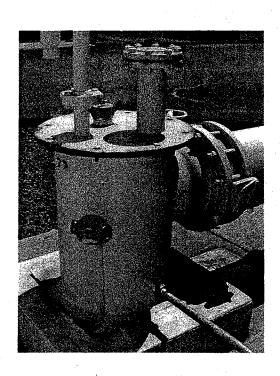
#### Lahaina WWRF Injection Wells 1 -4 UIC Status Report No. 18

Appendix
Injection Well and Wellhead Photographs
July 2004

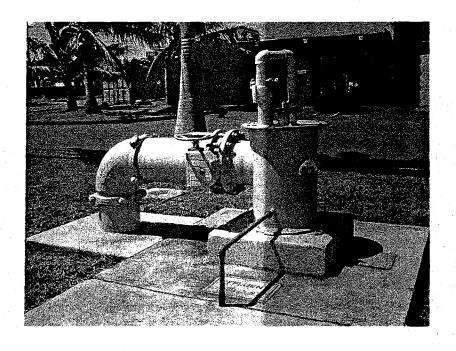


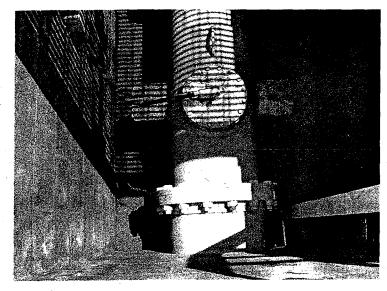


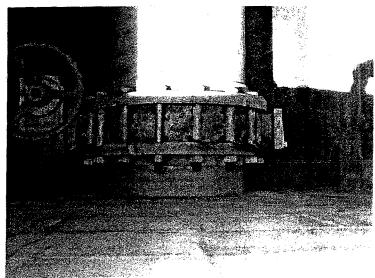




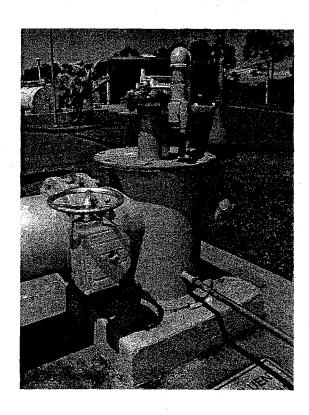
Lahania WWRF Injection Well No. 1 July 2004



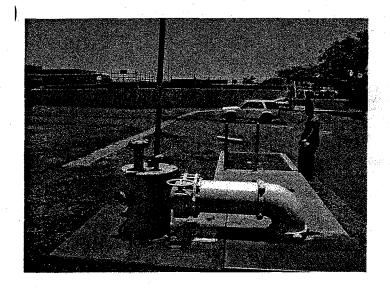


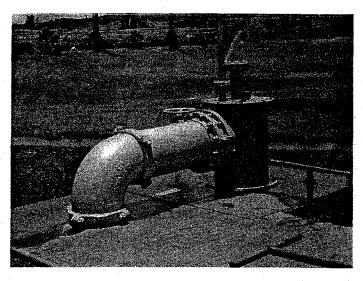


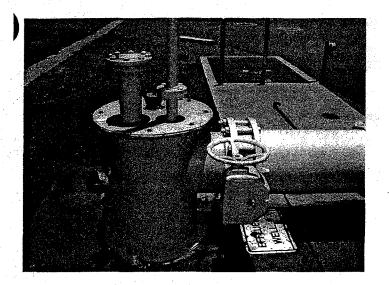
Replaced Bolts in Meter Box

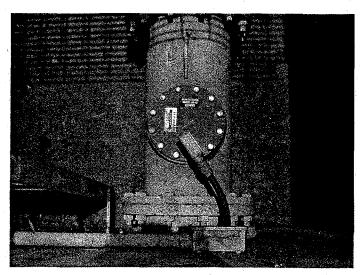


Lahania WWRF Injection Well No. 2 July 2004

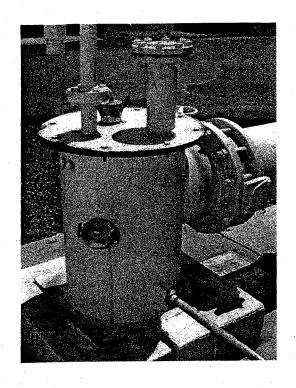






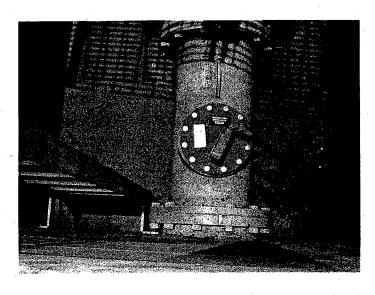


Lahania WWRF Injection Well No. 3 July 2004









Lahania WWRF Injection Well No. 4 July 2004

## LAHAINA WASTEWATER RECLAMATION FACILITY NITROGEN TESTING REPORTING PERIOD OCTOBER, NOVEMBER, DECEMBER 2003

#### I. ANALYSIS

- A. Performed by Robert Rychlinski, Sanitary Chemist
- B. Standard Methods 4500-Norg Macro-Kjeldahl
- C. Standard Methods 4500-NH3 Titrametric Method
- D. Standard Methods 4500 NO3-NO2 Automated Cadmium Reduction

#### II SAMPLE COLLECTIONS

- A. Influent samples collected at headworks building.
- B. Effluent samples collected at distribution box.
- C. Each of the influent and effluent are flow proportioned composite samples.

# LAHAINA WASTEWATER RECLAMATION FACILITY LABORATORY REPORT REPORTING PERIOD FOR OCTOBER, NOVEMBER, DECEMBER 2003

SAMPLE	DATE/TIME	NH3-N	O-N	TKN	NO3-N02	TN
		mg/L	mg/L	mg/L	mg/L	mg/L
Influent	10/2-10/3	20.8	11.1	31.9	E (A	5.46
Final Eff	0830-0730	ND	1.82	1.82	5.64	7.46
Influent	10/6-10/7	14.7	10.1	24.8		
Final Eff	0830-0730	ND	1.12	1.12	3.93	5.05
Influent	10/15-10/16	15.0	11.9	26.9		
Final Eff	0830-0730	0.04	1.01	1.05	5.03	6.08
Influent	10/20-10/21	15.8	12.0	27.8		
Final Eff	0830-0730	0.28	1.64	1.92	4.43	6.35
Influent	10/27-10/28	16.5	9.3	25.8		
Final Eff	0830-0730	0.21	1.40	1.61	4.09	5.70
Influent	11/2-11/3	16.2	10.1	26.3		
Final Eff	0830-0730	0.43	1.53	1.96	2.13	4.09
Influent <sup>e</sup>	11/9-11/10	17.3	12.4	29.7		
Final Eff	0830-0730	0.49	1.68	2.17	3.57	5.74
Influent	11/16-11/17	15.3	10.2	25.5		
Final Eff	0830-0730	0.21	1.96	2.17	3.82	5.99
Influent	11/23-11/24	16.4	11.2	27.6		
Final Eff	0830-0730	ND	1.76	1.76	3.50	5.26
Influent	12/2-12/3	15.4	12.7	28.1		
Final Eff	0830-0730	0.28	1.75	2.03	4.82	6.85
Influent	12/7-12/8	13.8	15.0	28.8		
Final Eff	0830-0730	ND	1.61	1.61	3.89	5.50
Influent	12/14-12/15	15.4	7.7	23.1	e de la companya de l	
Final Eff	0830-0730	ND	1.75	1.75	4.74	6.49
Influent	12/25-12/26	17.2	12.5	29.7	•	
Final Eff	0830-0730	2.49	1.64	4.13	3.67	7.80
Influent	12/28-12/29	18.5	11.0	29.5		
Final Eff	0830-0730	2.24	1.58	3.82	3.99	7.81

