



Analytical Chemists
April 22, 2011

Seychelle Water Filtration Products
32963 Calle Perfecto
San Juan Capistrano, CA 92675

Lab ID : SP 1103577
Customer : 2-23748

Laboratory Report

Introduction: This report package contains total of 5 pages divided into 3 sections:

Case Narrative	(2 pages) : An overview of the work performed at FGL.
Sample Results	(2 pages) : Results for each sample submitted.
Quality Control	(1 page) : Supporting Quality Control (QC) results.

Case Narrative

This Case Narrative pertains to the following samples:

Sample Description	Date Sampled	Date Received	FGL Lab ID #	Matrix
Bottle 1st Uranium Portion	04/07/2011	04/11/2011	SP 1103577-001	DW
Bottle 2nd Uranium Portion	04/07/2011	04/11/2011	SP 1103577-002	DW

Sampling and Receipt Information: All samples were received, prepared and analyzed within the method specified holding times. All samples arrived at room temperature. All samples were checked for pH if acid or base preservation is required (except for VOAs). For details of sample receipt information, please see the attached Chain of Custody and Condition Upon Receipt Form.

Quality Control: All samples were prepared and analyzed according to the following tables:

Radio QC

900.0	04/20/2011:205836 All analysis quality controls are within established criteria.
	04/19/2011:204213 All preparation quality controls are within established criteria, except: The following note applies to Gross Beta: 435 Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.
903.0	04/19/2011:205787 All analysis quality controls are within established criteria.
	04/18/2011:204162 All preparation quality controls are within established criteria.
908.0	04/16/2011:205547 All analysis quality controls are within established criteria.
	04/16/2011:205548 All analysis quality controls are within established criteria.
	04/15/2011:204077 All preparation quality controls are within established criteria.



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Analytical Chemists
April 22, 2011

Lab ID : SP 1103577-002

Customer ID : 2-23748

Seychelle Water Filtration Products

32963 Calle Perfecto

San Juan Capistrano, CA 92675

Sampled On : April 7, 2011-00:00

Sampled By : Not Available

Received On : April 11, 2011-10:15

Matrix : Drinking Water

Description : Bottle 2nd Uranium Portion

Project : Seychelle

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation		Sample Analysis	
					Method	Date/ID	Method	Date/ID
Radio Chemistry^{P,1}								
Gross Beta	0.000 ± 0.991	1.86	pCi/L	50	900.0	04/19/11:204213	900.0	04/20/11:205836
Total Alpha Radium (226)	0.000 ± 0.877	1.65	pCi/L	3	903.0	04/18/11:204162	903.0	04/19/11:205787
Uranium	0.000 ± 2.19	1.90	pCi/L	20	908.0	04/15/11:204077	908.0	04/16/11:205548

ND=Non-Detected, PQL=Practical Quantitation Limit, Containers: (P) Plastic Preservatives; HNO3 pH < 2 * PQL adjusted for dilution.

MDA = Minimum Detectable Activity (Calculated at the 95% confidence level) = Data utilized by DHS to determine matrix interference.

MCL / AL = Maximum Contamination Level / Action Level. Alpha's Action Level of 5 pCi/L is based on the Assigned Value (AV).

AV = (Gross Alpha Result + (0.84 x Error)), CCR Section 64442: Drinking Water Compliance Note: Do the following

If Gross Alpha's (AV) exceeds 5 pCi/L run Uranium. If Gross Alpha's (AV) minus Uranium exceeds 5 pCi/L run Radium 226.

Drinking Water Compliance:

Gross Alpha (AV) minus Uranium is less than or equal to 15 pCi/L

Uranium is less than or equal to 20 pCi/L

Radium 226 + Radium 228 is less than or equal to 5 pCi/L

Note: Samples are held for 3-6 months prior to disposal.

Note: Cs-137 utilized in Gross Beta Radioactivity removal test.**In each portion of Cs-137 added 100% was removed.****Michel M. Franco, Radiochemistry Technical Advisor**

Page 3 of 5

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April 22, 2011

Seychelle Water Filtration Products

Lab ID : SP 1103577

Customer : 2-23748

Certification:: I certify that this data package is in compliance with NELAC standards, both technically and for completeness, except for any conditions listed above. Release of the data contained in this data package is authorized by the Laboratory Director or his designee, as verified by the following electronic signature.

