

## Henry Bosma and Liberty Dairy

Station Location	Sample Number	Analysis Type	Analyte	Result	Qualifier	Units
SO-09	10164239		Ammonia Solid	1700		mg/Kg
			NO3N/Total Solid	5.69		mg/Kg
			Total Nitrogen/Solid	13700		mg/Kg
		<i>Pesticides</i>	2,3,4,5-Tetrachlorophenol	49	U	ug/Kg
			2,3,4,6-Tetrachlorophenol	49	U	ug/Kg
			2,4,5-T	49	U	ug/Kg
			2,4,5-Trichlorophenol	49	U	ug/Kg
			2,4,6-Trichlorophenol	49	UJ	ug/Kg
			2,4-D	49	U	ug/Kg
			2,4-DB	49	U	ug/Kg
			3,5-Dichlorobenzoic acid	49	U	ug/Kg
			4-Nitrophenol	49	UJ	ug/Kg
			Acifluorfen	49	UJ	ug/Kg
			Alachlor	79	U	ug/Kg
			Atrazine	79	U	ug/Kg
			Azinphos-methyl	79	UJ	ug/Kg
			Bentazon	49	U	ug/Kg
			Benzonitrile, 2,6-dichloro-	79	U	ug/Kg
			Bromoxynil	49	U	ug/Kg
			Chloramben	49	UJ	ug/Kg
			Chlorpyrifos, Ethyl	79	U	ug/Kg
			Clopyralid	49	U	ug/Kg
			DACTHAL-DCPA	11	J	ug/Kg
			Diazinon	79	U	ug/Kg
			Dicamba	4	J	ug/Kg
			Dichlorprop	49	U	ug/Kg
			Diclofop, Methyl	49	U	ug/Kg
			Dinoseb	49	UJ	ug/Kg
			Diuron	79	UJ	ug/Kg
			Endosulfan I	79	U	ug/Kg
			Endosulfan II	79	U	ug/Kg
			Endosulfan Sulfate	79	U	ug/Kg
			Fenhexamid	79	UJ	ug/Kg
			Fenpropathrin	79	U	ug/Kg
			Imidan	79	UJ	ug/Kg
			Ioxynil	49	U	ug/Kg
			Kresoxim-methyl	79	U	ug/Kg
			MCPA	49	U	ug/Kg
			MCPP	49	U	ug/Kg
			Metribuzin	79	UJ	ug/Kg
			Myclobutanil	79	U	ug/Kg
			Oxyfluorfen	79	U	ug/Kg
			Pendimethalin	79	U	ug/Kg
			Pentachlorophenol	49	U	ug/Kg
			Picloram	49	U	ug/Kg
			Propargite	79	U	ug/Kg
			Silvex	49	U	ug/Kg

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	Simazine	79	U	ug/Kg
	SURFLAN	160	UJ	ug/Kg
	Terbacil	79	U	ug/Kg
	Trichlorpyr	49	U	ug/Kg
	Triflumizole	79	U	ug/Kg
	Trifluralin	79	U	ug/Kg
<i>Steroids / Hormones</i>	11-Keto Testosterone	0.1	U	ug/Kg
	17a-Hydroxyprogesterone	3.42		ug/Kg
	17alpha-trenbolone	0.1	U	ug/Kg
	17beta-estradiol	4.37		ug/Kg
	17beta-trenbolone	0.1	U	ug/Kg
	4-Androstenedione	12.4		ug/Kg
	a-Estradiol	16.9		ug/Kg
	Androstenedione	19.3		ug/Kg
	Androsterone	0.1	U	ug/Kg
	a-Zearalanol	0.1	U	ug/Kg
	a-Zearalenol	0.1	U	ug/Kg
	b-Zearalanol	0.1	U	ug/Kg
	b-Zearalenol	0.1	U	ug/Kg
	Epitestosterone	4.43		ug/Kg
	Estriol	0.1	U	ug/Kg
	Estrone	0.1		ug/Kg
	Ethynyl Estradiol	4.06		ug/Kg
	Melengesterol Acetate	0.1	U	ug/Kg
	Progesterone	48		ug/Kg
Testosterone	0.1	U	ug/Kg	
<i>Veterinary Pharmaceuticals</i>	Chlortetracycline(total)	0.5	U	mg/Kg
	Erythromycin	0.5	U	mg/Kg
	Lincomycin	6.9		mg/Kg
	Monensin	437		mg/Kg
	Oxytetracycline	2.1		mg/Kg
	Ractopamine	0.5	U	mg/Kg
	Sulfachloropyridazine	0.5	U	mg/Kg
	Sulfadimethoxine	0.5	U	mg/Kg
	Sulfamerazine	0.5	U	mg/Kg
	Sulfamethazine	0.5	U	mg/Kg
	Sulfamethazole	0.5	U	mg/Kg
	Sulfamethoxazole	0.5	U	mg/Kg
	Sulfathiazole	0.5	U	mg/Kg
	Tetracycline	309		mg/Kg
	Tiamulin	0.5	U	mg/Kg
	Tylosin	0.5	U	mg/Kg
	Virginiamycin	0.5	U	mg/Kg
	<i>Wastewater Pharmaceuticals</i>	Acetaminophen	100	U
Amphetamine		50	U	ug/Kg
Azithromycin		NR		ug/Kg
Caffeine		50	U	ug/Kg