Abbreviations: NH3-N (Ammonia-Nitrogen), O-N (Organic Nitrogen), TKN (Total Kjeldahl Nitrogen), NO3-NO2 (Nitrate-Nitrite), TN (Total Nitrogen), ND (None Detected),

## LAHAINA WASTEWATER RECLAMATION FACILITY NITROGEN TESTING REPORTING PERIOD JANUARY, FEBRUARY, MARCH 2004

#### I. ANALYSIS

- A. Performed by Robert Rychlinski, Sanitary Chemist
- B. Standard Methods 4500-Norg Macro-Kjeldahl
- C. Standard Methods 4500-NH3 Titrametric Method
- D. Standard Methods 4500 NO3-NO2 Automated Cadmium Reduction

#### II SAMPLE COLLECTIONS

- A. Influent samples collected at headworks building.
- B. Effluent samples collected at distribution box.
- C. Each of the influent and effluent are flow proportioned composite samples.

# LAHAINA WASTEWATER RECLAMATION FACILITY LABORATORY REPORT REPORTING PERIOD FOR JANUARY, FEBRUARY, MARCH 2004

SAMPLE	DATE/TIME	NH3-N mg/L	O-N mg/L	TKN mg/L	NO3-N02 mg/L	TN mg/L
Influent	1/5-1/6	13.4	11.5	24.9	<b>.</b>	<i>3</i>
Final Eff	0830-0730	1.47	1.75	3.22	3.02	6.24
Influent	1/11-1/12	17.1	9.9	27		
Final Eff	0830-0730	ND	1.58	1.58	3.19	4.77
Influent	1/18-1/19	17.5	11.0	28.5		
Final Eff	0830-0730	0.28	1.48	1.76	3.27	5.03
Influent	1/25-1/26	16	12.3	28.3		
Final Eff	0830-0730	1.05	1.52	2.57	LA	
Influent	2/1-2/2	17.4	11.3	28.7		
Final Eff	0830-0730	ND	1.98	1.98	6.00	7.98
Influent	2/8-2/9	16.7	10.4	27.1		
Final Eff	0830-0730	ND	1.22	1.22	6.63	7.85
Influent	2/16-2/17	18.1	11.4	29.5		
Final Eff	0830-0730	0.84	1.64	2.48	4.33	6.81
Influent	2/22-2/23	17.8	13.9	31.7		
Final Eff	0830-0730	1.28	1.33	2.61	3.72	6.33
Influent	2/29-3/1	28.8	12.6	41.4		
Final Eff	0830-0730	ND	2.03	2.03	4.22	6.25
Influent	3/7-3/8	36.8	13.5	50.3		·
Final Eff	0830-0730	1.28	1.77	3.05	4.27	7.32
Influent	3/14-3/15	18.8	13.0	31.8		
Final Eff	0830-0730	ND	2.45	2.45	6.10	8.55
Influent	3/21-3/22	16.5	17.4	33.9	٠.	
Final Eff	0830-0730	1.4	1.96	3.36	4.32	7.68
Influent	3/28-3/29	15.8	13.9	29.7		
Final Eff	0830-0730	0.56	1.74	2.30	5.68	7.98

Abbreviations: NH3-N (Ammonia-Nitrogen), O-N (Organic Nitrogen), TKN (Total Kjeldahl Nitrogen), NO3-NO2 (Nitrate-Nitrite), TN (Total Nitrogen), ND (None Detected),

LA - Lab Accident (Value may not be reliable.)

# LAHAINA WASTEWATER RECLAMATION FACILITY NITROGEN TESTING REPORTING PERIOD APRIL, MAY, JUNE 2004

#### I. ANALYSIS

- A. Performed by Robert Rychlinski, Sanitary Chemist
- B. Standard Methods 4500-Norg Macro-Kjeldahl
- C. Standard Methods 4500-NH3 Titrametric Method
- D. Standard Methods 4500 NO3-NO2 Automated Cadmium Reduction

#### II SAMPLE COLLECTIONS

- A. Influent samples collected at headworks building.
- B. Effluent samples collected at distribution box.
- C. Each of the influent and effluent are flow proportioned composite samples.

# LAHAINA WASTEWATER RECLAMATION FACILITY LABORATORY REPORT REPORTING PERIOD FOR APRIL, MAY, JUNE 2004

SAMPLE	DATE/TIME	NH3-N mg/L	O-N mg/L	TKN mg/L	NO3-N02 mg/L	TN mg/L
Influent Final Eff	4/4-4/5 0830-0730	17.4 1.28	15.3 2.30	32.7 3.58	4.12	7.7
Influent Final Eff	4/11-4/12 0830-0730	17.9 1.12	11.1 1.75	29 2.87	5.28	8.15
Influent Final Eff	4/18-4/19 0830-0730	18.6 1.47	10.9 2.10	29.5 3.57	3.27	6.84
Influent Final Eff	4/25-4/26 0830-0730	18.5 0.32	8.6 1.92	27.1 2.24	4.84	7.08
Influent Final Eff	5/2-5/3 0830-0730	15.5 0.35	11.4 1.51	26.9 1.86	2.81	4.67
Influent Final Eff	5/10-5/11 0830-0730	14.6 0.56	12.7 1.82	27.3 2.38	1.81	4.19
Influent Final Eff	5/16-5/17 0830-0730	13.7 ND	14.8 0.35	28.5 0.35	2.85	3.20
Influent Final Eff	5/23-5/24 0830-0730	13.8 ND	11.9 0.42	25.7 0.42	3.93	4.34
Influent Final Eff	5/31-6/1 0830-0730	16.0 ND	9.5 1.19	25.5 1.19	4.69	5.88
Influent Final Eff	6/6-6/7 0830-0730	14.6 ND	13.6 1.47	28.2 1.47	4.06	5.53
Influent Final Eff	6/13-6/14 0830-0730	17.2 0.84	12.2 1.13	29.4 1.97	3.02	4.99
Influent Final Eff	6/20-6/21 0830-0730	16.5 1.28	13.6 1.26	30.1 2.54	3.87	6.41
Influent Final Eff	6/27-6/28 0830-0730	13.7 1.36	14.5 1.06	28.2 2.42	3.79	6.21