KD:DMB

Approved By **Kelly A. Dunnahoo, B.S.**

Digitally signed by Kelly A. Dunnahoo, B.S.
Title: Laboratory Director
Date: 2011-04-25

Analytical Chemists
April 22, 2011

Lab ID : SP 1103691-001

Customer ID : 2-23748

Seychelle Water Filtration Products

32963 Calle Perfecto

San Juan Capistrano, CA 92675

Sampled On : April 12, 2011-00:00

Sampled By : Not Available

Received On : April 12, 2011-10:30

Matrix : Drinking Water

Description : Pitcher Plus

Project : Seychelle

Sample Result - Radio

Constituent	Result ± Error	MDA	Units	MCL/AL	Sample Preparation		Sample Analysis	
					Method	Date/ID	Method	Date/ID
Radio Chemistry^P								
Gross Beta	0.697 ± 1.64	2.51	pCi/L	50	900.0	04/19/11:204213	900.0	04/20/11:205836
Total Alpha Radium (226)	0.000 ± 0.398	0.824	pCi/L	3	903.0	04/18/11:204162	903.0	04/19/11:205787
Uranium	0.000 ± 0.681	0.475	pCi/L	20	908.0	04/15/11:204077	908.0	04/16/11:205548

ND=Non-Detected, PQL=Practical Quantitation Limit. Containers: (P) Plastic Preservatives: N/A * PQL adjusted for dilution.

MDA = Minimum Detectable Activity (Calculated at the 95% confidence level) = Data utilized by DHS to determine matrix interference.

MCL / AL = Maximum Contamination Level / Action Level. Alpha's Action Level of 5 pCi/L is based on the Assigned Value (AV).

AV = (Gross Alpha Result + (0.84 x Error)). CCR Section 64442: Drinking Water Compliance Note: Do the following

If Gross Alpha's (AV) exceeds 5 pCi/L run Uranium. If Gross Alpha's (AV) minus Uranium exceeds 5 pCi/L run Radium 226.

Drinking Water Compliance:

Gross Alpha (AV) minus Uranium is less than or equal to 15 pCi/L

Uranium is less than or equal to 20 pCi/L

Radium 226 + Radium 228 is less than or equal to 5 pCi/L

Note: Samples are held for 3-6 months prior to disposal.

Note: Cs-137 utilized in Gross Beta Radioactivity removal test.
In each portion of Cs-137 added 100% was removed.
Michel M. Franco, Radiochemistry Technical Advisor



Analytical Chemists

April 22, 2011

Seychelle Water Filtration Products

Lab ID : SP 1103577

Customer : 2-23748

Quality Control - Radio

Constituent	Method	Date/ID	Type	Units	Conc.	QC Data	DQO	Note
Radio								
Beta	900.0	04/20/2011:205836	CCV CCB	cpm cpm	10150	92.9 % 0.3400	87 - 106 0.56	
Gross Beta	900.0	04/19/2011:204213 (SP 1103747-001)	Blank LCS MS MSD MSRPD	pCi/L pCi/L pCi/L pCi/L pCi/L	46.13 92.26 92.26 300.7	0.93 107 % 47.6 % 53.3 % 10.5%	4 75-125 80-130 80-130 ≤30	435 435
Alpha	903.0	04/19/2011:205787	CCV CCB	cpm cpm	10150	39.8 % 0.0500	38 - 46 0.15	
Total Alpha Radium (226)	903.0	04/18/2011:204162	RgBlk LCS BS BSD BSRPD	pCi/L pCi/L pCi/L pCi/L pCi/L	18.16 20.89 20.89 20.89	0.1 66.3 % 55.1 % 44.6 % 21.1%	2 52-89 43-92 43-92 ≤35.5	
Alpha	908.0	04/16/2011:205547	CCV CCB	cpm cpm	10160	41.5 % 0.100	38 - 47 0.19	
	908.0	04/16/2011:205548	CCV CCB	cpm cpm	10160	43.7 % 0.100	38 - 47 0.15	
Uranium	908.0	04/15/2011:204077	RgBlk LRS BS BSD BSRPD	pCi/L pCi/L pCi/L pCi/L pCi/L	20.86 20.86 20.86 20.86	0.32 74.8 % 93.3 % 90.2 % 3.4%	1 54-105 75-125 75-125 ≤20	
Definition								
CCV	: Continuing Calibration Verification - Analyzed to verify the instrument calibration is within criteria.							
CCB	: Continuing Calibration Blank - Analyzed to verify the instrument baseline is within criteria.							
Blank	: Method Blank - Prepared to verify that the preparation process is not contributing contamination to the samples.							
RgBlk	: Method Reagent Blank - Prepared to correct for any reagent contributions to sample result.							
LCS	: Laboratory Control Standard/Sample - Prepared to verify that the preparation process is not affecting analyte recovery.							
MS	: Matrix Spikes - A random sample is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.							
MSD	: Matrix Spike Duplicate of MS/MSD pair - A random sample duplicate is spiked with a known amount of analyte. The recoveries are an indication of how that sample matrix affects analyte recovery.							
BS	: Blank Spikes - A blank is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.							
BSD	: Blank Spike Duplicate of BS/BSD pair - A blank duplicate is spiked with a known amount of analyte. It is prepared to verify that the preparation process is not affecting analyte recovery.							
MSRPD	: MS/MSD Relative Percent Difference (RPD) - The MS relative percent difference is an indication of precision for the preparation and analysis.							
BSRPD	: BS/BSD Relative Percent Difference (RPD) - The BS relative percent difference is an indication of precision for the preparation and analysis.							
DQO	: Data Quality Objective - This is the criteria against which the quality control data is compared.							
Explanation								
435	: Sample matrix may be affecting this analyte. Data was accepted based on the LCS or CCV recovery.							