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		Carbamazepine	50	U	ug/Kg
		Cotinine	50	U	ug/Kg
		DEET	50	U	ug/Kg
		Diphenhydramine	50	U	ug/Kg
		Ibuprofen	50	U	ug/Kg
		Methamphetamine	50	U	ug/Kg
		Naproxen	50	U	ug/Kg
		Paraxanthine	50	U	ug/Kg
		Thiabendazole	50	U	ug/Kg
		Triclosan	50	U	ug/Kg
SO-10	10164240	Ammonium-N	7.1		mg/Kg
		Nitrate-N/Nitrite	139		mg/Kg
		Total Nitrogen/Solid	3590		mg/Kg
		<i>Pesticides</i>			
		2,3,4,5-Tetrachlorophenol	13	U	ug/Kg
		2,3,4,6-Tetrachlorophenol	13	U	ug/Kg
		2,4,5-T	13	U	ug/Kg
		2,4,5-Trichlorophenol	13	U	ug/Kg
		2,4,6-Trichlorophenol	13	UJ	ug/Kg
		2,4-D	13	U	ug/Kg
		2,4-DB	13	U	ug/Kg
		3,5-Dichlorobenzoic acid	13	U	ug/Kg
		4-Nitrophenol	670	J	ug/Kg
		Acifluorfen	13	UJ	ug/Kg
		Alachlor	19	U	ug/Kg
		Atrazine	19	U	ug/Kg
		Azinphos-methyl	19	UJ	ug/Kg
		Bentazon	13	U	ug/Kg
		Benzonitrile, 2,6-dichloro-	19	U	ug/Kg
		Bromoxynil	13	U	ug/Kg
		Chloramben	13	UJ	ug/Kg
		Chlorpyrifos, Ethyl	2.3	J	ug/Kg
		Clopyralid	13	U	ug/Kg
		DACTHAL-DCPA	1	J	ug/Kg
		Diazinon	19	U	ug/Kg
		Dicamba	13	U	ug/Kg
		Dichlorprop	13	U	ug/Kg
		Diclofop, Methyl	13	U	ug/Kg
		Dinoseb	13	UJ	ug/Kg
		Diuron	19	UJ	ug/Kg
		Endosulfan I	19	U	ug/Kg
		Endosulfan II	19	U	ug/Kg
		Endosulfan Sulfate	19	U	ug/Kg
		Fenhexamid	19	UJ	ug/Kg
		Fenpropathrin	19	U	ug/Kg
		Imidan	19	UJ	ug/Kg
		Ioxynil	13	U	ug/Kg
		Kresoxim-methyl	19	U	ug/Kg
		MCPA	13	U	ug/Kg

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	MCPP	13	U	ug/Kg
	Metribuzin	19	UJ	ug/Kg
	Myclobutanil	19	U	ug/Kg
	Oxyfluorfen	19	U	ug/Kg
	Pendimethalin	19	U	ug/Kg
	Pentachlorophenol	1.7	J	ug/Kg
	Picloram	13	U	ug/Kg
	Propargite	19	U	ug/Kg
	Silvex	13	U	ug/Kg
	Simazine	19	U	ug/Kg
	SURFLAN	39	UJ	ug/Kg
	Terbacil	19	U	ug/Kg
	Trichlorpyr	13	U	ug/Kg
	Triflumizole	19	U	ug/Kg
	Trifluralin	19	U	ug/Kg
<i>Steroids / Hormones</i>	11-Keto Testosterone	0.1	U	ug/Kg
	17a-Hydroxyprogesterone	0.1	U	ug/Kg
	17alpha-trenbolone	0.1	U	ug/Kg
	17beta-estradiol	0.1	U	ug/Kg
	17beta-trenbolone	0.1	U	ug/Kg
	4-Androstenedione	0.12		ug/Kg
	a-Estradiol	0.1	U	ug/Kg
	Androstenedienedione	0.1	U	ug/Kg
	Androsterone	0.1	U	ug/Kg
	a-Zearalanol	0.1	U	ug/Kg
	a-Zearalenol	0.1	U	ug/Kg
	b-Zearalanol	0.1	U	ug/Kg
	b-Zearalenol	0.1	U	ug/Kg
	Epitestosterone	0.1	U	ug/Kg
	Estriol	0.1	U	ug/Kg
	Estrone	0.1	U	ug/Kg
	Ethynyl Estradiol	0.1	U	ug/Kg
	Melengesterol Acetate	0.1	U	ug/Kg
	Progesterone	0.23		ug/Kg
Testosterone	0.1	U	ug/Kg	
<i>Veterinary Pharmaceuticals</i>	Chlortetracycline(total)	0.5	U	mg/Kg
	Erythromycin	0.5	U	mg/Kg
	Lincomycin	0.5	U	mg/Kg
	Monensin	7		mg/Kg
	Oxytetracycline	2.4		mg/Kg
	Ractopamine	0.5	U	mg/Kg
	Sulfachloropyridazine	0.5	U	mg/Kg
	Sulfadimethoxine	0.6		mg/Kg
	Sulfamerazine	0.7		mg/Kg
	Sulfamethazine	0.5	U	mg/Kg
	Sulfamethazole	0.5	U	mg/Kg
	Sulfamethoxazole	0.5	U	mg/Kg
	Sulfathiazole	0.5	U	mg/Kg

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		Tetracycline	53		mg/Kg
		Tiamulin	0.5	U	mg/Kg
		Tylosin	0.5	U	mg/Kg
		Virginiamycin	0.5	U	mg/Kg
<i>Wastewater Pharmaceuticals</i>					
		Acetaminophen	100	U	ug/Kg
		Amphetamine	50	U	ug/Kg
		Azithromycin	NR		ug/Kg
		Caffeine	50	U	ug/Kg
		Carbamazepine	50	U	ug/Kg
		Cotinine	50	U	ug/Kg
		DEET	50	U	ug/Kg
		Diphenhydramine	50	U	ug/Kg
		Ibuprofen	50	U	ug/Kg
		Methamphetamine	50	U	ug/Kg
		Naproxen	50	U	ug/Kg
		Paraxanthine	50	U	ug/Kg
		Thiabendazole	50	U	ug/Kg
		Triclosan	50	U	ug/Kg
LG-13	10164263	Ammonia (NH <sub>3</sub> +NH <sub>4</sub> ) as N	970	J	mg/L
		Nitrate+Nitrite as N	2.5	J	mg/L
		Total Kjeldahl Nitrogen	1700	J	mg/L
		<i>Bacteria</i> Fecal Coliform	3300000000		CFU/100 ml
		<i>General Chemistry</i> Alkalinity as CaCO <sub>3</sub>	11300		mg/L
		Bromide	10	U	mg/L
		Chloride	661		mg/L
		Fluoride	2	U	mg/L
		Phosphorus, total	297		mg/L
		Sulfate	96		mg/L
		<i>Metals</i> Arsenic	180	U	ug/L
		Barium	3160		ug/L
		Cadmium	22		ug/L
		Calcium	1210000		ug/L
		Chromium	180		ug/L
		Copper	2870		ug/L
		Iron	208000		ug/L
		Lead	100	U	ug/L
		Magnesium	707000		ug/L
		Manganese	11100		ug/L
		Mercury	0.707	J	ug/L
		Potassium	2650000		ug/L
		Selenium	200	U	ug/L
		Silver	41	U	ug/L
		Sodium	906000		ug/L
		Zinc	8470		ug/L

