Supplementary Table S1. Fisher pairwise comparisons of lagoon and house pathogen levels (CFU/gVSS $\log_{10}$)

Season	System	Site	Fecal coliforms	*E. coli*	*Enterococcus* sp.
Spring	Open	Lagoon	6.00 ^{g1}	5.46 ^{hi}	5.91 ^{cd}
		House	6.57 ^{e}	6.33 ^{cd}	6.35 ^{b}
	Cover	Lagoon	6.00 ^{g}	5.60 ^{gh}	5.44 ^{f}
		House	7.73 ^{a}	7.63 ^{a}	5.87 ^{cd}
Summer	Open	Lagoon	6.35 ^{f}	5.83 ^{f}	5.94 ^{cd}
		House	7.83 ^{a}	6.10 ^{e}	6.73 ^{a}
	Cover	Lagoon	7.04 ^{c}	6.47 ^{c}	5.86 ^{cd}
		House	7.42 ^{b}	6.71 ^{b}	6.07 ^{c}
Fall	Open	Lagoon	5.58 ^{i}	5.58 ^{gh}	5.56 ^{ef}
		House	6.81 ^{d}	6.72 ^{b}	6.01 ^{c}
	Cover	Lagoon	5.99 ^{g}	5.34 ^{i}	5.50 ^{f}
		House	6.38 ^{f}	6.19 ^{de}	5.74 ^{de}
Winter	Open	Lagoon	5.41 ^{j}	5.13 ^{j}	4.88 ^{g}
		House	6.06 ^{g}	5.61 ^{gh}	6.67 ^{a}
	Cover	Lagoon	5.73 ^{h}	5.73 ^{fg}	5.44 ^{f}
		House	6.34 ^{f}	6.25 ^{de}	5.86 ^{cd}

[1]Means followed by the same letter are not significantly different at $p = 0.05$

Supplementary Table S2.

Relative abundances of OTUs identified using universal bacterial primer set, presented as relative abundances (%) Only bacterial families are counted in Figure 5 and discussion involving bacterial family identification.

Key	
Sp = Spring	O = Open
Su = Summer	C = Covered
F = Fall	L = Lagoon
W = Winter	H = House

#OTU Table	SpOLRA	SuOLRA	FOLRA	WOLRA	SpCLRA	SuCLRA	FCLRA	WCLRA	SpOHRA	SuOHRA	FOHRA	WOHRA	SpCHRA	SuCHRA	FCHRA	WCHRA	# Identified in all samples	# Identified from all 8 lagoon samples	All 16 Samples	All Lagoons	Notes
Patulibacteraceae	0	9.93739E-05	0.000134	0.000116	0	0	0	0	0	0	0.000452	0	0	0	0	0	4	3			
Ruaniaceae	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000221577	0	7.73E-05	2	0			
Thermoactinomycetaceae	0	0	0.000267	0.000116	0	0.00037092	0.000529	0.000526	0	0.000342922	0.000271	0.000197	0	0	0	0	8	5			
Beutenbergiaceae	0.000226334	0.000331246	0.000579	0.001663	0.000620176	0	0.000106	0.000807	0.002320743	0.000571537	0.000723	0.000591	0.000169731	0	0.000606	0	13	7			
Thermoanaerobacterales Family III. Incertae Sedis	0.00016975	0	0.000401	0	0	0.00037092	0.000352	0.000386	0.000320102	0.00045723	0.000271	0.00023	0	0.000172337	6.27E-05	0	11	5			
Clostridiales Family XVI. Incertae Sedis	0	0	0	0	0	0	0.000106	0	0	0	0	0	0	0	0	0	1	1			
Bradyrhizobiaceae	0	0	0	0	0	0	0	0	0	0	0.000136	0.000131	0	0	0	0	2	0			
Heliobacteriaceae	0	0.000198748	0	0	0	0	0	0	0	0.000114307	0	0	0	0	0	0	2	1			
Thioalkalispiraceae	0	0	0	0	0	0	0	0	0	0.000114307	0.000316	0	0	0	0	0	2	0			
Desulfomicrobiaceae	0.001075086	0.000563119	0.000401	0.000387	0	0	0	0	0.003521127	0.003886455	0.003026	0.00023	0	0	0	0	8	4			
Nocardiaceae	0.00016975	0	0.000223	0	0	0	0.000388	0.00021	0	0	0	0.000164	0.000905233	0.001452558	0.000251	0.000386	9	4			
Legionellaceae	0	0.000132499	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1			
Desulfonatronumaceae	0	9.93739E-05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1			
Bogoriellaceae	0	0.000132499	0	0	0	0	0.000211	0.00021	0	0	0.000181	0	0	7.38589E-05	0	0	5	3			
unclassified Dehalococcoidia	0	9.93739E-05	0.000134	0	0.000689085	0.000695475	0.000247	0	0	0.000381025	0	0	0	0	0	0	6	5			
Rhodospirillaceae	0	0.000198748	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1			
Erysipelotrichaceae	0.012731285	0.015237338	0.044421	0.071313	0.012058986	0.026428042	0.020938	0.031959	0.007682458	0.005296247	0.04196	0.049621	0.002602546	0.020705106	0.023402	0.02138	16	8	1	1	
Dehalococcoidaceae	0.000396084	0.000894365	0.001869	0.00058	0.000413451	0.000973665	0.00148	0.000561	0	0.000114307	0.000587	0	0	0	0	0	10	8		2	
Methanosarcinaceae	0.002659424	0.001126238	0.000312	0.000387	0	0.000139095	0.000247	0.001263	0.05137644	0.007696704	0.000407	0.00128	0	0.000541632	6.27E-05	0	13	7			
Nitrososphaeraceae	0	9.93739E-05	0.000134	0	0	0.000417285	0	0	0.004961588	0.001295485	0	0	0.000169731	0	0	0	6	3			
Methermicoccaceae	0	0	0	0	0	0	0	0	0	0.000114307	0	0	0	0	0	0	1	0			
Rhizobiaceae	0	0	0	0.000116	0	0	0	0	0	0	0	0	0	0	0	0	1	1			
[Leptospirillaceae]	0.00016975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1			
Colwelliaceae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000752	0	1	0			