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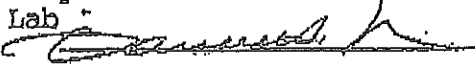
Date of Report: July 3, 1996

Sample ID No. SP 605173-01

Laboratory

Signature Lab

Name: FGL Environmental

Director: 

Name of Sampler: Paul Mead

Employed By: Environmental Svcs

Date/Time Sample

Date/Time Sample

Date Analyses

Collected: 06/26/1996-1000 Rec. @ Lab: 06/21/1996-1000 Completed: 06/28/1996

System

System

Name: CTL ENVIRONMENTAL SERVICES

Number:

Name or Number of Sample Source: 49606151-3 (Un-Filtered)

User ID:

Station Number:

Date/Time of Sample: 9 6 0 6 2 6 1 0 0 0

Laboratory Code: 5 8 6 7

Y Y M M D D T T T T

Submitted by: FGL Environmental

Phone # (805) 659-0910

RADIOLOGICAL CHEMICALS

MCL	UNITS	CHEMICAL	ENTRY	RESULT	DLR
	pCi/L	Radon 222	82303	540	←
	pCi/L	Radon 222 Counting Error	82302	± 30	

Before

Name or Number of Sample Source: 49606151-4 (Filtered)

User ID:

Station Number:

Date/Time of Sample: 9 6 0 6 2 6 1 0 0 0

Laboratory Code: 5 8 6 7

Y Y M M D D T T T T

Submitted by: FGL Environmental

Phone # (805) 659-0910

RADIOLOGICAL CHEMICALS

MCL	UNITS	CHEMICAL	ENTRY	RESULT	DLR
	pCi/L	Radon 222	82303	0.0	←
	pCi/L	Radon 222 Counting Error	82302	± 10	