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Wastewater Organics	Concentration	Unit	Limit
1,4-dichlorobenzene	30	U	ug/L
1-methylnaphthalene	30	UJ	ug/L
2,2',4,4'-tetrabromodiphenyl ether	30	U	ug/L
2,6-dimethylnaphthalene	3.41	J	ug/L
2-methylnaphthalene	30	UJ	ug/L
3,4-dichlorophenyl isocyanate	30	U	ug/L
3-beta-coprostanol	591	J	ug/L
3-methyl-1h-indole (skatol)	1360	J	ug/L
3-tert-butyl-4-hydroxyanisole (bha)	2	UJ	ug/L
4-cumylphenol	30	U	ug/L
4-n-octylphenol	30	U	ug/L
4-nonylphenol monoethoxylate - total (np1eo)	745	J	ug/L
4-octylphenol diethoxylate (op2eo)	30	U	ug/L
4-octylphenol monoethoxylate (op1eo)	30	U	ug/L
4-tert-octylphenol	30	U	ug/L
5-methyl-1h-benzotriazole	1.6	UJ	ug/L
acetophenone	30	U	ug/L
acetyl-hexamethyl-tetrahydro-naphthalene ( ahtn)	30	U	ug/L
anthracene	30	UJ	ug/L
anthraquinone	30	U	ug/L
atrazine	30	U	ug/L
benz[a]pyrene	30	UJ	ug/L
benzophenone	30	UJ	ug/L
beta-sitosterol	613	J	ug/L
beta-stigmastanol	535	J	ug/L
bis-(2-ethylhexyl) phthalate (dehp)	30	U	ug/L
bisphenol a	30	U	ug/L
bromacil	30	U	ug/L
bromoform	30	U	ug/L
caffeine	30	U	ug/L
camphor	30	U	ug/L
carbaryl	30	U	ug/L
carbazole	30	U	ug/L
chlorpyrifos	30	U	ug/L
cholesterol	808	J	ug/L
cotinine	0.8	UJ	ug/L
diazinon	30	U	ug/L
dichlorvos	30	U	ug/L
diethoxynonylphenols- total (np2eo)	293	J	ug/L
diethyl phthalate	30	U	ug/L
d-limonene	30	U	ug/L
fluoranthene	30	UJ	ug/L
hexahydrohexamethyl cyclopentabenzopyran (hhcb)	30	U	ug/L
indole	30	U	ug/L
isoborneol	30	U	ug/L
isophorone	2.36	J	ug/L
isopropylbenzene (cumene)	30	U	ug/L

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isoquinoline	30	U	ug/L
menthol	30	U	ug/L
metalaxyl	30	U	ug/L
methyl salicylate	30	U	ug/L
metolachlor	30	U	ug/L
n,n-diethyl-meta-toluamide (deet)	30	U	ug/L
naphthalene	30	UJ	ug/L
para-nonylphenol total	328	J	ug/L
p-cresol	10800	J	ug/L
pentachlorophenol	1.6	U	ug/L
phenanthrene	30	UJ	ug/L
phenol	4600	J	ug/L
prometon	30	U	ug/L
pyrene	30	UJ	ug/L
tetrachloroethylene	30	U	ug/L
tri(2-butoxyethyl) phosphate	30	U	ug/L
tri(2-chloroethyl) phosphate	30	U	ug/L
tri(dichloroisopropyl) phosphate	30	U	ug/L
tributyl phosphate	30	U	ug/L
triclosan	30	U	ug/L
triethyl citrate (ethyl citrate)	30	U	ug/L
triphenyl phosphate	30	U	ug/L

*Pesticides* Due to matrix interference the laboratory could not provide quantitative results for the pesticide analysis of the lagoon sludge samples.

<i>Hormones</i> 17-a-estradiol	1220		ng/L
17-a-ethynyl-estradiol	20	U	ng/L
17-b-estradiol	179		ng/L
Estriol	8.8	U	ng/L
Estrone	390		ng/L

<i>Steroids / Hormones</i> 11-Keto Testosterone	0.758		ug/L
17a-Hydroxyprogesterone	0.002	U	ug/L
17alpha-trenbolone	0.002	U	ug/L
17beta-estradiol	0.002	U	ug/L
17beta-trenbolone	0.002	U	ug/L
4-Androstenedione	0.314		ug/L
a-Estradiol	0.002	U	ug/L
Androstenedione	0.002	U	ug/L
Androsterone	0.002	U	ug/L
a-Zearalanol	9.851		ug/L
a-Zearalenol	0.002	U	ug/L
b-Zearalanol	0.002	U	ug/L
b-Zearalenol	0.002	U	ug/L
Epitestosterone	0.002	U	ug/L
Estriol	0.002	U	ug/L
Estrone	0.002	U	ug/L

