APPENDIX C - PLUGGING AND ABANDONMENT PLANS

Upon completion of injection activities, a well will be plugged and abandoned according to the following plans and to State and Federal regulations to ensure protection of Underground Sources of Drinking Water (USDW).

Permit No. HI50710003

				0	MB No. 2040	-0042 Apr	oroval Expire	s 1/31/05		
United States Environmental Protection Agency Washington, DC 20460 PLUGGING AND ABANDONMENT PLAN										
Name and Address of Facility Name and Address of Owner/Operator										
Lahaina Wastewater Reclamation F 3300 Honoapiilani Hwy., Lahaina, I				County of Ma 200 S. High S	ui - Depart	ment of Pub		nd Envir. N	Agmt.	
Locate Well and Outline Unit on		State		[] [ounty		Permit	Number		
Section Plat - 640 Acres		Hawaii			laui					
			ce Location Description 1/4 of 1/4 of 1/4 of 1/4 of Section Township Range n/a							
			ell in two c	lirections fron	n nearest lin	es of quarter	section and	l drilling uni	it .	
┝╾┽╼┝╌┽╼┝╴┽╼┝	-+	Surface Location	ft. frm ft. from (E		ine of quarte of quarter s				·	
w				AUTHORIZATIC	N .			ACTIVITY		
		<u></u>	vidual Peri Permit	nit						
		Rule					ss II Irine Dispos	al		
			of Wells				nhanced Re	covery		
		Number	or mens.			2	lydrocarbon	Storage		
S		2					ss III 1	-		
· · · · · · · · · · · · · · · · · · ·		Lease Nan	ne			Well Num	1			
	NG RECORD AFTER				METH	IOD OF EMPL	ACEMENT C	F CEMENT F	PLUGS	
SIZE WT (LB/FT) TO BE PUT IN 20 135 88	WELL (FT) TO BE I	LEFT IN WI	ELL (FT)	HOLE SIZE		e Balance Me				
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$				124 The Dump Bailer Method 18 7						
						her				
								T		
CEMENTING TO PLUG AND A Size of Hole or Pipe in which Plug Will			PLUG #1	PLUG #2	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	
Depth to Bottom of Tubing or Drill Pipe			200	84						
Sacks of Cement To Be Used (each plug	a)						[
Slurry Volume To Be Pumped (cu. ft.)	······································		54	27		 				
Calculated Top of Plug (ft.) Measured Top of Plug (if tagged ft.)			73							
Slurry Wt. (Lb./Gal.)	- <u> </u>		16	16						
Type Cement or Other Material (Class III)		4000 psi	4000 psi			Í			
	LE AND/OR PERFOR	ATED INTE	RVALS AN	ID INTERVALS		SING WILL B	E VARIED (if		·	
From	To 90' will be filled wit	th 2/4" ~~			From			To		
	16' will be filled wi									
Estimated Cost to Plug Wells	******			·					. T	
\$7,500										
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 p	rint)	Signa	ture			- <u></u> ,	<u> </u>	Date Signed		
	,									