After

MCL - Maximum Contaminant Level

DLR - Detection Limit for Reporting purposes

ND - Not Detected at or above DLR

+ Indicates Secondary Drinking Water Standards

THE PERIODIC TABLE

1 IA H 1 1.008 Hydrogen	2 IIA He 2 4.00 Helium	3 Li 3 6.94 Lithium	4 Be 4 9.01 Beryllium	5 B 5 10.81 Boron	6 C 6 12.01 Carbon	7 N 7 14.01 Nitrogen	8 O 8 16.00 Oxygen	9 F 9 19.00 Fluorine	10 Ne 10 20.18 Neon	11 Na 11 22.99 Sodium	12 Mg 12 24.31 Magnesium	13 Al 13 26.98 Aluminum	14 Si 14 28.09 Silicon	15 P 15 30.97 Phosphorus	16 S 16 32.07 Sulfur	17 Cl 17 35.45 Chlorine	18 Ar 18 39.95 Argon	19 K 19 39.10 Potassium	20 Ca 20 40.08 Calcium	21 Sc 21 44.96 Scandium	22 Ti 22 47.88 Titanium	23 V 23 50.94 Vanadium	24 Cr 24 52.00 Chromium	25 Mn 25 54.94 Manganese	26 Fe 26 55.85 Iron	27 Co 27 58.93 Cobalt	28 Ni 28 58.69 Nickel	29 Cu 29 63.55 Copper	30 Zn 30 65.39 Zinc	31 Ga 31 69.72 Gallium	32 Ge 32 72.61 Germanium	33 As 33 74.92 Arsenic	34 Se 34 78.96 Selenium	35 Br 35 79.90 Bromine	36 Kr 36 83.80 Krypton	37 Rb 37 85.47 Rubidium	38 Sr 38 87.62 Strontium	39 Y 39 88.91 Yttrium	40 Zr 40 91.22 Zirconium	41 Nb 41 92.91 Niobium	42 Mo 42 95.94 Molybdenum	43 Tc 43 (97.9) Technetium	44 Ru 44 101.07 Ruthenium	45 Rh 45 102.91 Rhodium	46 Pd 46 106.32 Palladium	47 Ag 47 107.87 Silver	48 Cd 48 112.41 Cadmium	49 In 49 114.82 Indium	50 Sn 50 118.71 Tin	51 Sb 51 121.76 Antimony	52 Te 52 127.60 Tellurium	53 I 53 126.90 Iodine	54 Xe 54 131.29 Xenon	55 Cs 55 132.91 Cesium	56 Ba 56 137.33 Barium	57 La 57 138.91 Lanthanum	58 Ce 58 140.12 Cerium	59 Pr 59 140.91 Praseodymium	60 Nd 60 144.24 Neodymium	61 Pm 61 (145) Promethium	62 Sm 62 150.36 Samarium	63 Eu 63 152.97 Europium	64 Gd 64 157.25 Gadolinium	65 Tb 65 158.93 Terbium	66 Dy 66 162.50 Dysprosium	67 Ho 67 164.93 Holmium	68 Er 68 167.26 Erbium	69 Tm 69 168.93 Thulium	70 Yb 70 173.04 Ytterbium	71 Lu 71 174.97 Lutetium	72 Hf 72 178.49 Hafnium	73 Ta 73 180.95 Tantalum	74 W 74 183.85 Tungsten	75 Re 75 186.21 Rhenium	76 Os 76 190.2 Osmium	77 Ir 77 192.22 Iridium	78 Pt 78 195.08 Platinum	79 Au 79 196.97 Gold	80 Hg 80 200.59 Mercury	81 Tl 81 204.38 Thallium	82 Pb 82 207.2 Lead	83 Bi 83 208.98 Bismuth	84 Po 84 (209) Polonium	85 At 85 (210) Astatine	86 Rn 86 (222) Radon	87 Fr 87 223.02 Francium	88 Ra 88 226.03 Radium	89 Ac 89 227.03 Actinium	90 Th 90 232.04 Thorium	91 Pa 91 231.04 Protactinium	92 U 92 238.03 Uranium	93 Np 93 237.05 Neptunium	94 Pu 94 (240) Plutonium	95 Am 95 243.06 Americium	96 Cm 96 (247) Curium	97 Bk 97 (249) Berkelium	98 Cf 98 (251) Californium	99 Es 99 252.08 Einsteinium	100 Fm 100 257.10 Fermium	101 Md 101 (257) Mendelevium	102 No 102 259.10 Nobelium	103 Lr 103 262.11 Lawrencium	104 Rf 104 (261) Rutherfordium	105 Db 105 (262) Dubnium	106 Sg 106 (263) Seaborgium	107 Bh 107 (262) Bohrium	108 Hs 108 (265) Hassium	109 Mt 109 (266) Meitnerium	110 Ununilium Ununilium 110 