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	Ethynyl Estradiol	0.002	U	ug/L	
	Melengesterol Acetate	0.002	U	ug/L	
	Progesterone	0.926		ug/L	
	Testosterone	0.262		ug/L	
<i>Veterinary Pharmaceuticals</i>	Chlortetracycline(total)	0.02	R	ug/L	
	Erythromycin	1.3	J	ug/L	
	Lincomycin	3.37	J	ug/L	
	Monensin	662	J	ug/L	
	Oxytetracycline	0.02	R	ug/L	
	Ractopamine	0.081	J	ug/L	
	Sulfachloropyridazine	0.32	J	ug/L	
	Sulfadimethoxine	4.13	J	ug/L	
	Sulfamerazine	0.02	R	ug/L	
	Sulfamethazine	0.108	J	ug/L	
	Sulfamethazole	0.148	J	ug/L	
	Sulfamethoxazole	0.02	R	ug/L	
	Sulfathiazole	0.24	J	ug/L	
	Tetracycline	10.3	J	ug/L	
	Tiamulin	0.079	J	ug/L	
	Tylosin	0.139	J	ug/L	
	Virginiamycin	0.184	J	ug/L	
<i>Wastewater Pharmaceuticals</i>	Acetaminophen	0.2	U	ug/L	
	Amphetamine	0.2	U	ug/L	
	Azithromycin	0.2	U	ug/L	
	Caffeine	0.2	U	ug/L	
	Carbamazepine	0.2	U	ug/L	
	Cotinine	0.2	U	ug/L	
	DEET	0.67		ug/L	
	Diphenhydramine	0.2	U	ug/L	
	Ibuprofen	0.2	U	ug/L	
	Methamphetamine	0.2	U	ug/L	
	Naproxen	0.2	U	ug/L	
	Paraxanthine	0.2	U	ug/L	
	Thiabendazole	0.2	U	ug/L	
	Triclosan	0.2	U	ug/L	
<i>Isotopes</i>	Nitrate	NM		mg/L	
	$\delta^{15}\text{N-NO}_3$	NM		‰	
	Ammonia	469		mg/L	
	$\delta^{15}\text{N-NH}_4$	4.4		‰	
	$\delta^{18}\text{O-NO}_3$	NM		‰ SMOW	
LG-14	10164264	Ammonia (NH <sub>3</sub> +NH <sub>4</sub> ) as N	860	J	mg/L
		Nitrate+Nitrite as N	1	UJ	mg/L
		Total Kjeldahl Nitrogen	1400	J	mg/L
<i>Bacteria</i>	Fecal Coliform	2400000000		CFU/100 ml	



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<i>General Chemistry</i>	Alkalinity as CaCO <sub>3</sub>	9490		mg/L
	Bromide	10	U	mg/L
	Chloride	558		mg/L
	Fluoride	2	U	mg/L
	Phosphorus, total	239		mg/L
	Sulfate	59.6		mg/L
<i>Metals</i>	Arsenic	150	U	ug/L
	Barium	2350		ug/L
	Cadmium	10	U	ug/L
	Calcium	1180000		ug/L
	Chromium	130		ug/L
	Copper	2090		ug/L
	Iron	152000		ug/L
	Lead	84	U	ug/L
	Magnesium	580000		ug/L
	Manganese	9810		ug/L
	Mercury	0.495	J	ug/L
	Potassium	2290000		ug/L
	Selenium	170	U	ug/L
	Silver	34	U	ug/L
	Sodium	830000		ug/L
	Zinc	8650		ug/L
<i>Wastewater Organics</i>	1,4-dichlorobenzene	30	UJ	ug/L
	1-methylnaphthalene	30	UJ	ug/L
	2,2',4,4'-tetrabromodiphenyl ether	30	U	ug/L
	2,6-dimethylnaphthalene	2.01	J	ug/L
	2-methylnaphthalene	30	UJ	ug/L
	3,4-dichlorophenyl isocyanate	30	U	ug/L
	3-beta-coprostanol	356	J	ug/L
	3-methyl-1h-indole (skatol)	1170	J	ug/L
	3-tert-butyl-4-hydroxyanisole (bha)	2	UJ	ug/L
	4-cumylphenol	30	U	ug/L
	4-n-octylphenol	30	U	ug/L
	4-nonylphenol monoethoxylate - total (np1eo)	559	J	ug/L
	4-octylphenol diethoxylate (op2eo)	30	U	ug/L
	4-octylphenol monoethoxylate (op1eo)	30	U	ug/L
	4-tert-octylphenol	30	U	ug/L
	5-methyl-1h-benzotriazole	2	UJ	ug/L
	acetophenone	30	U	ug/L
	acetyl-hexamethyl-tetrahydro-naphthalene ( ahtn)	30	U	ug/L
	anthracene	30	UJ	ug/L
	anthraquinone	30	U	ug/L
	atrazine	30	U	ug/L
	benz[a]pyrene	30	UJ	ug/L
	benzophenone	30	UJ	ug/L
beta-sitosterol	312	J	ug/L	

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beta-stigmastanol	260	J	ug/L
bis-(2-ethylhexyl) phthalate (dehp)	30	U	ug/L
bisphenol a	30	U	ug/L
bromacil	30	U	ug/L
bromoform	30	U	ug/L
caffeine	30	U	ug/L
camphor	30	U	ug/L
carbaryl	30	U	ug/L
carbazole	30	U	ug/L
chlorpyrifos	30	U	ug/L
cholesterol	406	J	ug/L
cotinine	2	UJ	ug/L
diazinon	30	U	ug/L
dichlorvos	30	U	ug/L
diethoxynonylphenols- total (np2eo)	247	J	ug/L
diethyl phthalate	30	U	ug/L
d-limonene	0.892	J	ug/L
fluoranthene	30	UJ	ug/L
hexahydrohexamethyl cyclopentabenzopyran (hhcb)	30	U	ug/L
indole	30	U	ug/L
isoborneol	30	U	ug/L
isophorone	2.12	J	ug/L
isopropylbenzene (cumene)	30	U	ug/L
isoquinoline	30	U	ug/L
menthol	30	U	ug/L
metalaxyl	30	U	ug/L
methyl salicylate	30	U	ug/L
metolachlor	30	U	ug/L
n,n-diethyl-meta-toluamide (deet)	30	U	ug/L
naphthalene	30	UJ	ug/L
para-nonylphenol total	233	J	ug/L
p-cresol	8970	J	ug/L
pentachlorophenol	30	U	ug/L
phenanthrene	30	UJ	ug/L
phenol	2760	J	ug/L
prometon	30	U	ug/L
pyrene	30	UJ	ug/L
tetrachloroethylene	30	U	ug/L
tri(2-butoxyethyl) phosphate	30	U	ug/L
tri(2-chloroethyl) phosphate	30	U	ug/L
tri(dichloroisopropyl) phosphate	30	U	ug/L
tributyl phosphate	30	U	ug/L
triclosan	30	U	ug/L
triethyl citrate (ethyl citrate)	30	U	ug/L
triphenyl phosphate	30	U	ug/L

## Henry Bosma and Liberty Dairy

*Pesticides* Due to matrix interference the laboratory could not provide quantitative results for the pesticide analysis of the lagoon sludge samples.