Methanobacteriaceae	0.001867255	0.001192487	0.005786	0.006574	0.00503032	0.003616469	0.010222	0.010875	0.002320743	0.007277577	0.00533	0.0255	0.012842999	0.014131666	0.026223	0.046159	16	8			archaea
Listeriaceae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.27E-05	0	1	0			
Oligosphaeraceae	0	0	0	0	0.000206725	0	0	0	0	0	0	0	0	0	0	0	1	1			
Clostridiales Family XI. Incertae Sedis	0.005771516	0.006790553	0.01086	0.017673	0.003376516	0.00083457	0.003031	0.00421	0.006642125	0.013031054	0.010976	0.018148	0.009222065	0.011965139	0.018952	0.008227	16	8	2	3	
Verrucomicrobia subdivision 3	0.003395009	0.005829938	0.005297	0.00147	0.001240353	0.001576409	0.000916	0.000561	0.000240077	0.004305582	0.004652	0.000985	0.000509194	0	0.000125	0	14	8		4	
Geodermatophilaceae	0	0	0.000178	0	0.000413451	0	0	0	0.000640205	0	0	0	0	0	0	0	3	2			
Catenulisporaceae	0	0	0.000223	0	0	0	0	0	0	0	0	9.85E-05	0	0	0	0	2	1			
Chromatiaceae	0.562609631	0.550366027	0.017848	0.001083	0	0	0	0	0.03753201	0.022823395	0.032656	0.000197	0	0	0	0	8	4			
Methylophilaceae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000167	0	1	0			
Methanocellaceae	0	9.93739E-05	0.000178	0	0	0	0	0	0	0	0.000136	0	0	0	0	0	3	2			
Paenibacillaceae	0.00016975	0.000662493	0.000979	0.000503	0.000275634	0.000324555	0.000106	0.00021	0.000800256	0.00060964	0.000678	0.00023	0	0	8.36E-05	5.79E-05	14	8		5	
Alteromonadaceae	0.00016975	0.000629368	0.000312	0.000348	0	0	0.000106	0.000175	0	0.00015241	0.002123	0.000263	0	0	0	0	9	6			
Dermacoccaceae	0	0	0	0	0	0	0	0.000105	0	0	0	0	0	0.000123098	0	0	2	1			
Christensenellaceae	0.000792169	0.000596244	0.001202	0.000155	0.00089581	0.00027819	0.000211	0.000526	0.002800896	0.001867022	0.001174	0.001346	0.00096181	0.000295436	0.000188	0.001391	16	8	3	6	
Carnobacteriaceae	0.00016975	0.000861241	0.000401	0.012027	0.000482359	0	0.001022	0.003473	0.000480154	0.000114307	0.001491	0.00594	0.006393211	0.005637895	0.012558	0.030766	15	7			
Pasteurellaceae	0	0.000364371	0.000935	0.000696	0	0	0.000106	0	0.001600512	0.002248047	0.003071	0.001542	0.000169731	0	0	0	9	4			
Acidaminococcaceae	0.000792169	0.000298122	0.001157	0.001779	0.001240353	0.000417285	0.000916	0.003473	0.000960307	0.002324252	0.002665	0.005021	0.043620934	0.000320055	0.012725	0.020762	16	8	4	7	
Peptostreptococcaceae	0.016239461	0.005664315	0.020385	0.03817	0.010405182	0.018175074	0.023512	0.022943	0.00728233	0.011011621	0.022222	0.047652	0.004186704	0.016593628	0.021751	0.023524	16	8	5	8	
Enterococcaceae	0	9.93739E-05	0.002448	0.003674	0	0	0	0.000105	0.000800256	0.000266717	0.001039	0.004627	0.002489392	0.003102073	0.001755	0.004732	12	4			
Verrucomicrobiaceae	0.00016975	0.000397496	0.001291	0.000851	0.000964719	0.000139095	0.000352	0.001438	0.000800256	0.005143837	0.00262	0.001149	0	0	8.36E-05	0	13	8		9	
Alicyclobacillaceae	0	0	0.000178	0	0	0	0	0	0.000240077	0.000114307	0.000271	0	0	0	0	0	4	1			
Desulfuromonadaceae	0	0.001093113	0.000668	0.000232	0	0	0.000141	0	0	0.00015241	0	0.000197	0	0	0	0	6	4			
Haloplasmataceae	0	0	0	0.000464	0	0	0	0.00021	0	0	0	0	0	0	0	7.73E-05	3	2			
Thermoanaerobacteraceae	0.00016975	9.93739E-05	0.000445	0	0.000413451	0.00018546	0	0.000175	0	0.000114307	0.000407	0	0.000169731	9.84785E-05	0.000167	0	11	6			
Chromobacteriaceae	0	9.93739E-05	0	0.000116	0	0	0	0	0	0	0	9.85E-05	0	0	0	0	3	2			
Defluviitaleaceae	0	0	0	0.000657	0	0	0	0	0	0.000190512	0.000136	0.00338	0	0	0.000125	0	5	1			
Elusimicrobiaceae	0	0	0	0	0	0	0	0	0	0	0	9.85E-05	0.000169731	0	0	0	2	0			
Streptococcaceae	0	0.000132499	0.000178	0.000619	0.000206725	0	0	0.000456	0	0.011316441	0.000994	0.003183	0.030777935	0.010611059	0.0028	0.029839	12	5			
Sphingomonadaceae	0	0.015899831	0.034183	0.001276	0	0	0	0	0	0.000228615	0.008988	0	0	0	0	0	5	3			
Rhodobacteraceae	0.00016975	0.009970519	0.023412	0.001856	0	0	0	0	0	0	0.009079	0	0	0.000910926	0	0	6	4			
Thermotogaceae	0.000622418	0.001291861	0.002136	0.000928	0.000620176	0.001761869	0.001375	0.000456	0	0.004191275	0.001129	0	0	0	0	0	10	8		10	
Blattabacteriaceae	0	0.000198748	0	0	0	0	0	0	0.000240077	0	0	0	0	0	0	0	2	1			
Pseudonocardiaceae	0	0.000132499	0	0.000309	0	0	0	0.00014	0	0.000342922	0.000136	0.000459	0	0.000344675	0.000125	0	8	3			