Nov. 1994	111 Ununnilium Ununnilium 111 Nov. 1994	112 Ununbium Ununbium 112 1996	113 Nh 113 (284) Nihonium	114 Fl 114 (289) Flerovium	115 Mc 115 (288) Moscovium	116 Lv 116 (293) Livermorium	117 Ts 117 (294) Tennessine	118 Og 118 (294) Oganesson	119 Uue 119 (295) Ununennium	120 Uub 120 (296) Unbibium	121 Uut 121 (297) Untrium	122 Uuq 122 (298) Unquadium	123 Uuh 123 (299) Unhexium	124 Uuq 124 (300) Unseptium	125 Uuh 125 (301) Unoctium	126 Uub 126 (302) Unnium	127 Uut 127 (303) Untrium	128 Uuq 128 (304) Unquadium	129 Uuh 129 (305) Unhexium	130 Uub 130 (306) Unnium	131 Uut 131 (307) Untrium	132 Uuq 132 (308) Unquadium	133 Uuh 133 (309) Unhexium	134 Uub 134 (310) Unnium	135 Uut 135 (311) Untrium	136 Uuq 136 (312) Unquadium	137 Uuh 137 (313) Unhexium	138 Uub 138 (314) Unnium	139 Uut 139 (315) Untrium	140 Uuq 140 (316) Unquadium	141 Uuh 141 (317) Unhexium	142 Uub 142 (318) Unnium	143 Uut 143 (319) Untrium	144 Uuq 144 (320) Unquadium	145 Uuh 145 (321) Unhexium	146 Uub 146 (322) Unnium	147 Uut 147 (323) Untrium	148 Uuq 148 (324) Unquadium	149 Uuh 149 (325) Unhexium	150 Uub 150 (326) Unnium	151 Uut 151 (327) Untrium	152 Uuq 152 (328) Unquadium	153 Uuh 153 (329) Unhexium	154 Uub 154 (330) Unnium	155 Uut 155 (331) Untrium	156 Uuq 156 (332) Unquadium	157 Uuh 157 (333) Unhexium	158 Uub 158 (334) Unnium	159 Uut 159 (335) Untrium	160 Uuq 160 (336) Unquadium	161 Uuh 161 (337) Unhexium	162 Uub 162 (338) Unnium	163 Uut 163 (339) Untrium	164 Uuq 164 (340) Unquadium	165 Uuh 165 (341) Unhexium	166 Uub 166 (342) Unnium	167 Uut 167 (343) Untrium	168 Uuq 168 (344) Unquadium	169 Uuh 169 (345) Unhexium	170 Uub 170 (346) Unnium	171 Uut 171 (347) Untrium	172 Uuq 172 (348) Unquadium	173 Uuh 173 (349) Unhexium	174 Uub 174 (350) Unnium	175 Uut 175 (351) Untrium	176 Uuq 176 (352) Unquadium	177 Uuh 177 (353) Unhexium	178 Uub 178 (354) Unnium	179 Uut 179 (355) Untrium	180 Uuq 180 (356) Unquadium	181 Uuh 181 (357) Unhexium	182 Uub 182 (358) Unnium	183 Uut 183 (359) Untrium	184 Uuq 184 (360) Unquadium	185 Uuh 185 (361) Unhexium	186 Uub 186 (362) Unnium	187 Uut 187 (363) Untrium	188 Uuq 188 (364) Unquadium	189 Uuh 189 (365) Unhexium	190 Uub 190 (366) Unnium	191 Uut 191 (367) Untrium	192 Uuq 192 (368) Unquadium	193 Uuh 193 (369) Unhexium	194 Uub 194 (370) Unnium	195 Uut 195 (371) Untrium	196 Uuq 196 (372) Unquadium	197 Uuh 197 (373) Unhexium	198 Uub 198 (374) Unnium	199 Uut 199 (375) Untrium	200 Uuq 200 (376) Unquadium	201 Uuh 201 (377) Unhexium	202 Uub 202 (378) Unnium	203 Uut 203 (379) Untrium	204 Uuq 204 (380) Unquadium	205 Uuh 205 (381) Unhexium	206 Uub 206 (382) Unnium	207 Uut 207 (383) Untrium	208 Uuq 208 (384) Unquadium	209 Uuh 209 (385) Unhexium	210 Uub 210 (386) Unnium	211 Uut 211 (387) Untrium	212 Uuq 212 (388) Unquadium	213 Uuh 213 (389) Unhexium	214 Uub 214 (390) Unnium	215 Uut 215 (391) Untrium	216 Uuq 216 (392) Unquadium	217 Uuh 217 (393) Unhexium	218 Uub 218 (394) Unnium	219 Uut 219 (395) Untrium	220 Uuq 220 (396) Unquadium	221 Uuh 221 (397) Unhexium	222 Uub 222 (398) Unnium	223 Uut 223 (399) Untrium	224 Uuq 224 (400) Unquadium	225 Uuh 225 (401) Unhexium	226 Uub 226 (402) Unnium	227 Uut 227 (403) Untrium	228 Uuq 228 (404) Unquadium	229 Uuh 229 (405) Unhexium	230 Uub 230 (406) Unnium	231 Uut 231 (407) Untrium	232 Uuq 232 (408) Unquadium	233 Uuh 233 (409) Unhexium	234 Uub 234 (410) Unnium	235 Uut 235 (411) Untrium	236 Uuq 236 (412) Unquadium	237 Uuh 237 (413) Unhexium	238 Uub 238 (414) Unnium	239 Uut 239 (415) Untrium	240 Uuq 240 (416) Unquadium	241 Uuh 241 (417) Unhexium	242 Uub 242 (418) Unnium	243 Uut 243 (419) Untrium	244 Uuq 244 (420) Unquadium	245 Uuh 245 (421) Unhexium	246 Uub 246 (422) Unnium	247 Uut 247 (423) Untrium	248 Uuq 248 (424) Unquadium	249 Uuh 249 (425) Unhexium	250 Uub 250 (426) Unnium	251 Uut 251 (427) Untrium	252 Uuq 252 (428) Unquadium	253 Uuh 253 (429) Unhexium	254 Uub 254 (430) Unnium	255 Uut 255 (431) Untrium	256 Uuq 256 (432) Unquadium	257 Uuh 257 (433) Unhexium	258 Uub 258 (434) Unnium	259 Uut 259 (435) Untrium	260 Uuq 260 (436) Unquadium	261 Uuh 261 (437) Unhexium	262 Uub 262 (438) Unnium	263 Uut 263 (439) Untrium	264 Uuq 264 (440) Unquadium	265 Uuh 265 (441) Unhexium	266 Uub 266 (442) Unnium	267 Uut 267 (443) Untrium	268 Uuq 268 (444) Unquadium	269 Uuh 269 (445) Unhexium	270 Uub 270 (446) Unnium	271 Uut 271 (447) Untrium	272 Uuq 272 (448) Unquadium	273 Uuh 273 (449) Unhexium	274 Uub 274 (450) Unnium	275 Uut 275 (451) Untrium	276 Uuq 276 (452) Unquadium	277 Uuh 277 (453) Unhexium	278 Uub 278 (454) Unnium	279 Uut 279 (455) Untrium	280 Uuq 280 (456) Unquadium	281 Uuh 281 (457) Unhexium	282 Uub 282 (458) Unnium	283 Uut 283 (459) Untrium	284 Uuq 284 (460) Unquadium	285 Uuh 285 (461) Unhexium	286 Uub 286 (462) Unnium	287 Uut 287 (463) Untrium	288 Uuq 288 (464) Unquadium	289 Uuh 289 (465) Unhexium	290 Uub 290 (466) Unnium	291 Uut 291 (467) Untrium	292 Uuq 292 (468) Unquadium	293 Uuh 293 (469) Unhexium	294 Uub 294 (470) Unnium	295 Uut 295 (471) Untrium	296 Uuq 296 (472) Unquadium	297 Uuh 297 (473) Unhexium	298 Uub 298 (474) Unnium	299 Uut 299 (475) Untrium	300 Uuq 300 (476) Unquadium	301 Uuh 301 (477) Unhexium	302 Uub 302 (478) Unnium	303 Uut 303 (479) Untrium	304 Uuq 304 (480) Unquadium	305 Uuh 305 (481) Unhexium	306 Uub 306 (482) Unnium	307 Uut 307 (483) Untrium	308 Uuq 308 (484) Unquadium	309 Uuh 309 (485) Unhexium	310 Uub 310 (486) Unnium	311 Uut 311 (487) Untrium	312 Uuq 312 (488) Unquadium	313 Uuh 313 (489) Unhexium	314 Uub 314 (490) Unnium	315 Uut 315 (491) Untrium	316 Uuq 316 (492) Unquadium	317 Uuh 317 (493) Unhexium	318 Uub 318 (494) Unnium	319 Uut 319 (495) Untrium	320 Uuq 320 (496) Unquadium	321 Uuh 321 (497) Unhexium	322 Uub 322 (498) Unnium	323 Uut 