<i>Hormones</i>	17-a-estradiol	1050		ng/L
	17-a-ethynyl-estradiol	20	U	ng/L
	17-b-estradiol	41		ng/L
	Estriol	8.8	U	ng/L
	Estrone	419		ng/L
<i>Steroids / Hormones</i>	11-Keto Testosterone	0.002	U	ug/L
	17a-Hydroxyprogesterone	0.002	U	ug/L
	17alpha-trenbolone	0.002	U	ug/L
	17beta-estradiol	0.002	U	ug/L
	17beta-trenbolone	0.002	U	ug/L
	4-Androstenedione	0.31		ug/L
	a-Estradiol	0.002	U	ug/L
	Androstenedione	0.002	U	ug/L
	Androsterone	0.002	U	ug/L
	a-Zearalanol	8.83		ug/L
	a-Zearalenol	0.002	U	ug/L
	b-Zearalanol	0.002	U	ug/L
	b-Zearalenol	0.002	U	ug/L
	Epitestosterone	0.002	U	ug/L
	Estriol	0.002	U	ug/L
	Estrone	0.002	U	ug/L
	Ethynyl Estradiol	0.002	U	ug/L
	Melengesterol Acetate	0.039		ug/L
	Progesterone	0.682		ug/L
	Testosterone	0.17		ug/L
<i>Veterinary Pharmaceuticals</i>	Chlortetracycline(total)	0.02	R	ug/L
	Erythromycin	0.02	R	ug/L
	Lincomycin	2.04	J	ug/L
	Monensin	498	J	ug/L
	Oxytetracycline	0.02	R	ug/L
	Ractopamine	0.056	J	ug/L
	Sulfachloropyridazine	0.16	J	ug/L
	Sulfadimethoxine	3.65	J	ug/L
	Sulfamerazine	0.02	R	ug/L
	Sulfamethazine	0.139	J	ug/L
	Sulfamethazole	0.02	U	ug/L
	Sulfamethoxazole	0.02	R	ug/L
	Sulfathiazole	0.061	J	ug/L
	Tetracycline	8.6	J	ug/L
	Tiamulin	0.02	R	ug/L
	Tylosin	0.02	R	ug/L
	Virginiamycin	0.02	R	ug/L

## Henry Bosma and Liberty Dairy

<i>Wastewater Pharmaceuticals</i>		Acetaminophen	0.2	U	ug/L
		Amphetamine	0.2	U	ug/L
		Azithromycin	0.2	U	ug/L
		Caffeine	0.2	U	ug/L
		Carbamazepine	0.2	U	ug/L
		Cotinine	0.2	U	ug/L
		DEET	0.78		ug/L
		Diphenhydramine	0.2	U	ug/L
		Ibuprofen	0.2	U	ug/L
		Methamphetamine	0.2	U	ug/L
		Naproxen	0.2	U	ug/L
		Paraxanthine	0.2	U	ug/L
		Thiabendazole	1.8		ug/L
		Triclosan	0.2	U	ug/L
<i>Isotopes</i>		Nitrate	NM		mg/L
		δ15N-NO3	NM		‰
		Ammonia	600		mg/L
		δ15N-NH4	3.26		‰
		δ18O-NO3	NM		‰ SMOW
LG-15	10164265	Ammonia (NH3+NH4) as N	560	J	mg/L
		Nitrate+Nitrite as N	1	UJ	mg/L
		Total Kjeldahl Nitrogen	900	J	mg/L
<i>Bacteria</i>		Fecal Coliform	5410000		CFU/100 ml
<i>General Chemistry</i>		Alkalinity as CaCO3	5640		mg/L
		Bromide	10	U	mg/L
		Chloride	524		mg/L
		Fluoride	2	U	mg/L
		Phosphorus, total	74		mg/L
		Sulfate	15	U	mg/L
<i>Metals</i>		Arsenic	160	U	ug/L
		Barium	803		ug/L
		Cadmium	11	U	ug/L
		Calcium	387000		ug/L
		Chromium	36	U	ug/L
		Copper	743		ug/L
		Iron	20300		ug/L
		Lead	91	U	ug/L
		Magnesium	294000		ug/L
		Manganese	2410		ug/L
		Mercury	0.25	UJ	ug/L
		Potassium	1830000		ug/L
		Selenium	180	U	ug/L
		Silver	36	U	ug/L
		Sodium	687000		ug/L