Bacillales incertae sedis	0	0	0	0	0	0	0	0	0	0.000114307	0	0	0	7.38589E-05	6.27E-05	0	3	0			
Nocardioidaceae	0	0.000993739	0.000267	0.000116	0	0	0	0	0	0	0.000271	0.000722	0	0.00064011	0	0	6	3			
Brachyspiraceae	0	0	0	0	0	0	0	0	0	0	0	0	0.00039604	0	0	0	1	0			
Acidimicrobiaceae	0	0	0.000267	0	0	0	0.000211	0.00021	0	0.000114307	0	0	0	0	0	0	4	3			
Archaeoglobaceae	0	0	0	0	0	0	0	0	0.000240077	0	0	0	0	0	0	0	1	0			
Oceanospirillaceae	0	0	0	0	0	0	0	0	0	0	0.000271	0	0.07145686	0	0	0	2	0			
Anaerolineaceae	0	0.00235185	0.003383	0.001354	0	0.000324555	0.001516	0.001509	0	0.001752715	0.0028	0.000197	0	0	6.27E-05	0	10	6			
unclassified Burkholderiales	0	0.000198748	0	0	0	0	0	0	0	0.00015241	0	0	0	0	0	0	2	1			
Salinisphaeraceae	0	0.000132499	0	0	0	0	0	0	0	0.000190512	0	0	0	0	0	0	2	1			
Syntrophorhabdaceae	0	0	0	0	0	0.001251855	0.001621	0.000246	0	0.00060964	0	0	0	0	0	0	4	3			
Bdellovibrionaceae	0	0.000364371	0	0	0.000413451	0	0	0.000246	0.000240077	0.000533435	0	0.000131	0.001131542	0	6.27E-05	7.73E-05	9	3			
Methanocorpusculaceae	0.002093589	0.001722482	0.001602	0.001934	0.003376516	0.00074184	0.000247	0	0.008322663	0.0030482	0.000994	0.004726	0.002036775	0	0	0	12	7			
Methanocalculaceae	0	0	0.000134	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1			
Clostridiaceae	0.142533809	0.108185101	0.250011	0.440869	0.170272878	0.2646977	0.22084	0.286687	0.268005762	0.251666984	0.295167	0.413672	0.060028289	0.339283076	0.427422	0.486384	16	8	6	11	
Myxococcaceae	0	0	0	0	0	0	0	0	0	0.000190512	0	0	0	0	0	0	1	0			
Promicromonosporaceae	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000763208	0	0	1	0			
Micromonosporaceae	0	0	0	0	0	0.000139095	0	0	0	0	0	0	0	0	0	0	1	1			
Ectothiorhodospiraceae	0	0	0.00049	0	0	0	0	0	0.000560179	0	0.000181	0	0	0	0	0	3	1			
Chthoniobacter	0	0	0	0	0.000206725	0	0	0	0	0	0	0.000131	0	0	0	0	2	1			
Brevibacteriaceae	0	0	0	0.000116	0	0.00037092	0.000282	0.000351	0	0.000190512	0	0.000131	0.000169731	0.018317002	0.008713	0.000406	10	4			
Oxalobacteraceae	0	0.000695618	0.000134	0.000155	0	0	0	0	0	0	0.000181	0	0	0	6.27E-05	0	5	3			
Methanomicrobiaceae	0.001358004	0.002086853	0.000356	0.000155	0.001515987	0.007140208	0.001375	0.001859	0.006322023	0.020041913	0.000136	0.000295	0.000735502	0	0.000125	5.79E-05	15	8			archaea

Spirulinaceae	0	0.000198748	0.000579	0	0	0	0	0	0	0	0	0	0.000136	0	0	0	0	0	0	3	2					
Microthrixaceae	0	0	0	0	0	0	0	0	0	0	0	0.000114307	0	0	0	0	0	0	0	1	0					
Moraxellaceae	0	9.93739E-05	0.000579	0.001276	0	0	0	0	0.000105	0.000480154	0.001447895	0.000136	0	0.001244696	0.036707864	0.003469	0.00085			11	4					
Methylococcaceae	0	9.93739E-05	0	0	0	0	0	0	0	0	0	0.000136	0	0	0	0	0	0	0	2	1					
Peptoniphilaceae	0.00599785	0.007519295	0.022077	0.014734	0.000757993	0.001251855	0.003877	0.001228	0.009362996	0.003162507	0.030352	0.020708	0.013239038	0.05608351	0.118222	0.006315				16	8	7	12			
Euzebyaceae	0	0	0	0	0	0	0.000106	0	0	0	0	0	0	0	0	0	0	0	0	1	1					
Kineosporiaceae	0.00016975	9.93739E-05	0.000267	0.000116	0.000206725	0.00027819	0.000176	0.000877	0.000480154	0.000114307	0.000903	0.000459	0.000282885	0	6.27E-05	5.79E-05				15	8		13			
Amoebophilaceae	0	0	0	0	0	0	0	0	0	0.000190512	0	0	0	0	0	0	0	0	0	1	0					
unclassified Fusobacteria	0	0	0.000134	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1					
Porphyromonadaceae	0.002772591	0.006757428	0.009614	0.016629	0.013712789	0.002225519	0.007261	0.013541	0.010723431	0.016650791	0.01346	0.018641	0.043847242	0.004702349	0.014752	0.020066				16	8	8	14			
Prevotellaceae	0.00016975	9.93739E-05	0.000846	0.000735	0.007855568	0	0.002115	0.00421	0.000480154	0.010478186	0.002529	0.005021	0.133917963	0.000738589	0.026933	0.065337				15	7					
Dermatophilaceae	0	0	0	0.000851	0	0	0	0	0	0.000114307	0	0	0	0	6.27E-05	0	0	0	0	3	1					
Streptomycetaceae	0	0	0.000668	0.000387	0	0	0.000458	0.000316	0	0.000266717	0.000587	0.000427	0	0.000369294	6.27E-05	0	0	0	0	9	4					
unclassified Clostridiales	0.001810672	0.000563119	0.001113	0.000116	0.000206725	0	0.000388	0.000105	0.000960307	0.000228615	0.000678	0.001149	0.001301273	0.000590871	0.002424	0.000695				15	7					