Abbreviations: NH3-N (Ammonia-Nitrogen), O-N (Organic Nitrogen), TKN (Total Kjeldahl Nitrogen), NO3-NO2 (Nitrate-Nitrite), TN (Total Nitrogen), ND (None Detected),

## LAHAINA WASTEWATER RECLAMATION FACILITY NITROGEN TESTING REPORTING PERIOD JULY, AUGUST, SEPTEMBER 2004

#### I. ANALYSIS

- A. Performed by Robert Rychlinski, Sanitary Chemist
- B. Standard Methods 4500-Norg Macro-Kjeldahl
- C. Standard Methods 4500-NH3 Titrametric Method
- D. Standard Methods 4500 NO3-NO2 Automated Cadmium Reduction

#### II SAMPLE COLLECTIONS

- A. Influent samples collected at headworks building.
- B. Effluent samples collected at distribution box.
- C. Each of the influent and effluent are flow proportioned composite samples.

# LAHAINA WASTEWATER RECLAMATION FACILITY LABORATORY REPORT REPORTING PERIOD FOR JULY, AUGUST, SEPTEMBER 2004

SAMPLE	DATE/TIME	NH3-N mg/L	O-N mg/L	TKN mg/L	NO3-N02 mg/L	TN mg/L
Influent Final Eff	7/5-7/6 0830-0730	15.7 1.33	14.5 1.18	30.2 2.51	NA	
rmai en	0630-0730	1,33	1.10	2.51	INA.	
Influent	7/12-7/13	17.0	14.5	31.5		
Final Eff	0830-0730	1.82	0.26	2.08	NA	
Influent	7/18-7/19	18.1	13.2	31.3		
Final Eff	0830-0730	1.05	1.40	2.45	3.44	5.89
Influent	7/25-7/26	16.4	14.6	31 %		
Final Eff	0830-0730	0.88	1.40	2.28	4.20	6.48
Influent	8/1-8/2	15.8	14.3	30.1	<i>-</i> √.	
Final Eff	0830-0730	0.98	1.08	2.06	4.84	6.90
Influent	8/8-8/9	15.5	15.4	30.9		
Final Eff	0830-0730	1.61	1.28	2.89	4.04	6.93
Influent	8/15-8/16	15.6	14.2	29.8		
Final Eff	0830-0730	1.41	1.18	2.59	3.26	5.85
Influent	8/23-8/24	14.4	11.9	26.3		
Final Eff	0830-0730	0.28	1.26	1.54	5.87	7.41
Influent	8/29-8/30	13.0	12	25		
Final Eff	0830-0730	0.14	0.91	1.05	5.09	6.14
Influent	9/5-9/6	11.8	11.4	23.2		
Final Eff	0830-0730	0.23	1.17	1.40	5.39	6.79
Influent	9/12-9/13	11.1	13.8	24.9		•
Final Eff	0830-0730	ND	0.84	0.84	5.61	6.45
Influent	9/19-9/20	13.6	10.0	23.6		
Final Eff	0830-0730	ND	1.26	1.26	6.46	7.72
Influent	9/26-9/27	12.1	14.1	26.2		
Final Eff	0830-0730	0.07	1.52	1.59	4.70	6.29

Abbreviations: NH3-N (Ammonia-Nitrogen), O-N (Organic Nitrogen), TKN (Total Kjeldahl Nitrogen), NO3-NO2 (Nitrate-Nitrite), TN (Total Nitrogen), ND (None Detected), NA (Not Available) Auto analyzer was not working properly to perform analyses.

## ATTACHMENT Q

#### ATTACHMENT Q

## Lahaina Wastewater Reclamation Facility UIC Permit Renewal - Permit No. HI596001

#### Plugging and Abandonment Plan

In the event that a well is not required for future use we have prepared preliminary Plugging and Abandonment Plans. These plans involve filling the open hole and/or perforated pipe with gravel, placing a cement grout at the transition between open hole and solid casing (or perforated casing and the solid casing), filling the solid casing with sand to about a 16' depth then completing the fill with a concrete plug. The casings will be left in place and will be cut off approximately four feet below natural ground surface elevation. Note that as requested in the previous permit application, recent bond ratings for Maui County are also included as Exhibits:

Exhibit Q-1: Plugging and Abandonment Plan Well #1

Exhibit Q-2: Plugging and Abandonment Plan Well #2

Exhibit Q-3: Plugging and Abandonment Plan Well #3

Exhibit Q-4: Plugging and Abandonment Plan Well #4

Exhibit Q-5: Plugging and Abandonment Plan Method / Diagrams

Exhibit Q-6 Standard & Poor's Bond Rating for Maui County

Exhibit Q-7: Moody's Bond Ratings for Maui County

OMB No. 2040-0042

0	EPA			United S		vironment shington, C	ital Protection DC 20460	1 Agency				
Z			PLU	JGGINC	AND	) ABA	NDONN	MENT PL	_AN			
Name	and Address of F	Facility				Ņ	ame and Add	dress of Own	er/Operator			
	naina Wastewater 10 Honoapiilani H							Iaui - Depart Street, Wail			and Envir. N	Mgmt.
	Locate Well and C		n .		tate Hawaii			County Maui		Permit	Number	
	Section Plat - 640	Acres		<u> </u>		ocation De	manana ja	.VAGUA			***************************************	***************************************
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	, , ,			<u> </u>	1/4 of	f 1/4 c	of 1/4 of	f1/4 of	Section	Township	Range	<u>, n/a </u>
)				Lo	ocate well	il in two d	irections fro	om nearest lin	ies of quarte	r section and	d drilling uni	it
1	·	_L_'	<u></u>	Su	urface ,		***************************************			•		
)		_ [		Lc	ocation	ft. frm	n (N/S) L	Line of quarte	er section			
}	<del></del>			an	nd ft	 t. from (E/\	/W) Line	e of quarter s	ection.			
		<u> </u>			90,000,000,000		AUTHORIZATION		1	WELL	ACTIVITY	-
W	1 1 1		E	[	<b>✓</b> Individ	idual Perm	nit		CLAS	.ss i		*
1 )					Area F	Permit			☐ CLA	ASS II		
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		s		Le	ease Name	,e			Well Numi	1		
	C/	ASING AND TU	BING RECORT	D AFTER PL	UGGING			MET	HOD OF EMPL	LACEMENT C	)F CEMENT F	PLUGS
SIZE	E WT (LB/FT)		IN WELL (FT)	TO BE LEF	FT IN WEI	LL (FT)	HOLE SIZE	Tr	ne Balance Me	ethod		
20	135	1 88		81			24		ne Dump Baile			
14	[85]	1115		115			18	7 =	ne Two-Plug N			
								7	ther			
											-	
	CEMENTING	G TO PLUG AND	D ABANDON D	ATA:	,	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size	of Hole or Pipe in				L	14/20	20			1		11.
	to Bottom of Tub				)	200	84				5	
	of Cement To Be											
Slurry	/ Volume To Be Pu	umped (cu. ft.)	1		5	54	27					
Calcu	lated Top of Plug	(ft.)				73	4.					
Meası	ured Top of Plug (	(if tagged ft.)			T		1					N
	/ Wt. (Lb./Gal.)	<del></del>				16	16					
Type(	Cement or Other N	Material (Class	III)			4000 psi				/ T		
	LIF	ST ALL OPEN H	IOLE AND/OR	PERFORATI				S WHERE CA	SING WILL B	E VARIED (if	any)	<del></del>
	From	<u></u> ,		То				From	<u> </u>		То	
205'			90' will be	filled with	3/4" grav	vel						
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1			<del> </del>				***************************************	***************************************				
Estim	ated Cost to Plug	Wells			**************************************		200000000000000000000000000000000000000					
\$7,50	***************************************			200,000,000,000,000,000,000,000,000,000				and the state of t				
					Cr	ertificat	tion			-	<del></del>	· · · · · · · · · · · · · · · · · · ·
									*** (			
	I certify under the attachments and t											
	attachments and t information is true											
	possibliity of fine					(****						-
Name	and Official Title	(Please type o	r print)		Signatu	ure	<del></del>				Date Signed	1
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OMB No. 2040-0042

United States Environmental Protection Agency Washington, DC 20460									
	PLUGGIN	G AN	D ABA	NDONN	IENT PL	ΑŅ			
Name and Address of Facility			N	lame and Add	iress of Owne	er/Operator	***************************************		
Lahaina Wastewater Reclamation 3300 Honoapiilani Hwy., Lahaina						aui - Department of Public Works and Envir. Mgmt. Street, Wailuku, HI 96793			
Locate Well and Outline Unit on	1	State Hawaii			Sounty Maui		Permit	Number	
Section Plat - 640 Acres		-	tion Du		IVIAUI	***************************************			
N T T T T T T		Surface L	ocation De	<b>****</b>	f1/4 of	Section	Township	Range	n/a
					Line of quarte	r section		d drilling uni	t
		Area	vidual Perr Permit	mit		CLAS	SS II		
┃ ├─┼─├─┼─┠─┼─┞ ├─┼─├─┼─┠	-+-	Rule Number of Wells 1					Brine Dispos Inhanced Re Iydrocarbon SS III	covery	
S S		Lease Nan	ne			Well Numi	<u></u>	***************************************	
CASING AND TUE	BING RECORD AFTER P	LUGGING	<b>)</b>		METHOD OF EMPLACEMENT OF CEMENT PLUGS				LUGS
SIZE         WT (LB/FT)         TO BE PUT IN WELL (FT)         TO BE LEFT IN WELL (FT)         HOLE SIZE           [20]         [135]         [88]         [81]         [24]           [20]         [20]         [20]         [20]				The	☐ The Balance Method ☐ The Dump Bailer Method ☑ The Two-Plug Method ☐ Other				
CEMENTING TO PLUG AND	ABANDON DATA:	amman kanada aya.	PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Wil	<del></del>		18/20	20					     -
Depth to Bottom of Tubing or Drill Pip	e (ft		180	85					
Sacks of Cement To Be Used (each plu	1 <b>a</b> )								
Slurry Volume To Be Pumped (cu. ft.)	<del></del>		54	27					
Calculated Top of Plug (ft.)			73	4					
Measured Top of Plug (if tagged ft.; Slurry Wt. (Lb./Gal.)	<u> </u>		16	1/12	1				
Type Cement or Other Material (Class I	un -		4000 psi	16 4000 psi					
	OLE AND/OR PERFORA			-	NUEDE CAS	SING WILL BI	E VARIED (if		
From	To	TED INTE	KVALS AIL	ID MIEKANE	From	SING WILL BI	E VARIED (II	To	
	100' will be filled wi	ith 3/4" g	ravel	:					
	16' will be filled wit								
					***************************************		(0000000000000000000000000000000000000		
\$7,600									
			`ortifico	tion					
Certification  I certify under the penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibliity of fine and imprisonment. (Ref. 40 CFR 144.32)									
lame and Official Title (Please type or print) Signature								Date Signed	15/00/00/10 according to the state of the st

OMB No. 2040-0042

Approval Expires 1/31/05

I&EPA	United States Environmental Protection Agency Washington, DC 20460						
PLUGGING	G AND AB	ANDONN	IENT PL	_AN	·		
Name and Address of Facility		Name and Add	*****************************	ergramment of the section and an extra contract of the section and the section	****	Association and associate the contract of the	
Lahaina Wastewater Reclamation Facility 3300 Honoapiilani Hwy., Lahaina, HI 96791			Maui - Depart Street, Wail			and Envir. N	Agmt.
Locate Well and Outline Unit on Section Plat - 640 Acres	State Hawaii		County Maui	***************************************	Permit	Number	
N S	Surface Location	Description	·				
Liii Tiii	1/4 of1	1/4 of 1/4 o	ıf1/4 of	Section	Township	Range	n/a
<b>╽</b> ╽╸┼╌┼╌╂╌┼╌┼╌╏	ocate well in two	o directions fro	m nearest lin	nes of quarter	r section and	d drilling uni	it
	Surface						
	.ocation ft. f	frm (N/S) L	Line of quarte	er section			
<mark>┃ ┡─┼─├─┼─┠─┼─</mark> ├─┼─│ <u> </u> a <sup>,</sup>	ınd ft. from (	<b>4.,,,,,,,,,,</b>	e of quarter s	ection.			
W B F F F F F F F F F F F F F F F F F F	*******	F AUTHORIZATION	ON			ACTIVITY	
	Individual Pe	ermit		CLAS			
	Area Permit				SS II Brine Dispos	<u>.</u>	
	3	; <del></del>		*********	Brine Dispos Enhanced Re		1
<b>│</b>	Number of Wells	s 1		*********	Ennanced Ke Hydrocarbon		
	ţ			gumetory	nyurocarbon SS III	Storage	+ <del>*</del>
S Le	.ease Name		······································	Well Numi	2		
CASING AND TUBING RECORD AFTER PL	LUGGING		METI	HOD OF EMPL	LACEMENT C	F CEMENT F	LUGS
SIZE WT (LB/FT) TO BE PUT IN WELL (FT) TO BE LE	EFT IN WELL (FT)	) HOLE SIZE	d n	he Balance Me	othod		
[20] [135] [108] [101]		24	T ==	ne Balance wie ne Dump Baile			
				ne Two-Plug M			
			m)	ther			
	**************************************					<del></del>	
CEMENTING TO PLUG AND ABANDON DATA:	PLUG #		PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inche	18 / 20	***************************************				<b></b>	
Depth to Bottom of Tubing or Drill Pipe (ft Sacks of Cement To Be Used (each plug)	225	105	1			#====	
Slurry Volume To Be Pumped (cu. ft.)	54	27					
Calculated Top of Plug (ft.)	93	<u>4</u>   4	11				
Measured Top of Plug (if tagged ft.;							
Slurry Wt. (Lb./Gal.)	16	16					
Type Cement or Other Material (Class III)	4000 p	osi 4000 psi					
LIST ALL OPEN HOLE AND/OR PERFORAT	ED INTERVALS /	AND INTERVAL!	S WHERE CA	SING WILL B	E VARIED (if	any)	
From To			From			То	
225   120' will be filled with							
93 16' will be filled with	sand						
		<u> </u>					
Estimated Cost to Plug Wells						***************************************	
\$7,850	······································						
	Certific	ation		A. C.	AND THE PROPERTY AND TH		
I certify under the penalty of law that I have personally e attachments and that, based on my inquiry of those indi- information is true, accurate, and complete. I am aware possiblity of fine and imprisonment. (Ref. 40 CFR 144.3	examined and am ividuals immedia that there are sig	n familiar with t ately responsibl	le for obtainir	ing the inform	nation, I beli	eve that the	
Name and Official Title (Please type or print)	Signature					Date Signed	***************************************

