APPENDIX A

Name	**Depoe Bay**			**Biosolid Analysis**			
File No.	**24095**			2017			
Phone No.							
		Lab analysis #	Coffey	**Date**			
	mg/kg dry-wt.		A102271-A	2/26/2001	A102271		
Arsenic	11						
Cadmium	2.25		**Total Metric tons**	**1**	**Total US tons**	1.11	
Chromium	17		**Total US tons**	**18.70**	**Total Metric tons**	16.82579	
Copper	427		**Acres land**	**65**			
Lead	32.5		**applied**				
Mercury	0.13		City used primary site,	total acres			
Molybdenum	6.55		**Cake Biosolid**	1	0.85	Replace the 1 with the appropriate decimal	
Nickel	18		**Liquid Biosolid**	0.5	0.5	Dewater (10-50%) and Liquid	
Selenium	0.1		**% Total Solids**	2.1			
Zinc	429		**% Volatile Solids**	77		Conversion	
						US-> Metric tons multiply by 1.1	
Total Organic	1.38	35000	**Organic N = (%TKN-%NH4)**			Metric -> US tons multiply by 0.9	
TN	5.4	54000					
NH4	1.9	19000	**Inorganic N = (%NH4 + %NO3)**		color key		
NO3	2.12	21200				requires entered value	
pH	7.06					calculated value	
Fecal Coliform		<2,000,000 /dry gr.	Total Solids			replace the 1 with # from selection	
org./100ml	680						
Phosphorus	2.02	20200					
Potassium	0.39	3900					
Anaerobic D.	1	0.2	Replace the 1 with the appropriate decimal				
Aerobic D.	0.3	0.3	Replace the 1 with the appropriate decimal				
Drying Bed	1	0.15	Replace the 1 with the appropriate decimal				
Gal/yr.	213490						
lb. TS/yr.	37390.64		**37390.64**	**lb. Total Solids**	18.70	**dry US tons**	
Dry TS ton/yr.	18.70						

Metal	**Biosolid concentratio mg/kg**	**503.13 Table 3 Conc. mg/kg**	**503.13 Table 3 metal lb./ton biosolid**	**Yearly lb. Metal per ton biosolids**	**Yearly Loading lb./ac-yr.**	**Yearly Loading kg/ha**

Arsenic	11	41	0.082	0.022	0.00633	0.007
Cadmium	2.25	39	0.078	0.005	0.00129	0.001
Chromium	17	1200	2.400	0.034	0.00978	0.011
Copper	427	1500	3.000	0.854	0.24563	0.275
Lead	32.5	300	0.600	0.065	0.01870	0.021
Mercury	0.13	17	0.034	0.000	0.00007	0.000
Molybdenum	6.55	18	0.036	0.013	0.00377	0.004
Nickel	18	420	0.840	0.036	0.01035	0.012
Selenium	0.1	36	0.072	0.000	0.00006	0.000
Zinc	429	2800	5.600	0.858	0.24678	0.276

	mg/kg dry-wt.	**lb. N / yr.**	**lb./ac-yr.**	**kg/ha**
Total Organic	1.38	392.60	6.04	6.76
TKN	5.4	605.73	31.06	34.79
NH4	1.9	355.21	5.46	6.12
NO3	2.12	792.68	12.20	13.66

lb. mineralized organic N/dry ton	6.04		
lb. inorganic N/dry ton	17.66		
Total lb. available N/dry ton	23.70		
Nitrogen loading rate N lb./acre	100.00	112	**kg/ha**
Number dry tons land applied per acre	4.22	9.452	**metric ton/ha**
Total lb. Org-N produced per year	392.60		
Total lb. NH4 produced per year	355.21		
Total lb. NO3 produced per year	792.68		
Total lb. Available N per year	1540.49		
Total number of acres required per year	15.40		
	65.00		
Total lb. Phosphorus /yr	755.29		
lb. Phosphorus/acre-yr	11.62		
Total lb, Potassium-yr	145.82	**gal. / ac**	**3284**

Trace Metals
Sample calculation:
[([(5.0 mg As/1000000 mgTS X 140000 lb. Total Solids) = 0.07 lb. As/yr.
(((5.0 mg As/ 1000000 mg TS) x 140000 lb. TS) / 52 ac = 0.013 lb. As/ac-yr.

(EPA cumulative loading 41 total lb. As/ac / 0.013 lb. As/ac/yr.) = 2719.3 yr. site life for As
(0.013 lb. As/ac-yr.) x 1.12 conversion factor = 0.015 kg/ha-yr.
(2.6 tons biosolid is equivalent to a loading rate of 100 lb. total available N/ac) .

Metal	Analysis Biosolid concentration mg/kg	Ceiling Limits 40 CFR 503.13 Table 2 Conc. mg/ha	40 CFR 503.13 Table 2 metal lb./ac biosolid	Yearly metal lbs. per ton biosolids	Biosolid Loading lb./ac-yr.	Biosolid Loading kg/ha-yr.
Arsenic	11	41	45.920	0.022	0.0063	0.007
Cadmium	2.25	39	43.680	0.005	0.0048	0.005
Chromium	17	1200	1344.000	0.034	0.0366	0.041
Copper	427	1500	1680.000	0.854	0.9197	1.030
Lead	32.5	300	336.000	0.065	0.0700	0.078
Mercury	0.13	17	19.040	0.000	0.0003	0.000
Molybdenum	6.55	18	20.160	0.013	0.0141	0.016
Nickel	18	420	470.400	0.036	0.0388	0.043
Selenium	0.1	36	40.320	0.000	0.0002	0.000
Zinc	429	2800	3136.000	0.858	0.9240	1.035

Metal	Biosolid Analysis mg/kg	Table 2 metal mg/ha	lb. Metal per /ac biosolid	Loading lb./ac-yr.	Loading kg/ha-yr.	Site Life in years
Arsenic	11	41	45.920	0.006	0.0071	5785.2699
Cadmium	2.25	39	43.680	0.001	0.0014	26903.857
Chromium	17	1200	1344.000	0.010	0.0110	109563.22
Copper	427	1500	1680.000	0.246	0.2751	5452.502
Lead	32.5	300	336.000	0.019	0.0209	14327.498
Mercury	0.13	17	19.040	0.000	0.0001	202972.88
Molybdenum	6.55	18	20.160	0.004	0.0042	4265.4382
Nickel	18	420	470.400	0.010	0.0116	36216.73
Selenium	0.1	36	40.320	0.000	0.0001	558772.41
Zinc	429	2800	3136.000	0.247	0.2764	10130.554

Depoe Bay Biosolid Land application Site

Site List

Site Name	Site No.	Acres	Crop grown	Agronomic loading N#/ac	2017 lbs N/ac	
Jeff Mann	Site 1	7.9	pasture	100		
Jeff Mann	Site 2	13	pasture	100		
Jeff Mann	Site 3	10	pasture	100		
Jeff Mann	Site 4	12	pasture	100		
Jeff Mann	Site 5	35	pasture	100	27	945
Jeff Mann	Site 6	30	Pasture	100	43	1290
John Lupton	Site 1	7	pasture	100		0
Total	6	114.9			70	2235