Coriobacteriaceae	0.000565835	0.001589983	0.008546	0.004486	0	0	0	0.00021	0.002880922	0.00091446	0.004788	0.005513	0.00311174	0.000123098	0.003907	0.006528				13	5					
Enterobacteriaceae	0	0.000264997	0.001068	0	0	0.000417285	0.000106	0	0.000240077	0.00015241	0.000136	9.85E-05	0.004016973	0.000837067	6.27E-05	5.79E-05				12	4					
Bacteroidaceae	0.010977197	0.009639273	0.01451	0.011563	0.107979603	0.008670252	0.014135	0.013577	0.020086428	0.0213755	0.010614	0.016278	0.017538897	0.012211335	0.017531	0.010101				16	8	9	15			
Flavobacteriaceae	0	0.000960615	0.003294	0.003365	0.002687431	0.00083457	0.002397	0.001473	0.002960948	0.00243856	0.003884	0.00361	0.00311174	0.004012999	0.000669	0.000637				15	7					
Hydrogenothermaceae	0	0.000231873	0.00049	0.000116	0	0	0.000106	0	0	0	0	9.85E-05	0	0	0	0	0	0	0	5	4					
Aerococcaceae	0	0	0.000534	0.00874	0	0	0.000106	0.000561	0	0	0.000452	0.002658	0.00175389	0.013146881	0.028438	0.021515				10	4					
Ardenscatenaceae	0	0	0.000178	0.000193	0.000206725	0	0	0.000667	0	0	0.000542	0	0.000169731	0	0	0	0	0	0	6	4					
Vibrionaceae	0.00016975	0.000761867	0.001291	0.00058	0	0	0.000211	0	0	0.000800152	0.001129	0	0	0	0	0	0	0	0	7	5					
Syntrophomonadaceae	0.00016975	0.000563119	0.001602	0.000348	0	0.000510015	0.002115	0.002736	0.000480154	0.003695942	0.0014	0	0	7.38589E-05	0	5.79E-05	0	0	0	12	7					
Phyllobacteriaceae	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000146	0	0	0	0	1	0					
Desulfobacteraceae	0.000226334	0.000861241	0.001958	0.000116	0.000826902	0.00055638	0.00148	0.000947	0.000240077	0.000495332	0.001491	9.85E-05	0.000169731	7.38589E-05	0.000167	7.73E-05				16	8	10	16			
Dietziaceae	0	0	0	0	0	0.000139095	0	0.000105	0	0	0.000136	0	0	0.012309813	0.000293	0.000135	0	0	0	6	2					
Thermoanaerobacterales Family IV. Incertae Sedis	0	0	0	0	0	0	0	0	0	0.001562202	0	0	0	0	0	0	0	0	0	1	0					
Leptotrichiaceae	0	0	0	0	0	0	0	0	0	0.00030482	0	0	0	0	0	0	0	0	0	1	0					
Geminicoccus	0	0	0	0.000116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1					
Deferribacteraceae	0	0.000132499	0.00049	0	0	0	0	0	0	0.000381025	0.000587	0	0.000169731	0	0	0	0	0	0	5	2					
[Paraprevotellaceae]	0	0	0	0	0	0	0	0	0	0	0	0	0.000226308	0	6.27E-05	0.000193	0	0	0	3	0					
Thiotrichaceae	0	9.93739E-05	0.000267	0.000116	0	0	0	0.00014	0	0.000228615	0.000181	0	0.000282885	0	0	0	0	0	0	7	4					
Clostridiales Family XIX. Incertae Sedis	0	0	0	0.000155	0	0	0	0	0	0	0	9.85E-05	0	7.38589E-05	6.27E-05	0	0	0	0	4	1					
Cardiobacteriaceae	0	0	0	0.000116	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1					
Actinomycetaceae	0.000339501	0.000331246	0.001335	0.003635	0	0	0	0.000386	0.001440461	0.000952562	0.00122	0.003413	0	0.004579251	0.002904	0.000599				12	5					
Eubacteriaceae	0.002206756	0.002517473	0.014421	0.014812	0.003238699	0.002040059	0.00497	0.009191	0.006001921	0.009030291	0.015447	0.018575	0.020763791	0.002757398	0.009047	0.012399				16	8	11	17			
Neisseriaceae	0	0	0	0	0	0	0	0	0	0	0	9.85E-05	0	0	0	0	0	0	0	1	0					
Veillonellaceae	0	0.000165623	0.000534	0.000387	0.00227398	0.00027819	0.000952	0.001859	0	0.002476662	0.000858	0.000689	0.106647808	0.000147718	0.002654	0.002163				14	7					
Erythrobacteraceae	0	0.000463745	0.001558	0	0	0	0	0	0	0	0.000136	0	0	0	0	0	0	0	0	3	2					
Propionibacteriaceae	0.005714932	0.004769949	0.009214	0.011718	0	0.00018546	0.001057	0.000386	0.003841229	0.00060964	0.014137	0.010633	0	0.000418534	0.000188	0	0	0	0	13	7					
Coxiellaceae	0	0.000132499	0.000757	0	0	0	0.000106	0	0	0	0.000678	0.000197	0	0	0	0	0	0	0	5	3					
Geobacteraceae	0	9.93739E-05	0.001914	0	0	0.00018546	0.000282	0	0	0.000114307	0.000858	0	0	0	0	0	0	0	0	6	4					
Pseudanabaenaceae	0	0.000132499	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1					
Lactobacillaceae	0	0	0	0.000464	0.000206725	0	0.000352	0.004069	0.001200384	0.004457992	0.000542	0.001903	0.06602546	0.013023783	0.038091	0.063811				12	4					
Clostridiales Family XIII. Incertae Sedis	0.000396084	0.001888105	0.005697	0.00116	0.000826902	0.00111276	0.001939	0.000456	0.000880282	0.000838255	0.003659	0.00233	0.000509194	0.000443153	0.000982	0.00338				16	8	12	18			
Methanosaetaceae	0.023595315	0.013448607	0.0304	0.037048	0.168687982	0.370502596	0.420776	0.322575	0.0690621	0.208192037	0.03383	0.006859	0.020424328	0.027180068	0.027999	0.008942				16	8					archaea