SEPA	States Environme Washington	n, DC 20460					
PLUGGING	AND AB	ANDONN	IENT PL	_AN			
Name and Address of Facility		Name and Add	Iress of Own	er/Operator			
Lahaina Wastewater Reclamation Facility 3300 Honoapiilani Hwy., Lahaina, HI 96791	444	County of M 200 S. High	Iaui - Depart Street, Wail			and Envir. N	Agmt.
	ate	***************************************	County		Permit	Number	
Locate Well and Outline Unit on Section Plat - 640 Acres	Iawaii	***************************************	Maui				
Su	rface Location	Description	**************************************	300000000000000000000000000000000000000	***************************************	***************************************	
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		A.,(0000000)			Township		
<mark>┃ ┡╸┼╾┞┈┼┈</mark> ┃	cate well in two	directions fro	m nearest lin	ies of quarter	r section and	drilling uni	it
Sur	ırface						
Lor	ocation ft. f	frm (N/S) L	Line of quarte	er section			
	d ft. from (	general and a second	e of quarter se				
	And the second s	F AUTHORIZATION	<del></del>	<del></del>	WELL	ACTIVITY	
W   T   T   T   T   T   T   T   T   T	☑ Individual Pe			CLAS			
<b>▎ ├─┴─├─┴─┠</b> ─┴─├─┼─│  ┃ <u></u>	Area Permit			CLAS			
	Rule				Brine Dispos:	1	
		**************************************		yaway.	Enhanced Re		
<del>┃                                    </del>	Number of Wells	, <u>[1</u> ]		(minute)			
				gwoong	Hydrocarbon ee III	Storage	
		***************************************		1 1 1	SS III		
S Lea	ase Name			Well Numb	ber 4		
CASING AND TUBING RECORD AFTER PLU	JGGING		METH	HOD OF EMPL	ACEMENT C	F CEMENT F	²LUG\$
SIZE WT (LB/FT) TO BE PUT IN WELL (FT) TO BE LEF	T IN WELL (FT)	HOLE SIZE	┤┌┰	ne Balance Me	athod		
20 (135 108 101		24	TI	ie Balance Me ie Dump Baile			
14 (85 150 150 150	***************************************	18	7	ie Dump balle ie Two-Plug M			
	**************************************	1110		•	lethou		
	***************************************	1	4 -~	ther			
DESCRIPTION TO BLUC AND ADANDON DATA.	Bulled	11 21 112 #2	7.110.43	7	1	1 -110 46	T
CEMENTING TO PLUG AND ABANDON DATA:	PLUG #		PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7
Size of Hole or Pipe in which Plug Will Be Placed (inche	14 / 20	***************************************	4	1	<u> </u>		7/
Depth to Bottom of Tubing or Drill Pipe (ft Sacks of Cement To Be Used (each plug)	255	105		1	<u> </u>	4	4
		=			#	<u> </u>	#
Siurry Volume To Be Pumped (cu. ft.)	54	27	-			<u> </u>	4
Calculated Top of Plug (ft.)	93	4			<u> </u>	<u> </u>	
Measured Top of Plug (if tagged ft.)				<u> </u>			
Slurry Wt. (Lb./Gal.)	16	16		4			4
Type Cement or Other Material (Class III)	4000 ps			<u> </u>	<u> </u>	<u> </u>	<u>[i]</u>
LIST ALL OPEN HOLE AND/OR PERFORATE	ED INTERVALS /	AND INTERVALS		SING WILL B	E VARIED (if	<del></del>	
From To			From			То	
[255   130' will be filled with	3/4" gravel						
93 16' will be filled with s	sand				***************************************		
			**************************************				
	***************************************						
Estimated Cost to Plug Wells	***************************************		***************************************		***************************************		
\$7,700			· · · · · · · · · · · · · · · · · · ·				Books
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	Certific	ation			1		-
I certify under the penalty of law that I have personally ex							
attachments and that, based on my inquiry of those indiving information is true, accurate, and complete. I am aware the		•		_			
possibility of fine and imprisonment. (Ref. 40 CFR 144.32		,				,	
Name and Official Title (Please type or print)	Signature					Date Signed	]

#### **Preliminary**

## Lahaina Injection Well Abandonment Plan Method of Abondoning Well

- 1 Measure Depth of Well
- 2 All casing shall remain with the exception of the stick up and to a depth of 4 feet below finish ground level.
- 3 Remove air surge line
- 4 Inflow pipe shall be exposed, cut and plugged
- 5 Fill all open hole with 3/4"gravel

Place two cubic yards of concrete at transition from open hole to solid casing

Of

Fill preforated casing with 3/4"gravel

Place two cubic yards of concrete at transition from perforated casing to solid casing.

- 6 Fill soid casing with sand to a point about 16 feet below finish ground (approximately 4 feet below inflow pipe)
- 7 Remove Casing stickup and additional 4 feet below ground surface
- 8 Seal remaining casing with concrete (Approximately 1 C.Y.)