		Of	MB No. 2040-004	2 Approv	val Expires 1/31/0)5		
	ed States Environ		Agency		· ·			
Washington, DC 20460 PLUGGING AND ABANDONMENT PLAN								
Name and Address of Facility		Name and Addr	ess of Owner/O	perator				
Lahaina Wastewater Reclamation Facility 3300 Honoapiilani Hwy., Lahaina, HI 96791			ui - Departmer Street, Wailuku		Works and Env	vir. Mgmt.		
Locate Well and Outline Unit on	State Hawaii		ounty Iaui		Permit Numbe	r		
Section Plat - 640 Acres	Surface Locatio				1			
N	1/4 of $1/4 of$ $1/4 of$ $1/4 of$ $1/4 of$ Range n/a							
		o directions from						
	Surface	o difections from	i neareat intea c	n quarter se		gunt		
┝╾┽╼┝╌┽╼┟╴┽╼╎		frm (N/S)	ne of quarter se	ction				
┠╾┽╼┡╍┽╼┠┈┽╼┞╴┽╼╿	andft. from	- marine internation	of quarter section					
	ТҮРЕ	OF AUTHORIZATIO	N		WELL ACTIVIT	Y		
	Individual				-			
	Area Permi	:			ll e Disposal			
┝╾┽╼┝╌┽╼┝╌┽╼╽		(.		<u></u>	anced Recovery	:		
╏ <u>╞</u> ╌ <u></u> ┽┯┝╍┽┯┠┉┽┯┝╴┽┯╽	Number of We	ls []	.	c	rocarbon Storag			
	[() <u> </u>			
S	Lease Name		v	Vell Number	2			
CASING AND TUBING RECORD AFTER		<u> </u>	METHOD	OF EMPLAC	EMENT OF CEMI	ENT PLUGS		
	LEFT IN WELL (F		time in the second second	lance Metho				
			The Dump Bailer Method					
			Other					
CEMENTING TO PLUG AND ABANDON DATA:	PLUG		PLUG #3 P	LUG #4 P	PLUG #5 PLU	3 #6 PLUG #7		
Size of Hole or Pipe in which Plug Will Be Placed (inche								
Depth to Bottom of Tubing or Drill Pipe (ft Sacks of Cement To Be Used (each plug)	180	85						
Slurry Volume To Be Pumped (cu. ft.)	54	27						
Calculated Top of Plug (ft.)	73	4						
Measured Top of Plug (if tagged ft.)								
Slurry Wt. (Lb./Gal.) Type Cement or Other Material (Class III)	16	16			[][
LIST ALL OPEN HOLE AND/OR PERFOR			WHERE CASING		ARIED (if any)			
From To			From		To			
[180 [100' will be filled	with 3/4" gravel							
73 [16' will be filled w	rith sand		-					
Estimated Cost to Plug Wells								
\$7,600		9. august 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 19						
				1988-1990 19. ¹⁹⁹ - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199 - 199				
	Contif	cation						
					41-1I	- 4 - 14		
I certify under the penalty of law that I have personal attachments and that, based on my inquiry of those								
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)								
Name and Official Title <i>(Please type or print)</i>	Signature				Date S	ianed		
		на страница 1971 — Прила Прила и страница 1971 — Прила При			L			

Exhibit O-2

	————————————————————————————————————			0	AB No. 2040-	0042 App	roval Expire	s 1/31/05			
SEPA	Uni	ted States En Was	vironmenta hington, D		Agency						
PLUGGING AND ABANDONMENT PLAN											
Name and Address of Facility				me and Addr				·····			
Lahaina Wastewater Reclamation FacilityCounty of Maui - Department of Public Works and Envir. Mgmt.3300 Honoapiilani Hwy., Lahaina, HI 96791200 S. High Street, Wailuku, HI 96793											
Locate Well and Outline Unit on	· · · · · · · · · · · · · · · · · · ·	State			ounty Cani		Permit	ermit Number			
Section Plat - 640 Acres	<u> </u>	Hawaii									
			Surface Location Description 1/4 of 1/4 of Township Range n/a								
┃		Locate we	ll in two di	rections from	n nearest lin	es of quarter	section and	drilling unit	t ·		
┝╺┽╾┝╶┽╼┝╶┽╼╎		Surface Location	ft. frm	- gun and and a spectra war	ne of quarte of quarter se		• .				
		Nava 100				T	WELL /	CTIVITY			
W	E	2	idual Perm	it							
	1	Area	Permit				65 Fine Dispos	- I			
┝╾┽╾┝╼┽╾┡╶┽╼╎			of Wells 1			1	nhanced Re				
┃		Number	of Wells 1	استورین		42.mm	ydrocarbon	Storage			
l ls	l				· · · ·		SS III	······			
		Lease Nam	ne [1	Well Num	per [3				
		<u></u>			METH	OD OF EMPL	ACEMENT O	F CEMENT P	LUGS		
SIZE WT (LB/FT) TO BE PUT II [20] [135] [108]	N WELL (FT) TO BI	E LEFT IN WE		HOLE SIZE		e Balance Me		•			
				The Dump Bailer Method							
					0 ···	_					
CEMENTING TO PLUG AND		Г	<u></u>	PLUG #2		PLUG #4			[
Size of Hole or Pipe in which Plug Wi			PLUG #1	20	PLUG #3		PLUG #5	PLUG #6	PLUG #7		
Depth to Bottom of Tubing or Drill Pi	pe (ft		225	105							
Sacks of Cement To Be Used (each plu	ug)										
Slurry Volume To Be Pumped (cu. ft.) Calculated Top of Plug (ft.)			<u>54</u> 93	<u>27</u> 4							
Measured Top of Plug (if tagged ft.)	<u></u>		<u>,,,</u>								
Slurry Wt. (Lb./Gal.)	······		16	[16]							
Type Cement or Other Material (Class	III)	<u>_</u>	4000 psi	4000 psi							
LIST ALL OPEN H	OLE AND/OR PERFO		RVALS AND		WHERE CAS	SING WILL BI	E VARIED (if	any) To	<u>.</u>		
225	120' will be filled		ravel			<u> </u>					
93	16' will be filled w								·]		
	5.										
Estimated Cost to Plug Wells								<u></u>			
\$7,850											
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 imprisonm											
Name and Official Title (Please type or	print)	Signat	ure				ſ	Date Signed	j		
	- 										
PA Form 7520-14 (Rev. 8-01)											