Proteinivoraceae	0	0	0	0	0	0	0	0	0	0	0	0	0	9.84785E-05	0	0	0	0	0	1	0					
Desulfohalobiaceae	0	0.000794992	0.00543	0.000232	0.001447078	0.00064911	0.000599	0	0	0.00045723	0.002213	0	0	0	0	0	0	0	0	8	6					
Helicobacteraceae	0	0	0	0	0	0	0	0	0	0	0	0.000131	0	0	0	0	0	0	0	1	0					
Armatimonadaceae	0	0.000198748	0.000134	0.000155	0	0	0	0	0	0.001028767	0.000316	0	0	0	0	0	0	0	0	5	3					
Prolixibacter	0	0	0	0	0.000689085	0	0.000458	0	0	0.001905125	0.000181	0	0	0	0	0	0	0	0	4	2					
Nocardiopsaceae	0	0	0	0	0	0	0	0	0	0	0	0	0	7.38589E-05	0	0	0	0	0	1	0					
Thermoproteaceae	0	9.93739E-05	0	0	0.000206725	0.0009273	0.000106	0.000105	0.000240077	0.00228615	0	0	0	0	0	0	0	0	0	7	5					
Opitutaceae	0.00016975	0	0	0	0	0	0	0	0	0.000419127	0	0	0	0	0	0	0	0	0	2	1					
Micrococcaceae	0	0.000298122	0.000445	0.000232	0	0	0	0.000667	0	0.000228615	0.000768	0.000558	0	0.002855877	0.000272	0.000212	0	0	0	10	4					
Phycisphaeraceae	0	0	0	0	0	0	0	0	0	0.000114307	0	0	0	0	0	0	0	0	0	1	0					
Bacillaceae	0.001018503	0.001589983	0.00681	0.001431	0.003031974	0.00074184	0.003454	0.001754	0.004401408	0.00396266	0.009395	0.002625	0.006845827	0.000763208	0.010029	0.001893				16	8	13	19			
Ruminococcaceae	0.025123069	0.030209679	0.061112	0.052943	0.029768467	0.007232938	0.016744	0.026031	0.047775288	0.039283673	0.074842	0.087165	0.108401697	0.010512581	0.026202	0.035131				16	8	14	20			
Sanguibacteraceae	0	0	0	0.000116	0	0	0	0	0	0	0.000136	0	0	7.38589E-05	0	0	0	0	0	3	1					
Clostridiales Family XVII. Incertae Sedis	0	0	0	0	0	0	0	0	0	0.000114307	0	0	0	0	0	0	0	0	0	1	0					
Syntrophobacteraceae	0	0	0	0	0	0	0	0	0	0.000381025	0.000136	0	0	0	0	0	0	0	0	2	0					
Flammeovirgaceae	0	0.000231873	0.000445	0.000232	0.001791621	0.00074184	0.001974	0.000386	0.002080666	0.009220804	0.001536	0.000131	0	0	6.27E-05	0	0	0	0	12	7					
Rhodocyclaceae	0.00016975	0.000761867	0.001602	0	0	0	0	0	0	0.000571537	0.001355	0	0	0	0	0	0	0	0	5	3					
Acholeplasmataceae	0.004300345	0.006393057	0.014644	0.000735	0.008613561	0.002735534	0.000493	0.002982	0.000800256	0.000228615	0.006007	0.001739	0.00758133	0.000196957	0.000543	0	0	0	0	15	8		21			
Natranaerobiaceae	0	0	0	0	0.000206725	0	0.000106	0	0	0.00015241	0	0	0	0	0	0	0	0	0	3	2					
Lachnospiraceae	0.010524529	0.003179966	0.016202	0.013187	0.022464168	0.003709199	0.007438	0.010244	0.034090909	0.016803201	0.015357	0.031374	0.041414427	0.002412723	0.025533	0.033663				16	8	15	22			
Leuconostocaceae	0	0	0	0	0	0	0	0	0	0	0	0	0.000565771	0.004382294	0.000355	0.000541	0	0	0	4	0					
Prolixibacteraceae	0.000339501	0.000563119	0.001335	0.000812	0.002136163	0.00046365	0.001234	0.000561	0.008802817	0.012840541	0.003523	0.000656	0	0.000147718	0	5.79E-05	0	0	0	14	8		23			
Gracilibacteraceae	0.001810672	0.003842459	0.00681	0.009204	0.001791621	0.004219214	0.005252	0.007227	0.00528169	0.007353782	0.00944	0.008566	0	0.001230981	0.000752	0.000464	0	0	0	15	8		24			
Anaplasmataceae	0	0	0	0.000232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1					
Desulfurococcaceae	0	0	0	0	0	0.000139095	0	0	0	0.000228615	0	0	0	0	0	0	0	0	0	2	1					
Chitinophagaceae	0	9.93739E-05	0	0	0	0	0	0	0	0	0.000136	0	0	0	0	0	0	0	0	2	1					
Phormidiaceae	0	0.000364371	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1					
Clostridiales Family XII. Incertae Sedis	0	0	0.000134	0.000541	0	0.000139095	0	0.000105	0	0.000381025	0	0.001936	0	0.004677729	0.000815	0	0	0	0	8	4					
Comamonadaceae	0.013410287	0.008413661	0.013486	0.0029	0	0.000139095	0	0	0.000400128	0.000342922	0.004923	0.000263	0	0.002388104	0	5.79E-05	0	0	0	11	5					
Microbacteriaceae	0.000452668	0.002020604	0.006944	0.001276	0	0	0	0	0.00072023	0.000228615	0.003433	0	0.000226308	0.001698754	0.000355	5.79E-05	0	0	0	11	4					
Methanoregulaceae	0.00016975	0	0	0	0.00275634	0.009226632	0.008037	0.010139	0.000240077	0.00137169	0	0	0.000848656	0.000467773	6.27E-05	7.73E-05	0	0	0	11	5					
Sphingobacteriaceae	0.002319923	0.001159363	0.004451	0.003365	0.002549614	0.001854599	0.000811	0.001052	0.011043534	0.010592494	0.00271	0.004135	0.002942008	0.000590871	0.000501	0.00085				16	8	16	25			