#### Note:

Monitor and record depth and volume of material placement

Verify that no sluffing of material occurs (48 hours) before placing one layer of material over another. File required reports with EPA, State DOH and DNLR

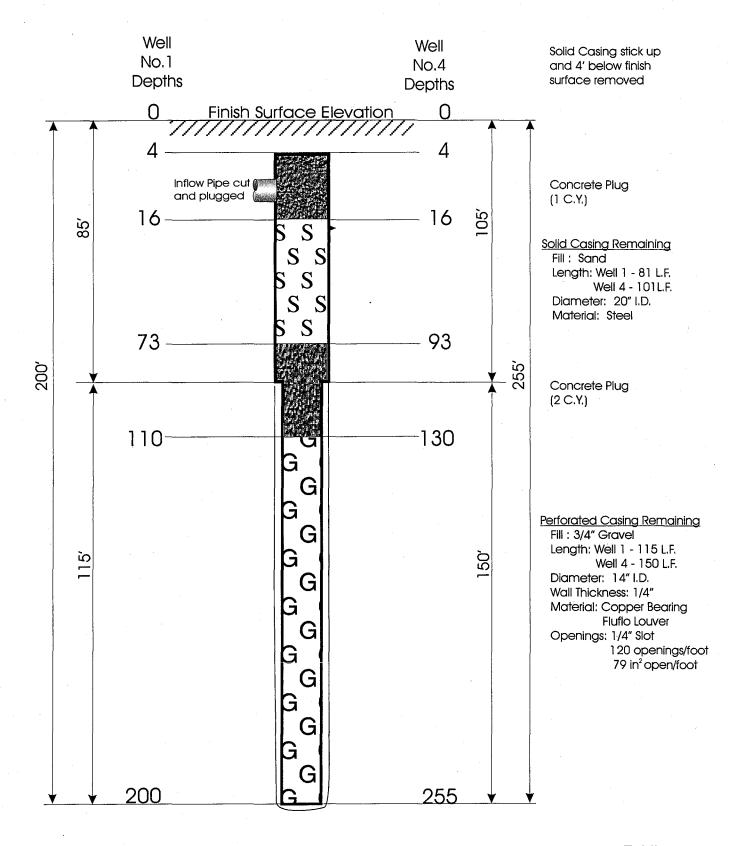
#### **Cost Estimate**

Item	Unit Cost	Well 1	Well 2	Well 3	Well 4
Mobilization	\$2,500	\$2,500	\$2,500	\$2,500	\$2,500
3/4" gravel (C.Y.)	\$75	\$266	\$391	\$514	\$370
Concrete (C.Y.)	\$150	\$450	\$450	\$450	\$450
Sand (C.Y.)	\$60	\$268	\$273	<b>′\$370</b>	\$370
Monitoring etc.	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000
Well Head Removal etc.	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500
Backfill/grading	\$500	\$500	\$500	\$500	\$500
Total		\$7,484	\$7,614	\$7,834	\$7,690

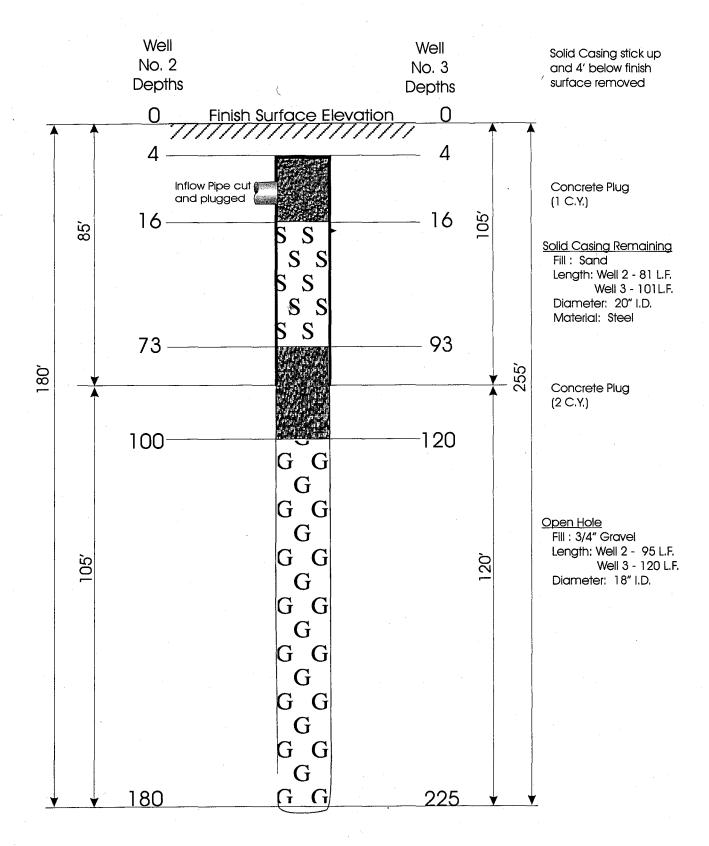
### Lahaina Injection Well Abandonment Plan

Well Characteristics	Well 1	Well 2	Well 3	Well 4
Casing Stickup (ft.)	4	3	3	3
Open Hole diameter (in.)	. 0	18	18	0
Open Hole height (ft.)	0	95	120	0
Perforated Casing diameter (in.)	14	0	0	14
Perforated Casing height (ft.)	115	0	0	150
Solid Casing diameter (in.)	20	20	20	20
Solid Casing height (ft.)	88	88	108	108
Well Depth	200	180	225	255
	•			
Plug Locations	•			
Depth to top of Plug 2	4	4	4:	4
Depth to inflow pipe	11	11.5	12	12
Depth to bottom of plug 2	16	16	16	16
Depth to top of Plug 1	73	73	93	93
Depth to bottom of solid casing	85	85	105	105
Depth to bottom of Plug 1	110	100	120	130
Bottom depth	200	180	225	255
Fill Volume for one lineal foot			4	
Volume of Solid Casing (ft^3)	2.18	2.18	2.18	2.18
Volume of Perforated Casing (ft^3)	1.07	0.00	0.00	1.07
Volume of Open Hole (ft^3)	0.00	1.77	1.77	0.00
volume of open tiele (it o)	0.00			3.33
CEMENT PLUGS				
Solid Casing Plug length (2 C.Y.)	24.75	24.75	24.75	24.75
Perforated Casing Plug length (1 C.Y.)	25.26	0.00	0.00	25.26
Open Hole Plug Length (1 C.Y.)	0.00	15.28	15.28	0.00
OTHER MATERIALS			**	
Solid Casing Sand Length (ft.)	55.25	56.25	76.25	76.25
Perforated Casing Gravel length (ft.)	89.74	0.00	0.00	124.74
Open Hole Gravel Length (ft.)	0.00	79.72	104.72	0.00
Open Hole Graver Length (it.)	0.00	10.12	104.72	0.00
Total Length Filled	195.00	176.00	221.00	251.00
Stick up and casing removal	8.00	7.00	7.00	7.00
Total Well Depth	203.00	183.00	228.00	258.00
			•	
A O W of the Assistance will fill.	· · · · · · · · · · · · · · · · · · ·			
1 C.Y. of material will fill:	12.38	12.38	12.38	12.38
Solid Casing length (ft.)	25.26	0.00	0.00	12.36 25.26
Perforated Casing length (ft.)	the state of the s			
Open Hole length (ft.)	0.00	15.28	15.28	0.00
Fill Material Required	•			
Volume of Concrete Required (C.Y.)	3.00	3.00	3.00	3.00
Volume of Sand Required (C.Y.)	4.46	4.54	6.16	6.16
· , , ,	3.55	5.22	6.85	4.94
Volume of Gravel Required (C.Y.)	3.00	5.22	0.00	4.54

