

## **APPENDIX 3.2.3.11**

# **SGS VILLAGE BOREHOLE SAMPLING SGS PIT WATER SAMPLING ANALYSIS APRIL 2009**

<b>SGS 3rd Quarter Village Boreholes Results</b>									
<b>Sample Analysis Results</b>				<b>Job number</b>					
<b>Sample Number</b>	6	8	9	10	14		19	<b>Test Units</b>	<b>Method Code</b>
<b>Description</b>	PA12	PA6	PA100	PA5	PA8	PA9	PA70		
	Abnabna	Ayanfuri	Blank	Nkutumso	Gyamaan	Fobinso	Camp		
<b>Physical Parameters</b>									
pH	6,4	5,1	7,6	6,1	5,8		5,5		4500-H <sup>+</sup> B
Apparent Colour	5	<5	<5	<5	<5		<5	plat cobalt unit	2120 B
True Colour	<5	<5	<5	<5	<5		<5	plat cobalt unit	2120 B
Turbidity	37,5	4	7,2	2,1	13,4		1,6	NTU	2130 B
Total Dissolved Solids	190	65	193	132	113		39	mg/L (ppm)	2540 C
Total Suspended Solids	6,9	4,2	5	<1	33,1		<1	mg/L (ppm)	2540D
Conductivity	26	9,1	27,5	22,2	19,8		5,7	ms/m	2510 B
Dissolved Oxygen	3,9	3,8	3,7	3,9	4		4	mg/L (ppm)	4500-0G
<b>Nutrients and Other Chemicals</b>									
Total Hardness	70	8,9	100,5	68,7	29,2		6,6	mg CaCO <sub>3</sub> /L	
Ca Hardness	-	-	-	-	-		-	mg/L (ppm)	
Mg Hardness	-	-	-	-	-		-	mg/L (ppm)	
Alkalinity	115,7	10,9	127,4	78,8	16,4		13,4	mg CaCO <sub>3</sub> /L	2320 B
Calcium (Ca <sup>++</sup> )	16	1	28	12	2		1	mg/L (ppm)	3111D
Magnesium (Mg <sup>++</sup> )	7,3	1,6	7,4	9,4	5,9		2,2	mg/L (ppm)	
Sodium (Na)	20	11	20	16	22		6	mg/L (ppm)	3500-Na D
Potassium (K)	0,6	0,5	1	0,7	2,2		1,7	mg/L (ppm)	3500-K D
Chloride	7	14,3	6,8	11,5	27		4,9	mg/L (ppm)	( 325.2 )
Nitrate	0,13	6,22	0,28	0,06	30,7		4,06	mg/L (ppm)	4500-NO <sub>3</sub> <sup>-</sup> E
Nitrite	-	-	-	-	-		-	mg/L (ppm)	4500-NO <sub>2</sub> <sup>-</sup> B
Phosphate	0,4	<0.02	0,02	<0.02	<0.02		<0.02	mg/L (ppm)	( 365.1 )
Sulphate	<1	<1	7,3	9,7	1,1		<1	mg/L (ppm)	4500-SO <sub>4</sub> <sup>2-</sup> E
Silica	-	-	-	-	-		-	mg/L (ppm)	( 370.1 )
Fobinso borehole well pump was broken, no sample.									
<b>Sample Analysis Results</b>				<b>Job number</b>					
<b>Sample Number</b>	6	8	9	10	14		19	<b>Test Units</b>	<b>Method</b>