2 								OMB	No. 2040-	0042 Ap	proval Expire	s 1/31/05		
				Unite	ed States Environmental Protection Agency									
₿	Washington, DC 20460 PLUGGING AND ABANDONMENT PLAN													
Name a	and Address of Fa	acility					ame and A	ddres	s of Owne	r/Operator				
Lahai	ina Wastewater Honoapiilani H	Reclamation					County of 200 S. Hig				olic Works a 93	nd Envir. N	lgmt.	
	ocate Well and O		-		State Hawaii		· · · · · ·	Cour			Permit	Number		
<u></u>	ection Plat - 640 A	Acres	;	ł	Surface L	ocation D	escription							
		N			1/4 0	(]	· · · · · · · · · · · · · · · · · · ·		114 -6	Section	Township	Range	n/a	
				-	5,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0	······	Con-service of							
						ell in two	directions f	rom n	earest line	es of quarte	r section and	l drilling uni	t .	
▎┝		 +			Surface			٦	. · .					
		╶┛┍╌┰╶╹┍			Location] ft. fri ft. from (E	m (N/S)		of quarte					
				ŀ	and	· · · · ·			quarter se	iction.	WELL		· · · · ·	
w			E			vidual Per					SS I			
· -	╶╶┼╼┝╸┽╴	_} -			Area						SS II			
		╶┠┈╶┼╺╌┞			🗌 Rule	•					Brine Dispos	aí		
					Number	of Wells	1				Enhanced Re	covery		
					Number	UI Wensi	<u>and and and and and and and and and and </u>			274762797	lydrocarbon	Storage		
1 L						1					SS III			
		S	·		Lease Nan	ne [Well Num	ber 4			
	CA	SING AND TUE	SING RECOR	D AFTER	₹ PLUGGING				METHOD OF EMPLACEMENT OF CEMENT PLUGS					
SIZE	WT (LB/FT)	TO BE PUT I	N WELL (FT)	TO BE I	E LEFT IN WELL (FT) HOLE SIZE		ZE							
20	135	108		101					e Dump Bail	Bailer Method				
14	85	150		150	18				The Two-Plug Method					
									Other					
		Lange and the second se		<u>I</u> [[1						·	· · · · · · · · · · · · · · · · · · ·		
		TO PLUG AND				PLUG #1		#2 I	PLUG #3	PLUG #4	PLUG #5	PLUG #6	PLUG #7	
	Hole or Pipe in v			(inche		14/20	105			<u> </u>				
	of Cement To Be			·		[233		═╬╤						
	Volume To Be Pu		-91	· · ·		54	27	╡╞				[]		
· · · · · · · · · · · · · · · · · · ·	ated Top of Plug					93	4							
<u> </u>	red Top of Plug (i													
Slurry	Wt. (Lb./Gal.)					16	16]				
Type C	ement or Other N	laterial (Class	(11)			4000 ps	i 4000 p	si]					
	LIS	T ALL OPEN H	OLE AND/OR	PERFOR					HERE CAS	SING WILL E	E VARIED (if	any)		
	From			То				Fr	om		. <u> </u>	То		
255]	130' will b	e filled w	rith 3/4" g	ravel							1	
93		1	16' will be	filled wi	th sand									
<u> </u>							· · · · · · · · · · · · · · · · · · ·							
				:										
	ted Cost to Plug	wells		****										
\$7,70		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1			1111-1111-1111-111-111-111-111-111-111							بىغۇر يېرىمىغ بىلىمىغۇرىغۇر يېرىغۇر يېر		
					Ċ	Certifica	ation			•			1	
l a	certify under the attachments and t nformation is true	that, based on	my inquiry o	of those in	dividuals	immediat	ely respons	ible fo	or obtainin	ig the infor	nation, I beli	eve that the		
	ossibliity of fine						. •	-		-		2		
Name a	and Official Title	(Please type o	r print)	••••	Signa	ature					Ī	Date Signed		
<u> </u>]							·		
	rm 7520-14 (Rev.													