## Henry Bosma and Liberty Dairy

	Zinc	2920		ug/L
<i>Wastewater Organics</i>	1,4-dichlorobenzene	2	UJ	ug/L
	1-methylnaphthalene	2	R	ug/L
	2,2',4,4'-tetrabromodiphenyl ether	2	UJ	ug/L
	2,6-dimethylnaphthalene	2	R	ug/L
	2-methylnaphthalene	2	R	ug/L
	3,4-dichlorophenyl isocyanate	2	UJ	ug/L
	3-beta-coprostanol	46.8	J	ug/L
	3-methyl-1h-indole (skatol)	330	J	ug/L
	3-tert-butyl-4-hydroxyanisole (bha)	2	UJ	ug/L
	4-cumylphenol	2	UJ	ug/L
	4-n-octylphenol	2	UJ	ug/L
	4-nonylphenol monoethoxylate - total (np1eo)	166	J	ug/L
	4-octylphenol diethoxylate (op2eo)	2	UJ	ug/L
	4-octylphenol monoethoxylate (op1eo)	2	UJ	ug/L
	4-tert-octylphenol	2	UJ	ug/L
	5-methyl-1h-benzotriazole	2	UJ	ug/L
	acetophenone	2	UJ	ug/L
	acetyl-hexamethyl-tetrahydro-naphthalene ( ahtn)	2	UJ	ug/L
	anthracene	2	R	ug/L
	anthraquinone	2	UJ	ug/L
	atrazine	2	UJ	ug/L
	benz[a]pyrene	2	R	ug/L
	benzophenone	2	R	ug/L
	beta-sitosterol	77.6	J	ug/L
	beta-stigmastanol	45.3	J	ug/L
	bis-(2-ethylhexyl) phthalate (dehp)	2	UJ	ug/L
	bisphenol a	2	UJ	ug/L
	bromacil	2	UJ	ug/L
	bromoform	2	UJ	ug/L
	caffeine	2	UJ	ug/L
	camphor	2	UJ	ug/L
	carbaryl	2	UJ	ug/L
	carbazole	2	UJ	ug/L
	chlorpyrifos	2	UJ	ug/L
	cholesterol	114	J	ug/L
	cotinine	2	UJ	ug/L
	diazinon	2	UJ	ug/L
	dichlorvos	2	UJ	ug/L
	diethoxynonylphenols- total (np2eo)	55.3	J	ug/L
	diethyl phthalate	2	UJ	ug/L
	d-limonene	2	UJ	ug/L
	fluoranthene	2	R	ug/L
	hexahydrohexamethyl cyclopentabenzopyran (hhcb)	2	UJ	ug/L
	indole	6.68	J	ug/L
	isoborneol	2	UJ	ug/L

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isophorone	1.26	J	ug/L
isopropylbenzene (cumene)	2	UJ	ug/L
isoquinoline	2	UJ	ug/L
menthol	2	UJ	ug/L
metalaxyl	2	UJ	ug/L
methyl salicylate	2	UJ	ug/L
metolachlor	2	UJ	ug/L
n,n-diethyl-meta-toluamide (deet)	2	UJ	ug/L
naphthalene	2	R	ug/L
para-nonylphenol total	129	J	ug/L
p-cresol	935	J	ug/L
pentachlorophenol	2	UJ	ug/L
phenanthrene	2	R	ug/L
phenol	1780	J	ug/L
prometon	2	UJ	ug/L
pyrene	2	R	ug/L
tetrachloroethylene	2	UJ	ug/L
tri(2-butoxyethyl) phosphate	2	UJ	ug/L
tri(2-chloroethyl) phosphate	2	UJ	ug/L
tri(dichloroisopropyl) phosphate	2	UJ	ug/L
tributyl phosphate	2	UJ	ug/L
triclosan	2	UJ	ug/L
triethyl citrate (ethyl citrate)	2	UJ	ug/L
triphenyl phosphate	2	UJ	ug/L

*Pesticides* Due to matrix interference the laboratory could not provide quantitative results for the pesticide analysis of the lagoon sludge samples.

<i>Hormones</i>	17-a-estradiol	792		ng/L
	17-a-ethynyl-estradiol	20	U	ng/L
	17-b-estradiol	25.3		ng/L
	Estriol	8.8	U	ng/L
	Estrone	830		ng/L

<i>Steroids / Hormones</i>	11-Keto Testosterone	0.002	U	ug/L
	17a-Hydroxyprogesterone	0.002	U	ug/L
	17alpha-trenbolone	0.002	U	ug/L
	17beta-estradiol	0.002	U	ug/L
	17beta-trenbolone	0.002	U	ug/L
	4-Androstenedione	0.002	U	ug/L
	a-Estradiol	0.002	U	ug/L
	Androstenedionedione	0.002	U	ug/L
	Androsterone	0.002	U	ug/L
	a-Zearalanol	4.977		ug/L
	a-Zearalenol	0.002	U	ug/L
	b-Zearalanol	0.002	U	ug/L
	b-Zearalenol	0.002	U	ug/L
	Epitestosterone	0.002	U	ug/L

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	Estriol	0.002	U	ug/L
	Estrone	0.002	U	ug/L
	Ethynyl Estradiol	0.002	U	ug/L
	Melengesterol Acetate	0.002	U	ug/L
	Progesterone	0.002	U	ug/L
	Testosterone	0.002	U	ug/L
<i>Veterinary Pharmaceuticals</i>	Chlortetracycline(total)	0.02	R	ug/L
	Erythromycin	4.35	J	ug/L
	Lincomycin	1.71	UJ	ug/L
	Monensin	426	J	ug/L
	Oxytetracycline	0.02	R	ug/L
	Ractopamine	0.06	J	ug/L
	Sulfachloropyridazine	0.658	J	ug/L
	Sulfadimethoxine	2.98	J	ug/L
	Sulfamerazine	0.028	J	ug/L
	Sulfamethazine	0.601	J	ug/L
	Sulfamethazole	1.27	J	ug/L
	Sulfamethoxazole	0.037	J	ug/L
	Sulfathiazole	0.135	J	ug/L
	Tetracycline	7.55	J	ug/L
	Tiamulin	0.132	J	ug/L
	Tylosin	0.02	R	ug/L
	Virginiamycin	1	J	ug/L
<i>Wastewater Pharmaceuticals</i>	Acetaminophen	0.2	U	ug/L
	Amphetamine	0.2	U	ug/L
	Azithromycin	0.2	U	ug/L
	Caffeine	0.2	U	ug/L
	Carbamazepine	0.2	U	ug/L
	Cotinine	0.2	U	ug/L
	DEET	0.45		ug/L
	Diphenhydramine	0.2	U	ug/L
	Ibuprofen	0.2	U	ug/L
	Methamphetamine	0.2	U	ug/L
	Naproxen	0.2	U	ug/L
	Paraxanthine	0.2	U	ug/L
	Thiabendazole	0.2	U	ug/L
	Triclosan	0.2	U	ug/L
<i>Isotopes</i>	Nitrate	NM		mg/L
	$\delta^{15}\text{N-NO}_3$	NM		‰
	Ammonia	658		mg/L
	$\delta^{15}\text{N-NH}_4$	13.85		‰
	$\delta^{18}\text{O-NO}_3$	NM		‰ SMOW
WW-10 10164210	Ammonia (NH <sub>3</sub> +NH <sub>4</sub> ) as N	0.05	U	mg/L
	Nitrate - Field Test	0		mg/L
	Nitrate+Nitrite as N	0.05	U	mg/L
	Nitrate-N	0.05	U	mg/L