323 (499) Untrium	324 Uuq 324 (500) Unquadium	325 Uuh 325 (501) Unhexium	326 Uub 326 (502) Unnium	327 Uut 327 (503) Untrium	328 Uuq 328 (504) Unquadium	329 Uuh 329 (505) Unhexium	330 Uub 330 (506) Unnium	331 Uut 331 (507) Untrium	332 Uuq 332 (508) Unquadium	333 Uuh 333 (509) Unhexium	334 Uub 334 (510) Unnium	335 Uut 335 (511) Untrium	336 Uuq 336 (512) Unquadium	337 Uuh 337 (513) Unhexium	338 Uub 338 (514) Unnium	339 Uut 339 (515) Untrium	340 Uuq 340 (516) Unquadium	341 Uuh 341 (517) Unhexium	342 Uub 342 (518) Unnium	343 Uut 343 (519) Untrium	344 Uuq 344 (520) Unquadium	345 Uuh 345 (521) Unhexium	346 Uub 346 (522) Unnium	347 Uut 347 (523) Untrium	348 Uuq 348 (524) Unquadium	349 Uuh 349 (525) Unhexium	350 Uub 350 (526) Unnium	351 Uut 351 (527) Untrium	352 Uuq 352 (528) Unquadium	353 Uuh 353 (529) Unhexium	354 Uub 354 (530) Unnium	355 Uut 355 (531) Untrium	356 Uuq 356 (532) Unquadium	357 Uuh 357 (533) Unhexium	358 Uub 358 (534) Unnium	359 Uut 359 (535) Untrium	360 Uuq 360 (536) Unquadium	361 Uuh 361 (537) Unhexium	362 Uub 362 (538) Unnium	363 Uut 363 (539) Untrium	364 Uuq 364 (540) Unquadium	365 Uuh 365 (541) Unhexium	366 Uub 366 (542) Unnium	367 Uut 367 (543) Untrium	368 Uuq 368 (544) Unquadium	369 Uuh 369 (545) Unhexium	370 Uub 370 (546) Unnium	371 Uut 371 (547) Untrium	372 Uuq 372 (548) Unquadium	373 Uuh 373 (549) Unhexium	374 Uub 374 (550) Unnium	375 Uut 375 (551) Untrium	376 Uuq 376 (552) Unquadium	377 Uuh 377 (553) Unhexium	378 Uub 378 (554) Unnium	379 Uut 379 (555) Untrium	380 Uuq 380 (556) Unquadium	381 Uuh 381 (557) Unhexium	382 Uub 382 (558) Unnium	383 Uut 383 (559) Untrium	384 Uuq 384 (560) Unquadium	385 Uuh 385 (561) Unhexium	386 Uub 386 (562) Unnium	387 Uut 387 (563) Untrium	388 Uuq 388 (564) Unquadium	389 Uuh 389 (565) Unhexium	390 Uub 390 (566) Unnium	391 Uut 391 (567) Untrium	392 Uuq 392 (568) Unquadium	393 Uuh 393 (569) Unhexium	394 Uub 394 (570) Unnium	395 Uut 395 (571) Untrium	396 Uuq 396 (572) Unquadium	397 Uuh 397 (573) Unhexium	398 Uub 398 (574) Unnium	399 Uut 399 (575) Untrium	400 Uuq 400 (576) Unquadium	401 Uuh 401 (577) Unhexium	402 Uub 402 (578) Unnium	403 Uut 403 (579) Untrium	404 Uuq 404 (580) Unquadium	405 Uuh 405 (581) Unhexium	406 Uub 406 (582) Unnium	407 Uut 407 (583) Untrium	408 Uuq 408 (584) Unquadium	409 Uuh 409 (585) Unhexium	410 Uub 410 (586) Unnium	411 Uut 411 (587) Untrium	412 Uuq 412 (588) Unquadium	413 Uuh 413 (589) Unhexium	414 Uub 414 (590) Unnium	415 Uut 415 (591) Untrium	416 Uuq 416 (592) Unquadium	417 Uuh 417 (593) Unhexium	418 Uub 418 (594) Unnium	419 Uut 419 (595) Untrium	420 Uuq 420 (596) Unquadium	421 Uuh 421 (597) Unhexium	422 Uub 422 (598) Unnium	423 Uut 423 (599) Untrium	424 Uuq 424 (600) Unquadium	425 Uuh 425 (601) Unhexium	426 Uub 426 (602) Unnium	427 Uut 427
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Environment
Agency