# Lahaina Wastewater Reclamation Facility Well Abandonment Plan Injection Well No.'s 1 and 4



# Lahaina Wastewater Reclamation Facility Well Abandonment Plan Injection Well No.'s 2 and 3



## ATTACHMENT R

#### ATTACHMENT R

## Lahaina Wastewater Reclamation Facility UIC Permit Renewal - Permit No. HI596001

#### **Necessary Resources**

As requested in the previous permit application, recent bond ratings for Maui County are also included as Exhibits:

The following exhibits are attached for your review:

Exhibit R-1 Standard & Poor's Bond Rating for Maui County

Exhibit R-2: Moody's Bond Ratings for Maui County

						1 age 1 of 2
The McGraw-Hill Compa	nles		300 AP 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
STANDARD	Edit Profile			Annual Property	Search	
&POOR'S	Credit • Indices	• Equit			• Funds	• Data Service
Global / English	<del>-</del>	home • pr	oducts a-z • our e	events • about us	• press room •	contact us • c
select region/language						
Credit Ratings Find a Rating Credit Ratings Actions Credit Ratings Search Criteria & Definitions	Credit Ratings Search  Maui Cnty, HI  HI USA		◆ New Search  ■ New Searc			
News & Analysis	Issue Ratings					
Browse By Sector ( GICS® )	Filter By: > Instrument N				RESET FIL	TER <sup>go</sup>
Energy Materials		Class:	The second of the first of the second of the			27
Materials Industrials Consumer Discretionary	> Maturity Date: Exact Date (MM/DD/YYYY) <121>-<140> of <235> <1> <2> <3> <4> <5> <6> <7> <8> <9> <10> >>		(MM/DD/YYYY) (9> <10> >>	FILTER <sup>go</sup>		
Consumer Staples Health Care		Class		Rating	Bating Data	Cradit\Mate
Financials	Instrument US\$17.750 mil GO bnds	1997 A	Maturity Date Sep 01, 2015	AAA/Stable	Rating Date Jul 08, 1997	<u>CreditWatcl</u>
Information Technology Telecommunications Services	ser 1997 A dtd 06/15/1997 due 09/01/1998-2017	1997 A	Sep 01, 2015	AAVStable	Jui 06, 1997	
Utilities	•	1997 A	Sep 01, 2016	AAA/Stable	Jul 08, 1997	
Browse By Business		1997 A	Sep 01, 2017	AAA/Stable	Jul 08, 1997	
Line Bond Insurance International Public Finance Sovereigns	US\$21.555 mil GO bnds ser 2004A&B dtd 03/17/2004 due 09/01/2004-2017	2004A	Sep 01, 2007	AAA/Stable, AA-/ Negative(SPUR)	Mar 16, 2004	•
Public Finance (US) Structured Finance		2004A	Sep 01, 2008	AAA/Stable, AA-/ Negative(SPUR)	Mar 16, 2004	
		2004A	Sep 01, 2009	AAA/Stable, AA-/ Negative(SPUR)	Mar 16, 2004	
		2004A	Sep 01, 2010	AAA/Stable, AA-/ Negative(SPUR)	Mar 16, 2004	
	<b>\</b>	2004A	Sep 01, 2010	AAA/Stable, AA-/ Negative(SPUR)	Mar 16, 2004	
		2004A	Sep 01, 2011	AAA/Stable, AA-/ Negative(SPUR)	Mar 16, 2004	
		2004A	Sep 01, 2011	AAA/Stable, AA-/ Negative(SPUR)	Mar 16, 2004	
		2004B	Sep 01, 2005	AAA/Stable, AA-/ Negative(SPUR)	Mar 16, 2004	
		2004B	Sep 01, 2006	AAA/Stable, AA-/ Negative(SPUR)	Mar 16, 2004	
	A STATE OF THE STA	2004B	Sep 01, 2007	AAA/Stable, AA-/ Negative(SPUR)	Mar 16, 2004	
		2004B	Sep 01, 2008	AAA/Stable, AA-/ Negative(SPUR)	Mar 16, 2004	
		2004B	Sep 01, 2008	AAA/Stable, AA-/ Negative(SPUR)	Mar 16, 2004	
		2004B	Sep 01, 2009	AAA/Stable, AA-/ Negative(SPUR)	Mar 16, 2004	
		2004B	Sep 01, 2009	AAA/Stable, AA-/	Mar 16, 2004	

		Negative(SPUR)	
2004B	Sep 01, 2010	AAA/Stable, AA-/ Negative(SPUR)	Mar 16, 2004
2004B	Sep 01, 2010	AAA/Stable, AA-/ Negative(SPUR)	Mar 16, 2004
2004B	Sep 01, 2011	AAA/Stable, AA-/ Negative(SPUR)	Mar 16, 2004

<121>-<140> of <235> <<u>1> <2> <3> <4> <5> <6> <7> <<u>8> <9> <10> >></u></u>

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Maui (County of) HI

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Res	search Links		12 records
40	Report Type	Date	<b>Title</b>
	New Issue	24 MAR 2003	MOODY'S ASSIGNS Aa3 RATING TO MAUI COUNTY (HI) GENERAL OBLIGATION BONDS, 2003 SERIES A, B, C AND D; STABLE OUTLOOK
	New Issue	7 MAY 2002	MOODY'S ASSIGNS Aa3 RATING TO MAUI COUNTY, HAWAII'S GENERAL OBLIGATION BONDS
<b></b>	New Issue	26 JUN 2001	MOODY'S ASSIGNS Aa3 RATING TO MAUI COUNTY'S GENERAL OBLIGATION REFUNDING BONDS
	New Issue	11 MAY 2001	MOODY'S UPGRADES MAUI COUNTY'S GENERAL OBLIGATION BONDS FROM A1 TO Aa3
	New Issue	4 MAY 2000	Maui (County of) HI
	New Issue	4 MAY 1999	Maui (County of) HI
	New Issue	30 MAR 1998	Maui (County of) HI
	New Issue	23 JUN 1997	Maui (County of) HI
	New Issue	3 JUN 1996	General Obligation Bonds, Series '96A
	New Issue	8 JUN 1995	Maui County
	New Issue	27 JAN 1993	General Obligation Bonds, '93A
	New Issue	2 SEP 1992	General Obligation Refunding Bonds '92 A