Description	PA12	PA6	PA100	PA5	PA8	PA9	PA70		Code
	Abnabna	Ayanfuri	Blank	Nkutumso	Gyamaan	Fobinso	Camp		
<b>Additional Chemical Tests</b>									
Fluoride	-	-	-	-	-		-	mg/L (ppm)	4500-F- D
Total Cyanide	-	-	-	-	-		-	mg/L (ppm)	4500-CN- C
Free Cyanide	-	-	-	-	-		-	mg/L (ppm)	4500-CN- E
Cyanide (WAD)	-	-	-	-	-		-	mg/L (ppm)	4500-CN- I
Biochemical Oxygen Demand	<5	<5	<5	<5	<5		<5	mg/L (ppm)	5210 B
Chemical Oxygen Demand	<25	<25	<25	<25	<25		<25	mg/L (ppm)	5220 B
Hydrocarbon (O & G)	-	-	-	-	-		-	mg/L (ppm)	5520 B
Sulphide	-	-	-	-	-		-	mg/L (ppm)	4500-S <sup>2</sup> - F
Phosphorus	-	-	-	-	-		-	mg/L (ppm)	4500-P E
Ammonia (Nitrogen)	-	-	-	-	-		-	mg/L (ppm)	4500-NH <sub>3</sub> G
<b>Microbiological Tests</b>									
Presumptive Coliforms	-	-	-	-	-		-	MPN/100ml	9221 B
Total Coliforms	-	-	-	-	-		-	CFU/ml	AOAC 991.14
Faecal Coliforms	-	-	-	-	-		-	CFU/ml	AOAC 991.14
Total Plate Count	-	-	-	-	-		-	Cfu/ml	AOAC 990.12
Salmonella	-	-	-	-	-		-	Present /Absent	AOAC 967.25
Streptococcus	-	-	-	-	-		-	Cfu/ml	
Staphylococcus	-	-	-	-	-		-	Cfu/ml	
Bacillus cereus	-	-	-	-	-		-	Cfu/ml	
Clostridium	-	-	-	-	-		-	Cfu/ml	
Yeast/Mould	-	-	-	-	-		-	Cfu/ml	AOAC 997.02
E. coli	-	-	-	-	-		-	Present /Absent	9225A,D
<b>Sample Analysis Results</b>									
				<b>Job number -</b>					
<b>Sample Number</b>	6	8	9	10	14		19	<b>Test Units</b>	<b>Method Code</b>
<b>Description</b>	PA12	PA6	PA100	PA5	PA8	PA9	PA70		
	Abnabna	Ayanfuri	Blank	Nkutumso	Gyamaan	Fobinso	Camp		
<b>Trace Metals (Total)</b>									
Iron as Fe (Total)	4,82	0,27	0,28	0,97	1,77		0,28	mg/L (ppm)	3111 B
Manganese as Mn (Total)	0,12	<0.05	<0.05	0,09	0,17		<0.05	mg/L (ppm)	3111 B
Copper as Cu (Total)	<0.02	<0.02	<0.02	<0.02	<0.02		0,03	mg/L (ppm)	3111 B
Zinc as Zn (Total)	<0.02	0,04	<0.02	0,03	0,03		0,03	mg/L (ppm)	3111 B
Lead as Pb (Total)	<0.02	<0.02	<0.02	<0.02	<0.02		<0.02	mg/L (ppm)	3111 B
Mercury as Hg (Total)	-	-	-	-	-		-	mg/L (ppm)	3112B
Chromium as Cr (Total)	<0.03	<0.03	<0.03	<0.03	<0.03		<0.03	mg/L (ppm)	3112B
Nickel as Ni (Total)	<0.05	<0.05	<0.05	<0.05	<0.05		<0.05	mg/L (ppm)	3111 B

Description	PA12	PA6	PA100	PA5	PA8	PA9	PA70		
	Abnabna	Ayanfuri	Blank	Nkutumso	Gyamaan	Fobinso	Camp		
Arsenic as As (Total)	0,01	0,006	0,05	<0.002	<0.002		<0.002	mg/L (ppm)	3114B
Cadmium as Cd (Total)	<0.02	<0.02	<0.02	<0.02	<0.02		<0.02	mg/L (ppm)	3111 B
Aluminium as Al (Total)	<0.2	<0.2	<0.2	<0.2	0,3		<0.2	mg/L (ppm)	3111D
Bismuth as Bi (Total)	-	-	-	-	-		-	mg/L (ppm)	
Silver as Ag (Total)	-	-	-	-	-		-	mg/L (ppm)	3111 B
Antimony as Sb (Total)	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	mg/L (ppm)	3111 B
Cobalt as Co (Total)	-	-	-	-	-		-	mg/L (ppm)	3111 B
Selenium as Se (Total)	-	-	-	-	-		-	mg/L (ppm)	3114B
Barium as Ba (Total)	-	-	-	-	-		-	mg/L (ppm)	
Beryllium as Be (Total)	-	-	-	-	-		-	mg/L (ppm)	
Boron as B (Total)	-	-	-	-	-		-	mg/L (ppm)	
Molybdenum as Mo (Total)	<0.2	<0.2	<0.2	<0.2	<0.2		<0.2	mg/L (ppm)	
Thallium as Tl (Total)	-	-	-	-	-		-	mg/L (ppm)	
Uranium as U (Total)	-	-	-	-	-		-	mg/L (ppm)	
Vanadium as V (Total)	-	-	-	-	-		-	mg/L (ppm)	

**WATER QUALITY RESULTS FOR CAGP PIT WATER SAMPLING****31032009****PA 60 Fetish****PA61 Fobinso North****PA62 Fobinso South****PA63 Abnabna**