UNITED KINGDOM

creating a better place

NATIONAL LABORATORY SERVICE

FILTER EVALUATION

Seychelle Environmental Technologies for
UK Agent (Seychelle): PGS Butler-(Drinksafe-systems) UK

Issued date: 5th September 2005

To illustrate our approach to evaluating the filters submitted please see the summary below:

Our testing procedures were designed to comply with the Cardinal Points specification supplied by the MoD ref. DC/CPS/6015 Issue 1 and to challenge the filter in a way that gives an accurate representation of its use in the field.

Over 150 separate laboratory tests were carried out between 13th June and 10th August 2005 at the Environment Agency's National Laboratory Service Laboratory based at Starcross, Devon, UK.

Method tests and validation to cover all five main areas of source water contamination (Organic, Metal, Inorganic, Microbiological and Aesthetics) were implemented and the filter's efficacy to reduce levels of contaminants present were tested.

Each filter tested was challenged with 300 litres of water cumulatively seeded with a combination of Organic, Metal, Inorganic and Microbiological contaminants to represent potential field operational conditions. To demonstrate the filter's ability to demonstrate the filter's ability to 'trap and retain' contaminants, post-filter samples were taken for analysis at intervals of 100, 200 and 300 litres.

All of the above waterborne viruses and pathogens were tested for in this manner over 300 litres with either F+RNA Phage (Waterborne Virus), E—Coli, and E-Faecalis and live cryptosporidium cysts, (Cryptosporidium and Giardia). This also included testing for Anthrax with Bacillus Globegii.

Seychelle Filter Tests

UK Govt Environment Agency June-August 2005
National Laboratory Service UKAS Testing 0745 Group

Starcross

Devon UK

Over 150 separate laboratory tests conducted
June – August 2005

Tested at 100/200/300 Litres
Tested at 100/200/300 Litres Metals and 400/500/600
Litres Live Bacillus Globefii (Anthrax)

The filter is to function both as a means of disinfection against bacteria and viruses and as a filter to remove parasites, water borne pathogens and other waterborne contaminants. It is to effective against the following challenges:

Bacteria: E Coli b Cholera Salmonella Hepatitis
Viruses: Polio Norwark Meningitis Anthrax
Parasites: Giardiosis Cryptosporidium Bilharzia Leptospirosis/Weils Disease
Metals: Lead Copper Aluminum Mercury Radon 22 Cadmium
Chemicals: Nitrates PCBs Benzines DDT

Ultimately the filter should remove the chlorine and or Iodine that can been used in the disinfection process leaving the service person with clean, safe, odor free, taste free water.

All contaminants cumulatively added at 1/100/200 liters
Tested at 100/200/300 Liters

ONLY Live Microbiological Tested:

Live Cryptosporidium cysts
Live E-Coli
Live E Faecalis
Live F+RNA Phage (waterborne virals)
Live Bacillus Globegii (Surrogate Non Invasive-Anthrax)

REDUCTION VALUES CONTINUED

METAL COMPOUNDS	100L 100% Reduction	200L 100% Reduction	300L 100% Reduction
Aluminum	>75	>75	70
Arsenic	28	27.8	28.8
Cadmium	>97.5	96.5	94.8
Copper	>75	>75	>75
Lead	>75	>75	>75
Mercury	85	79.4	77.1

CHLORINE**Test Results**

COMPOUND	MRV (mg/l)	Total Pre-filtered amount (mg)	Post- filtered amount (mg)	Reduction
Chlorine	0.01	240	<1	>99.58

IODINE**Test Results**

COMPOUND	MRV (mg/l)	Total Pre-filtered amount (mg)	Post- filtered amount (mg)	Reduction
Iodine	0.02	24	<2	>91.67

REDUCTION VALUE

COMPOUND	100L 100% Reduction	200L 100% Reduction	300L 100% Reduction
Endrin	96.7	95	94.4
4,4-DDD (TDE-pp)	>96.7	>96.7	>96.7
4,4-DDT	>96.7	>96.7	>96.7
Lindane	>93.3	93.3	93.3
Heptachlor	>96.7	>96.7	>96.7
PCB 28	>96.7	>96.7	>96.7
PCB 52	>96.7	>96.7	>96.7
PCB 101	>96.7	>96.7	>96.7
PCB138	>96.7	>96.7	>96.7
PCB 153	>96.7	>96.7	>96.7
PCB 180	>96.7	>96.7	>96.7
Altrazine	90	86.7	86.7
Simazine	96.7	93.3	93.3
Nitrite	8.9	11	11.3
Bromodichloromethane	94.9	90.2	88.1
Bromoform	>91.2	>91.2	>91.2
Benzene	>88	>88	>88
Dibromochloromethane	>94.6	>94.6	>94.2
Carbon Tetrachloride	>88	>88	>88
Ethyl Benzene	>88	>88	>88
Methyl tert Butyl Ether	25.3	12.7	-4
1,1,1-Trichloroethane	>88	>88	>88
1,1,2-Trichloroethane	>88	>88	>88
Trichloroethene	>88	>88	>88
Toluene	86.7	87.3	>87.6
Total Xylene	>88	>88	>88
Cryptosporidium	99.90	99.89	99.92
E.Coli	>99.9999	>99.9999	>99.9999
E.faecalis	>99.9988	99.9988	>99.9991
F+RNA	>99.9999	99.9999	99.9999

Greater than (>) are quoted when a result(s) is below the methods minimum reporting value (MRV); therefore value taken as a positive result i.e. MRV of <10 is taken as 10.