#### **Issuer Details**

Sector: State:

County , Water/Sewer

Hawaii (State of)

City/Town: County:

**Outlook:** 

No Outlook, 15 NOV

2003

Watchlist Status: No

Direction: Date:

Ticker(s):

CUSIP(s):

577285, 577302,

577319, 577336

**Current Rating List** 

18 records

General Obligation Bonds, 2004 Series A & B



Sale Date: 2 MAR 2004 Sa

Sale Amt: 23.21

Insured Aaa Assign 12 MAR 2004 No Underlying Aa3 Assign 16 MAR 2004 No

General Obligation Bonds, 2003 Series A, B, C and D

**Sale Date: 25 MAR 2003** 

Sale Amt: 41.13

Insured Aaa Assign 3 JUN 2003 No
Underlying Aa3 RATING 16 MAR 2004 No

**AFFIRMATION** 

General Obligation Bonds, 2002 Series B & C

Sale Date: 22 AUG 2002

**Sale Amt: 26.27** 

Insured Aaa Assign 5 SEP 2002 No
Underlying Aa3 Assign 16 MAR 2004 No

General Obligation Bonds, 2002 Series A

Sale Date: 9 MAY 2002

**Sale Amt: 25.00** 

Rating Rating Action Rating Date Watch Watch Direction/Date
Insured Aaa Assign 17 MAY 2002 No
Underlying Aa3 RATING 16 MAR 2004 No

**AFFIRMATION** 

🖼 General Obligation Bonds, 2001 Series B and C

Sale Date: 2 JUL 2001 Sale Amt: 29.88

Rating Rating Action Rating Date Watch Watch Direction/Date
Insured Aaa Assign 23 OCT 2001 No
Hodelving A33 BATING 16 MAR 2004 No

Underlying Aa3 RATING 16 MAR 2004 No AFFIRMATION

General Obligation Bonds, 2001 Series A

**Sale Date:** 16 MAY 2001 **Sale Amt:** 23.49

RatingRating ActionRating DateWatch Direction/DateUnderlyingAa3RATING16 MAR 2004No

AFFIRMATION

General Obligation Bonds, 2000 Series A

Sale Date: 19 MAY 2000 Sale Amt: 14.44

Rating Rating Action Rating Date Watch Watch Direction/Date
Insured Aaa Assign 22 MAY 2000 No
Underlying Aa3 RATING 16 MAR 2004 No

AFFIRMATION

General Obligation Bonds, Series 1999A

Sale Date: 5 MAY 1999 Sale Amt: 11.60

Insured Aaa Assign 17 MAY 1999 No
Underlying Aa3 RATING 16 MAR 2004 No

General Obligation, 1998 Series C

**Sale Date:** 21 JUL 1998 **Sale Amt:** 11.76

Rating Rating Action Rating Date Watch Watch Direction/Date
Insured Aaa Assign 11 AUG 1998 No

Underlying Aa3 Assign 16 MAR 2004 No

**AFFIRMATION** 

#### General Obligation

**Sale Date:** 21 APR 1998 **Sale Amt:** 43.54

Rating Rating Action Rating Date Watch Watch Direction/Date
Insured Aaa Assign 4 MAY 1998 No
Underlying Aa3 RATING 16 MAR 2004 No

Underlying Aa3 RATING 16 MAR 2004 AFFIRMATION

#### General Obligation

Sale Date: 25 JUN 1997 Sale Amt: 17.75

Rating Rating Action Rating Date Watch Watch Direction/Date
Insured Aaa Assign 8 JUL 1997 No
Underlying Aa3 RATING 16 MAR 2004 No

AFFIRMATION

#### General Obligation

**Sale Date:** 12 JUN 1996 **Sale Amt:** 14.50

Rating Rating Action Rating Date Watch Watch Direction/Date
Insured Aaa Assign 25 JUN 1996 No
Underlying Aa3 RATING 16 MAR 2004 No

General Obligation

Sale Date: 9 JUN 1995 Sale Amt: 17.29

Insured Aaa Assign 28 JUN 1995 No
Underlying Aa3 RATING 16 MAR 2004 No

AFFIRMATION

#### General Obligation Refunding Bonds, Series '93F & G, Dated 12-15-93

**AFFIRMATION** 

**Sale Date:** 15 DEC 1993 **Sale Amt:** 55.48

Rating Rating Action Rating Date Watch Watch Direction/Date
Insured Aaa Assign 12 JAN 1994 No
Underlying Aa3 RATING 16 MAR 2004 No

AFFIRMATION

#### General Obligation

**Sale Date:** 21 APR 1993 **Sale Amt:** 104.28

Rating Rating Action Watch Direction/Date Rating Date Watch Insured Aaa Assign 7 MAY 1993 No **RATING** 16 MAR 2004 Underlying Aa3 No **AFFIRMATION** 

General Obligation

 Sale Date: 27 JAN 1993
 Sale Amt: 22.80

Rating Rating Action Rating Date Watch Watch Direction/Date 10 FEB 1993 Insured Aaa Assign No **RATING** 16 MAR 2004 No Underlying Aa3 **AFFIRMATION** 

Water Revenue

Rating Rating Action Rating Date Watch Watch Direction/Date
Insured Aaa Assign 27 DEC 1991 No

General Obligation

Sale Date: 4 DEC 1990 Sale Amt: 38.89

Insured Underlying Rating Aaa Aa3 Rating Action Assign RATING AFFIRMATION **Rating Date** 19 DEC 1990 16 MAR 2004

Watch No No Watch Direction/Date

Back to Top



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## ATTACHMENT U

#### ATTACHMENT U

Lahaina Wastewater Reclamation Facility UIC Permit Renewal - Permit No. HI596001

#### **Description of Business**

The Department of Public Works and Environmental Management is the branch of the Maui County government charged with providing and regulating the public sewer facilities, roads, drainage facilities, and solid waste operations on the four islands (Maui, Molokai, Lanai and Kahoolawe) which make up the County. Of particular concern to this permit application, Maui County operates 5 wastewater reclamation facilities (WWRF's) which sever approximately 130,000 (people) residential and visitors on a daily basis.

The Lahaina WWRF treats approximately 5.5 million gallons a day of domestic wastewater influent that is generated by an estimated daily residential population of approximately 40,000 people in residential subdivisions and resort accommodations along with typical supportive light commercial businesses. The wastewater is treated to R-1 standards and approximately 4.5 mgd is sent to the four injection wells included in this permit and about 1 million gallons is delivered to reuse customers for irrigation uses.