Piscirickettsiaceae	0	0	0	0	0	0	0	0	0	0	0	0.000197	0	0	0	5.79E-05	0	0	0	2	0					
Peptococcaceae	0.001810672	0.005432442	0.010905	0.004989	0.004685777	0.002503709	0.005605	0.003263	0.004881562	0.014136026	0.009485	0.006203	0.001867044	0.001255601	0.001943	0.001873				16	8	17	26			
Pelobacteraceae	0	9.93739E-05	0.001068	0	0	0.00046365	0.000352	0	0	0	0.000316	0	0	0	0	0	0	0	0	5	4					

[Weeksellaceae]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5.79E-05	1	0			
Desulfobulbaceae	0.004243762	0.001225612	0.004273	0.00932	0.001791621	0.00055638	0.003208	0.003648	0.001520487	0.00396266	0.006685	0.003544	0.000565771	0.001107883	0.000251	0	15	8		27	
Alcaligenaceae	0.000735585	0.000298122	0.000312	0.000116	0	0	0	0	0	0	0.000678	0	0	0.000837067	0.00023	0	7	4			
Caulobacteraceae	0	0	0	0	0	0	0	0	0	0	0	0	0	7.38589E-05	0	0	1	0			
Hyphomicrobiaceae	0	0.000165623	0	0	0.000344542	0	0.000106	0.000281	0	0.000342922	0	0	0.019236209	0.000295436	0.001525	0.004983	9	4			
Marinilabiliaceae	0.002942341	0.003709961	0.006988	0.003945	0.008131202	0.005146513	0.006733	0.001614	0.013204225	0.017565251	0.007001	0.001903	0.003281471	0.006105667	0.001107	0.001062	16	8	18	28	
Acidobacteriaceae	0	0	0	0	0	0	0	0	0	0	0	9.85E-05	0	0	0	0	1	0			
Anaeroplasmataceae	0	0	0	0	0	0	0	0	0	0	0	0	0.000169731	0	0	0	1	0			
Caldicoprobacteraceae	0.00016975	0	0	0	0	0	0	0	0.000320102	0	0.000407	0	0	0	0	0	3	1			
Succinivibrionaceae	0	9.93739E-05	0.000134	0	0	0	0	0.000316	0.000240077	0.000114307	0.000181	9.85E-05	0.015615276	0	0.000627	0.000309	10	3			
Methanospirillaceae	0.004809597	0.003875584	0.023813	0.01427	0.011094267	0.025964392	0.002291	0.002912	0.0196863	0.011316441	0.020822	0.006465	0.001810467	0	6.27E-05	0	14	8			**archaea**
Orbaceae	0	0.000463745	0.001469	0	0	0	0	0	0	0.000533435	0.001671	0	0	0	0	0	4	2			
Rubrobacteraceae	0.000396084	0.002086853	0.002448	0.001199	0.000275634	0.002225519	0.002115	0.000982	0	0.000114307	0.001084	9.85E-05	0	0	0.000188	0	12	8		29	
Clostridiales Family XIV. Incertae Sedis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6.27E-05	0	1	0			
Planococcaceae	0.00016975	0	0	0.000116	0	0	0	0	0.000240077	0.000381025	0.000452	0.000459	0.001697313	0.001280221	0.006791	0.000483	10	2			
Pseudomonadaceae	0.003508176	9.93739E-05	0.001068	0.001586	0.000275634	0	0	0	0	0	0.000407	0	0.010806223	0.001034024	0.000522	5.79E-05	10	5			
Koribacteraceae	0	0	0	0	0	0	0	0	0	0	0	9.85E-05	0	0	0	0	1	0			
Caldilineaceae	0.000396084	0.001093113	0.001291	0.000735	0.000206725	0.000139095	0.000388	0.00014	0	0	0.000994	0	0	0	0	0	9	8		30	
Gaiellaceae	0	0	0.000846	0	0	0.00018546	0.000247	0.000105	0	0	0.000361	0	0	0	0	0	5	4			
Rikenellaceae	0.000396084	0.001623108	0.001958	0.004486	0.009027012	0	0.001339	0.000386	0.00200064	0.00106687	0.001716	0.001313	0.00718529	0	0.000501	0.000348	14	7			
Corynebacteriaceae	0	0	0.004629	0.000387	0.000206725	0.004311944	0.000141	0.001333	0.004801536	0.003467327	0.002529	0.002757	0.0027157	0.296051012	0.027059	0.003515	14	6			
Cryomorphaceae	0.000226334	0.001623108	0.000623	0	0.002067255	0.005146513	0.002855	0.000105	0.000640205	0.001943227	0.000136	9.85E-05	0.000226308	0	6.27E-05	0	13	7			
Dictyoglomaceae	0	0	0	0	0	0	0	0	0	0	0.000136	0	0	0	0	0	1	0			
Pseudoalteromonadaceae	0	9.93739E-05	0.000312	0	0	0	0	0	0	0	0.000316	0	0	0	0	0	3	2			
Francisellaceae	0	0	0	0	0	0	0	0	0	0	0.000136	0	0	0	0	0	1	0			
Burkholderiaceae	0	0.000894365	0.000712	0.000116	0	0	0	0	0	0	0.000271	0	0	0	0	0	4	3			
Halothiobacillaceae	0	0	0	0	0	0	0	0	0	0.00015241	0	0	0	0	0	0	1	0			
Fusobacteriaceae	0	0.000198748	0.000134	0	0	0.000139095	0	0	0	0.00076205	0.000768	0.000328	0	0	0	0	6	3			
Aeromonadaceae	0	0	0	0	0	0	0	0	0	0	0	0	0	7.38589E-05	0	0	1	0			
Spirochaetaceae	0.019068636	0.015502335	0.02675	0.008044	0.089581036	0.017247774	0.00631	0.008349	0.0131242	0.02305201	0.031572	0.042007	0.006732673	0.00396376	0.009131	0.006122	16	8	19	31	
Acetobacteraceae	0	9.93739E-05	0	0.000116	0	0	0	0	0	0	0	0	0	0	0	0	2	2			
Halomonadaceae	0.00016975	0.000331246	0.000267	0.000116	0	0	0	0.000175	0	0.000114307	0	0	0	7.38589E-05	0	0	7	5			
Staphylococcaceae	0	0	0	0.000116	0	0.00046365	0	0.000105	0	0.000495332	0.000136	0.000197	0	0.005613275	0.001442	0.000541	9	3			