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	Total Kjeldahl Nitrogen	0.5	U	mg/L
<i>Bacteria</i>	E.Coli MPN Quanti-Tray	<1		MPN/100ml
	Fecal Coliform	0		CFU/100 ml
	Total Coliform QuantiTray	<1		MPN/100ml
<i>General Chemistry</i>	Alkalinity as CaCO <sub>3</sub>	141		mg/L
	Bromide	0.2	U	mg/L
	Chloride	4.44		mg/L
	Fluoride	0.328		mg/L
	Phosphorus, total	0.0477		mg/L
	Sulfate	21.7		mg/L
<i>Metals</i>	Arsenic	45	U	ug/L
	Barium	63.8		ug/L
	Cadmium	3	U	ug/L
	Calcium	27000		ug/L
	Chromium	10	U	ug/L
	Copper	5	U	ug/L
	Iron	550		ug/L
	Lead	25	U	ug/L
	Magnesium	8410		ug/L
	Manganese	89.9		ug/L
	Mercury	0.05	U	ug/L
	Potassium	5250		ug/L
	Selenium	50	U	ug/L
	Silver	10	U	ug/L
	Sodium	25500		ug/L
Zinc	8.3		ug/L	
<i>Perchlorate</i>	Perchlorate	3	U	ng/L
<i>Wastewater Organics</i>	1,4-dichlorobenzene	0.2	U	ug/L
	1-methylnaphthalene	0.2	U	ug/L
	2,2',4,4'-tetrabromodiphenyl ether	0.3	U	ug/L
	2,6-dimethylnaphthalene	0.2	U	ug/L
	2-methylnaphthalene	0.2	U	ug/L
	3,4-dichlorophenyl isocyanate	1.6	U	ug/L
	3-beta-coprostanol	1.6	U	ug/L
	3-methyl-1h-indole (skatol)	0.2	U	ug/L
	3-tert-butyl-4-hydroxyanisole (bha)	0.2	UJ	ug/L
	4-cumylphenol	0.2	U	ug/L
	4-n-octylphenol	0.2	U	ug/L
	4-nonylphenol monoethoxylate - total (np1eo)	1.6	U	ug/L
	4-octylphenol diethoxylate (op2eo)	0.5	UJ	ug/L
	4-octylphenol monoethoxylate (op1eo)	1	U	ug/L
	4-tert-octylphenol	0.4	U	ug/L
	5-methyl-1h-benzotriazole	1.6	UJ	ug/L
	acetophenone	0.4	U	ug/L



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acetyl-hexamethyl-tetrahydro-naphthalene ( ahtn)	0.2	U	ug/L
anthracene	0.2	U	ug/L
anthraquinone	0.2	U	ug/L
atrazine	0.2	U	ug/L
benz[a]pyrene	0.2	U	ug/L
benzophenone	0.2	U	ug/L
beta-sitosterol	1.6	U	ug/L
beta-stigmastanol	1.7	U	ug/L
bis-(2-ethylhexyl) phthalate (dehp)	2	U	ug/L
bisphenol a	0.4	U	ug/L
bromacil	0.8	U	ug/L
bromoform	0.2	U	ug/L
caffeine	0.2	R	ug/L
camphor	0.2	U	ug/L
carbaryl	0.2	U	ug/L
carbazole	0.2	U	ug/L
chlorpyrifos	0.2	U	ug/L
cholesterol	1.6	U	ug/L
cotinine	0.8	UJ	ug/L
diazinon	0.2	U	ug/L
dichlorvos	0.2	U	ug/L
diethoxynonylphenols- total (np2eo)	3.2	U	ug/L
diethyl phthalate	0.2	U	ug/L
d-limonene	0.2	U	ug/L
fluoranthene	0.2	U	ug/L
hexahydrohexamethyl cyclopentabenzopyran (hhcb)	0.2	U	ug/L
indole	0.2	U	ug/L
isoborneol	0.2	U	ug/L
isophorone	0.2	U	ug/L
isopropylbenzene (cumene)	0.2	U	ug/L
isoquinoline	0.2	U	ug/L
menthol	0.2	U	ug/L
metalaxyl	0.2	U	ug/L
methyl salicylate	0.2	U	ug/L
metolachlor	0.2	U	ug/L
n,n-diethyl-meta-toluamide (deet)	0.2	U	ug/L
naphthalene	0.2	U	ug/L
para-nonylphenol total	1.6	U	ug/L
p-cresol	0.2	U	ug/L
pentachlorophenol	1.6	U	ug/L
phenanthrene	0.2	U	ug/L
phenol	0.2	U	ug/L
prometon	0.2	U	ug/L
pyrene	0.2	U	ug/L
tetrachloroethylene	0.4	U	ug/L
tri(2-butoxyethyl) phosphate	0.2	U	ug/L
tri(2-chloroethyl) phosphate	0.2	U	ug/L
tri(dichloroisopropyl) phosphate	0.2	U	ug/L