<u>Preliminary</u> Lahaina Injection Well Abandonment Plan <u>Method of Abondoning Well</u>

- 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

or

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

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

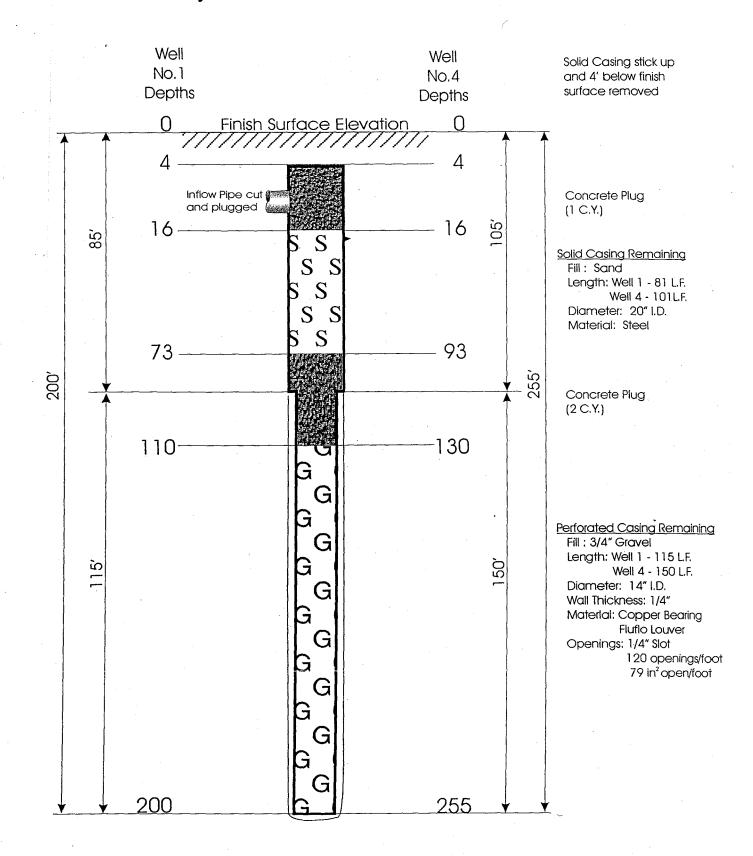
Cost Estimate

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	´\$370	\$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

-	I Characteristics ing Stickup (ft.)	Well 1 4	Well 2 3	Well 3 3	Well 4
	en Hole diameter (in.)	0	18	18	0
	en Hole height (ft.)	0	95	120	0
•	forated Casing diameter (in.)	14	0	0	14
Pert	forated Casing height (ft.)	115	0	0	150
Soli	d Casing diameter (in.)	20	20	20	20
Soli	d Casing height (ft.)	88	88	108	108
Wel	I Depth	200	180	225	255
	g Locations				
•	th to top of Plug 2	4	. 4	4	4
•	th to inflow pipe	11	11.5	12	12
•	th to bottom of plug 2	16	16	16	16
•	th to top of Plug 1	73	73	93	93
	th to bottom of solid casing	85	85	105	105
•	th to bottom of Plug 1	110	100	120	130
воп	om depth	200	180	225	255
	Volume for one lineal foot	- / -			
	Ime of Solid Casing (ft^3)	2.18	2.18	2.18	2.18
	ume of Perforated Casing (ft^3)	1.07	0.00	0.00	1.07
VOIU	ume of Open Hole (ft^3)	0.00	1.77	1.77	0.00
	MENT PLUGS	0475	0475	0475	
	d Casing Plug length (2 C.Y.)	24.75	24.75	24.75	24.75
	orated Casing Plug length (1 C.Y.)	25.26 0.00	0.00 15.28	0.00 15.28	25.26
Ope	n Hole Plug Length (1 C.Y.)	0.00	10.20	10.20	0.00
	IER MATERIALS		50.05		
	d Casing Sand Length (ft.)	55.25	56.25	76.25	76.25
	orated Casing Gravel length (ft.)	89.74	0.00	0.00	124.74
Ope	n Hole Gravel Length (ft.)	0.00	79.72	104.72	0.00
	I Length Filled	195.00	176.00	221.00	251.00
	k up and casing removal	8.00	7.00	7.00	7.00
Tota	I Well Depth	203.00	183.00	228.00	258.00
	Y. of material will fill:	10.00	40.00	10.00	10.00
	d Casing length (ft.)	12.38	12.38	12.38	12.38
	orated Casing length (ft.)	25.26	0.00	0.00	25.26
Ope	n Hole length (ft.)	0.00	15.28	15.28	0.00
Fill I	Material Required				
Volu	me of Concrete Required (C.Y.)	3.00	3.00	3.00	3.00
Volu	me of Sand Required (C.Y.)	4.46	4.54	6.16	6.16
	me of Gravel Required (C.Y.)	3.55	5.22	6.85	4.94

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