Ignavibacteriaceae	0	0.000728742	0.000623	0	0	0	0	0	0	0.000190512	0.000316	0	0	0	0	0	4	2			
Fibrobacteraceae	0	0.000198748	0.000178	0	0.001722712	0.000510015	0.000247	0	0.002800896	0.001867022	0.000136	0	0.000735502	0.001427938	0.000251	7.73E-05	12	5			
Parachlamydiaceae	0	0	0	0	0	0	0.000106	0	0	0	0	0	0	0	0	0	1	1			
Candidatus Xiphinematobacter	0	0	0.000178	0	0	0	0	0	0	0	0.000271	0	0	0	0	0	2	1			
Leptospiraceae	0.00016975	0.000132499	0.000401	0	0	0	0.000458	0	0.000960307	0.002248047	0.00131	0	0	0	0	0	7	4			
Desulfovibrionaceae	0.00016975	0.000198748	0.000801	0.000232	0.000757993	0.00018546	0	0.00014	0.000480154	0.000419127	0.000226	0.000755	0.002093352	0.000172337	0.001442	0.00085	15	7			
Brucellaceae	0	0.000165623	0.000134	0.000116	0	0	0.000106	0	0.000320102	0.001257382	0	0.000131	0	0.000147718	0.000167	5.79E-05	10	4			
Thermoleophilaceae	0	0	0	0	0	0	0	0	0	0.00015241	0	0	0	0	0	0	1	0			
Syntrophaceae	0.009053358	0.012653616	0.025326	0.00321	0.037624035	0.037323813	0.035955	0.041045	0.001440461	0.021413603	0.014182	0.000131	0.009618105	0.000960165	0.00257	0.000792	16	8	20	32	
Bacillales Family X. Incertae Sedis	0	0	0	0.000116	0	0	0	0	0	0	0	0	0	0	0	0	1	1			
Thermomonosporaceae	0.00016975	0.000198748	0.000356	0	0	0	0.000141	0.00014	0	0	0.000542	0	0.000226308	7.38589E-05	0.000146	0	9	5			
Moritellaceae	0	0	0	0	0	0	0	0	0	0	0	0.000394	0	0	0	0	1	0			
Sporichthyaceae	0	0	0	0	0	0	0	0.000105	0	0	0	0	0	0	0	0	1	1			
Synergistaceae	0.078424716	0.091192156	0.162683	0.110295	0.223745865	0.13997589	0.121788	0.114155	0.26056338	0.091179272	0.144264	0.074366	0.017878359	0.003151312	0.014459	0.001738	16	8	21	33	
Campylobacteraceae	0	0.000198748	0.001202	0.00116	0.000551268	0.00027819	0	0.000877	0	0.000342922	0.001084	0.000755	0.002036775	0	0	0	10	6			
Caldithrix	0.00016975	0.000331246	0.000623	0.000155	0.001515987	0	0	0	0.000480154	0.00121928	0.001355	0	0.000169731	0	0	0	9	5			
Deinococcaceae	0	0.000132499	0.000312	0	0	0	0	0	0	0	0.000813	0	0	0	0	0	3	2			
Sutterellaceae	0	0	0	0	0	0	0	0	0	0	0	0	0.000169731	0	0	0	1	0			
Intrasporangiaceae	0	0	0	0	0	0	0	0	0	0	0.000181	0.00023	0	0.000246196	0	0	3	0			
Jonesiaceae	0	0	0	0	0	0	0	0	0	0	0	0	0	9.84785E-05	0	0	1	0			
unclassified Gammaproteobacteria	0	0	0.001113	0.000387	0	0	0.000247	0.000105	0	0	0	9.85E-05	0	0	0	0	5	4			
Methanomassiliicoccaceae	0	9.93739E-05	0.000134	0	0.002894157	0.001251855	0	0	0	0.00045723	0	0.000131	0.014087694	0	0	0	7	4			
Dermabacteraceae	0	0	0	0	0	0.000139095	0	0	0	0	0	0.000197	0	0.001698754	0.00046	5.79E-05	5	1			
Rhodothermaceae	0	0	0	0	0	0	0	0	0	0	0.000136	0	0	0	0	0	1	0			
Polyangiaceae	0	0	0	0	0	0	0	0	0	0.000266717	0	0	0	0	0	0	1	0			
Xanthomonadaceae	0.000282917	0.000364371	0.000579	0	0	0.00018546	0.000211	0	0.000240077	0.000571537	0.000587	0.000131	0.005205092	0.002388104	0.002236	0.000367	13	5			
Cellulomonadaceae	0	0	0	0	0	0	0	0.000842	0	0	0	0	0	0	8.36E-05	0	2	1			
Solibacteraceae	0	0	0	0	0	0	0.000106	0	0	0	0	0	0	0	0	0	1	1			
Pasteuriaceae	0	0	0	0.000193	0	0	0	0	0	0	0	0	0	0	0	0	1	1			
Catabacteriaceae	0.00016975	0	0.000267	0.000116	0	0.000139095	0.000106	0.000316	0.000240077	0.000114307	0	0.000525	0	0	0	0	9	6			
Cytophagaceae	0.000565835	0.000596244	0.002359	0.000928	0.000826902	0.002040059	0.00289	0.000351	0.003201024	0.009030291	0.002529	0.001346	0.001923621	0.000147718	0.000522	0.000773	16	8	22	34	
Bifidobacteriaceae	0	9.93739E-05	0	0	0	0	0	0	0.000240077	0	0	0	0	0.000221577	0	0	3	1			
Gordoniaceae	0	0	0	0	0	0	0	0	0	0	0	0	0	0.000172337	0	0	1	0			
Puniceicoccaceae	0	0	0	0	0	0	0	0.000175	0	0	0	0	0	0	0	0	1	1			
Dethiosulfovibrionaceae	0	0.000132499	0	0.000309	0	0	0	0	0.000400128	0	0	0.001575	0	0	0	0	4	2			
Oscillospiraceae	0	0.000132499	0.000623	0.000619	0.000206725	0	0.001057	0.000491	0.003040973	0.00045723	0.001491	0.001871	0.015049505	0.001772613	0.001943	0.004654	14	6			
Halanaerobiaceae	0	0	0	0	0	0	0	0	0	0.000190512	0	0	0	0	0	0	1	0			
Spiroplasmataceae	0	0	0	0	0	0	0	0	0	0	0	9.85E-05	0	0	0	0	1	0			

* Each column should add up to 1.0 (100%)

0% > 5%

Supplementary Table S3. Relative abundances of OTUs identified using archael primer set, presented as relative abundances (%).