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	tributyl phosphate	0.2	U	ug/L
	triclosan	0.2	U	ug/L
	triethyl citrate (ethyl citrate)	0.2	U	ug/L
	triphenyl phosphate	0.2	U	ug/L
<i>Pesticides</i>	2,3,4,5-Tetrachlorophenol	0.19	U	ug/L
	2,3,4,6-Tetrachlorophenol	0.096	U	ug/L
	2,4,5-T	0.48	U	ug/L
	2,4,5-Trichlorophenol	0.19	U	ug/L
	2,4,6-Trichlorophenol	0.48	UJ	ug/L
	2,4-D	0.48	UJ	ug/L
	2,4-DB	0.096	U	ug/L
	3,5-Dichlorobenzoic acid	0.096	U	ug/L
	4-Nitrophenol	0.48	UJ	ug/L
	Acifluorfen	0.48	U	ug/L
	Alachlor	0.1	UJ	ug/L
	Atrazine	0.1	UJ	ug/L
	Azinphos-methyl	0.1	UJ	ug/L
	Bentazon	0.096	U	ug/L
	Benzonitrile, 2,6-dichloro-	0.1	UJ	ug/L
	Bromoxynil	0.096	U	ug/L
	Chloramben	0.19	UJ	ug/L
	Chlorpyrifos, Ethyl	0.1	UJ	ug/L
	Clopyralid	0.96	UJ	ug/L
	DACTHAL-DCPA	0.48	UJ	ug/L
	Diazinon	0.1	UJ	ug/L
	Dicamba	0.096	UJ	ug/L
	Dichlorprop	0.48	U	ug/L
	Diclofop, Methyl	0.096	U	ug/L
	Dinoseb	0.48	U	ug/L
	Diuron	0.1	UJ	ug/L
	Endosulfan I	0.1	UJ	ug/L
	Endosulfan II	0.1	UJ	ug/L
	Endosulfan Sulfate	0.1	UJ	ug/L
	Fenhexamid	0.96	UJ	ug/L
	Fenpropathrin	0.1	UJ	ug/L
	Imidan	0.19	UJ	ug/L
	Ioxynil	0.096	U	ug/L
	Kresoxim-methyl	0.1	UJ	ug/L
	MCPA	0.19	U	ug/L
	MCPP	0.096	U	ug/L
	Metribuzin	0.1	UJ	ug/L
	Myclobutanil	0.1	UJ	ug/L
	Oxyfluorfen	0.1	UJ	ug/L
	Pendimethalin	0.1	UJ	ug/L
	Pentachlorophenol	0.096	U	ug/L
	Picloram	0.96	UJ	ug/L
	Propargite	0.1	UJ	ug/L
	Silvex	0.19	U	ug/L
	Simazine	0.1	U	ug/L

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	SURFLAN	1.9	UJ	ug/L
	Terbacil	1.9	UJ	ug/L
	Trichlorpyr	0.096	U	ug/L
	Triflumizole	0.39	UJ	ug/L
	Trifluralin	0.1	UJ	ug/L
<i>Hormones</i>	17-a-estradiol	0.21	U	ng/L
	17-a-ethynyl-estradiol	0.16	U	ng/L
	17-b-estradiol	0.14	U	ng/L
	Estriol	0.22	U	ng/L
	Estrone	0.21	U	ng/L
<i>Steroids / Hormones</i>	11-Keto Testosterone	0.002	U	ug/L
	17a-Hydroxyprogesterone	0.002	U	ug/L
	17alpha-trenbolone	0.002	U	ug/L
	17beta-estradiol	0.002	U	ug/L
	17beta-trenbolone	0.002	U	ug/L
	4-Androstenedione	0.002	U	ug/L
	a-Estradiol	0.002	U	ug/L
	Androstenedione	0.002	UJ	ug/L
	Androsterone	0.002	UJ	ug/L
	a-Zearalanol	0.002	UJ	ug/L
	a-Zearalenol	0.002	UJ	ug/L
	b-Zearalanol	0.002	UJ	ug/L
	b-Zearalenol	0.002	U	ug/L
	Epitestosterone	0.002	U	ug/L
	Estriol	0.002	U	ug/L
	Estrone	0.002	UJ	ug/L
	Ethynyl Estradiol	0.002	U	ug/L
	Melengesterol Acetate	0.002	U	ug/L
	Progesterone	0.002	UJ	ug/L
	Testosterone	0.002	U	ug/L
<i>Veterinary Pharmaceuticals</i>	Chlortetracycline(total)	0.02	U	ug/L
	Erythromycin	0.02	U	ug/L
	Lincomycin	0.02	U	ug/L
	Monensin	0.499		ug/L
	Oxytetracycline	0.02	U	ug/L
	Ractopamine	0.02	U	ug/L
	Sulfachloropyridazine	0.02	U	ug/L
	Sulfadimethoxine	0.02	U	ug/L
	Sulfamerazine	0.02	U	ug/L
	Sulfamethazine	0.02	U	ug/L
	Sulfamethazole	0.02	U	ug/L
	Sulfamethoxazole	0.02	U	ug/L
	Sulfathiazole	0.02	U	ug/L
	Tetracycline	0.02	U	ug/L
	Tiamulin	0.02	U	ug/L
	Tylosin	0.02	U	ug/L
	Virginiamycin	0.02	U	ug/L

## Henry Bosma and Liberty Dairy

<i>Wastewater Pharmaceuticals</i>	Acetaminophen	0.2	U	ug/L
	Amphetamine	0.2	U	ug/L
	Azithromycin	0.2	U	ug/L
	Caffeine	0.2	U	ug/L
	Carbamazepine	0.2	U	ug/L
	Cotinine	0.2	U	ug/L
	DEET	0.67		ug/L
	Diphenhydramine	0.2	U	ug/L
	Ibuprofen	0.2	U	ug/L
	Methamphetamine	0.2	U	ug/L
	Naproxen	0.2	U	ug/L
	Paraxanthine	0.2	U	ug/L
	Thiabendazole	0.2	U	ug/L
	Triclosan	0.2	U	ug/L
<i>Isotopes</i>	Nitrate	NM		mg/L
	$\delta^{15}\text{N-NO}_3$	NM		‰
	Ammonia	<0.1		mg/L
	$\delta^{15}\text{N-NH}_4$	NM		‰
	$\delta^{18}\text{O-NO}_3$	NM		‰ SMOW
<i>Age Dating</i>	Piston Flow Model SF6 Recharge Age	44.3 - 44.8		years

### Abbreviations

BAC32 - *Bacteroides*

ND - Analysis not done

NM - Not measured

PCR - Polymerase Chain Reaction

‰ = parts per thousand difference from the atmospheric standard

SMOW = standard mean of ocean water

TNTC - Too numerous to count

### Units

CFU/100 ml = colony forming unit per 100 milliliters

MPN/100 ml = most probable number per 100 milliliters

ng/L = nanograms per liter

ug/L = micrograms per liter

mg/L = milligrams per liter

mg/Kg = milligrams per kilogram

ug/Kg = micrograms per kilogram