	SpOL_RA	SuOL_RA	FOL_RA	WOL_RA	SpCL_RA	SuCL_RA	FCL_RA	WCL_RA	SpOHRA	SuOH_RA	FOH_RA	WHO_RA	SpCH_RA	SuCH_RA	FCH_RA	WCH_RA	# Identified in all samples	# Identified in all 8 lagoon samples
Methanospirillaceae	0.22418	0.19245	0.33251	0.35818	0.08608	0.17113	0.03529	0.05450	0.11824	0.08842	0.38320	0.13634	0.03204	0.00146	0.00737	0.00398	16	8
Methanomicrobiaceae	0.07631	0.06576	0.02167	0.00784	0.08736	0.08504	0.01813	0.01591	0.07271	0.12628	0.01458	0.01928	0.04904	0.00511	0.00289	0.00390	16	8
Methanomassiliicoccaceae	0.08870	0.02625	0.01051	0.00478	0.09022	0.01539	0.00295	0.00221	0.06801	0.03708	0.00704	0.01383	0.14499	0.00237	0.00989	0.00460	16	8
Methanoregulaceae	0.00103	0.00223	0.00000	0.00707	0.05572	0.13448	0.12042	0.22172	0.00367	0.00730	0.00169	0.00293	0.03094	0.02772	0.02593	0.01794	15	7
Methanocorpusculaceae	0.16987	0.10700	0.07953	0.04848	0.04648	0.01409	0.00624	0.00498	0.10902	0.04224	0.06170	0.05339	0.03914	0.00146	0.00438	0.00023	16	8
Methermicoccaceae	0.00031	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00038	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	2	1
Methanosarcinaceae	0.15335	0.07752	0.01713	0.01905	0.01034	0.18793	0.02466	0.01245	0.23808	0.21349	0.17786	0.03603	0.08179	0.02635	0.07519	0.00242	16	8
Methanocellaceae	0.00000	0.00000	0.00000	0.00000	0.00000	0.00047	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1	1
Methanopyraceae	0.00919	0.05300	0.03451	0.00745	0.00748	0.01409	0.00219	0.00221	0.00113	0.02781	0.00456	0.00000	0.00066	0.00027	0.00093	0.00000	14	8
Methanothermaceae	0.00000	0.00000	0.00000	0.00000	0.00018	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1	1
Methanocalculaceae	0.00423	0.00037	0.00324	0.00529	0.00134	0.00470	0.00150	0.00221	0.00414	0.00421	0.00258	0.00303	0.00224	0.00000	0.00000	0.00023	14	8
Methanosaetaceae	0.04957	0.23455	0.22756	0.11340	0.42615	0.25018	0.58568	0.28050	0.17345	0.29831	0.08352	0.07458	0.15352	0.33966	0.24450	0.08417	16	8
Nitrososphaeraceae	0.00041	0.00000	0.00052	0.00000	0.00037	0.00000	0.00000	0.00000	0.01533	0.02404	0.00000	0.00040	0.00569	0.00000	0.00065	0.00000	8	3
Thermococcaceae	0.00413	0.01511	0.01959	0.00198	0.00511	0.01092	0.01034	0.00249	0.00028	0.00721	0.00506	0.00000	0.00055	0.00000	0.00056	0.00000	13	8
Methanobacteriaceae	0.17741	0.18489	0.23508	0.42259	0.14217	0.05567	0.18608	0.39585	0.18173	0.09211	0.24720	0.65910	0.43486	0.59478	0.62257	0.88151	16	8
Thermofilaceae	0.02726	0.04087	0.01687	0.00357	0.02488	0.04463	0.00549	0.00401	0.01289	0.03125	0.01071	0.00111	0.00672	0.00082	0.00280	0.00101	16	8
Methanocaldococcaceae	0.00000	0.00000	0.00000	0.00000	0.01399	0.01010	0.00104	0.00097	0.00000	0.00000	0.00000	0.00000	0.00508	0.00000	0.00000	0.00000	5	4
Archaeoglobaceae	0.00372	0.00000	0.00130	0.00032	0.00213	0.00117	0.00000	0.00000	0.00094	0.00026	0.00030	0.00000	0.01274	0.00000	0.00233	0.00000	10	5
Methanococcaceae	0.01033	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	1	1

Key	
Sp = Spring	O = Open
Su = Summer	C = Covered
F = Fall	L = Lagoon
W = Winter	H = House

Supplementary Figure S4. NMS ordination plot, as seen in Figure 4, demonstrating lagoon and house community structure in relation to individual archaeal family relative abundances.