Sample Analysis Results		Client Name -				E001702	
Sample Number	1	2	3	4	Test Units	Method Code	Date of Analysis
Description	PA60	PA61	PA62	PA63			
<b>Physical Parameters</b>							
pH	8,6	7,1	3,8	7,5		4500-H <sup>+</sup> B	
Apparent Colour	<5	<5	5	<5	plat cobalt unit	2120 B	
True Colour	<5	<5	<5	<5	plat cobalt unit	2120 B	
Turbidity	3,1	43,4	36,8	6,9	NTU	2130 B	
Total Dissolved Solids	42	108	40	194	mg/L (ppm)	2540 C	
Total Suspended Solids	<1	25,7	<1	4,9	mg/L (ppm)	2540D	
Conductivity	5,9	15,9	5,7	27,6	ms/m	2510 B	
Dissolved Oxygen	4	4	3,9	4	mg/L (ppm)	4500-0G	
<b>Nutrients and Other Chemicals</b>							
Total Hardness	22	41,2	3,8	104	mg CaCO <sub>3</sub> /L	2340 B	
Ca Hardness	-	-	-	-	mg/L (ppm)		
Mg Hardness	-	-	-	-	mg/L (ppm)		
Alkalinity	21,9	56	<0.5	123,6	mg CaCO <sub>3</sub> /L	2320 B	
Calcium (Ca <sup>++</sup> )	7	11	1	29	mg/L (ppm)	3111D	
Magnesium (Mg <sup>++</sup> )	1,1	3,3	<0.5	7,7	mg/L (ppm)		
Sodium (Na)	4,2	13	3,9	17	mg/L (ppm)	3500-Na D	
Potassium (K)	1,2	0,8	0,8	0,9	mg/L (ppm)	3500-K D	
Chloride	3,1	5,3	4,2	6,9	mg/L (ppm)	( 325.2 )	
Nitrate	1,33	2,22	6,15	0,31	mg/L (ppm)	4500-NO <sub>3</sub> <sup>-</sup> E	
Nitrite	-	-	-	-	mg/L (ppm)	4500-NO <sub>2</sub> <sup>-</sup> B	
Phosphate	<0.02	<0.02	<0.02	0,02	mg/L (ppm)	( 365.1 )	
Sulphate	2,3	11,2	3,7	7,7	mg/L (ppm)	4500-SO <sub>4</sub> <sup>2-</sup> E	
Silica	-	-	-	-	mg/L (ppm)	( 370.1 )	

Sample Analysis Results		Client Name -				E001702	
Sample Number	1	2	3	4	Test Units	Method Code	Date of Analysis
Description	PA60	PA61	PA62	PA63			
<b>Additional Chemical Tests</b>							
Fluoride	-	-	-	-	mg/L (ppm)	4500-F- D	
Total Cyanide	-	-	-	-	mg/L (ppm)	4500-CN- C	

Free Cyanide	-	-	-	-	mg/L (ppm)	4500-CN- E	
Cyanide (WAD)	-	-	-	-	mg/L (ppm)	4500-CN- I	
Biochemical Oxygen Demand	<5	<5	<5	<5	mg/L (ppm)	5210 B	
Chemical Oxygen Demand	<25	<25	<25	<25	mg/L (ppm)	5220 B	
Hydrocarbon (O & G)	-	-	-	-	mg/L (ppm)	5520 B	
Sulphide	-	-	-	-	mg/L (ppm)	4500-S <sup>2-</sup> F	
Phosphorus	-	-	-	-	mg/L (ppm)	4500-P E	
Ammonia (Nitrogen)	-	-	-	-	mg/L (ppm)	4500-NH <sub>3</sub> G	
<b>Microbiological Tests</b>							
Presumptive Coliforms	-	-	-	-	MPN/100ml	9221 B	
Total Coliforms	-	-	-	-	CFU/ml	AOAC 991.14	
Faecal Coliforms	-	-	-	-	CFU/ml	AOAC 991.14	
Total Plate Count	-	-	-	-	Cfu/ml	AOAC 990.12	
Salmonella	-	-	-	-	Present /Absent	AOAC 967.25	
Streptococcus	-	-	-	-	Cfu/ml		
Staphylococcus	-	-	-	-	Cfu/ml		
Bacillus cereus	-	-	-	-	Cfu/ml		
Clostridium	-	-	-	-	Cfu/ml		
Yeast/Mould	-	-	-	-	Cfu/ml	AOAC 997.02	
E. coli	-	-	-	-	Present /Absent	9225A,D	

Sample Analysis Results		Client Name -				E001702	
Sample Number	1	2	3	4	Test Units	Method Code	Date of Analysis
Description	PA60	PA61	PA62	PA63			
<b>Trace Metals (Total)</b>							
Iron as Fe (Total)	0,06	0,63	<0.91	0,14	mg/L (ppm)	3111 B	
Manganese as Mn (Total)	<0.05	<0.05	<0.05	<0.05	mg/L (ppm)	3111 B	
Copper as Cu (Total)	<0.02	<0.02	<0.02	<0.02	mg/L (ppm)	3111 B	
Zinc as Zn (Total)	<0.02	<0.02	<0.02	<0.02	mg/L (ppm)	3111 B	
Lead as Pb (Total)	<0.02	<0.02	<0.02	<0.02	mg/L (ppm)	3111 B	
Mercury as Hg (Total)	-	-	-	-	mg/L (ppm)	3112B	
Chromium as Cr (Total)	<0.03	<0.03	<0.03	<0.03	mg/L (ppm)	3112B	
Nickel as Ni (Total)	<0.05	<0.05	<0.05	<0.05	mg/L (ppm)	3111 B	
Arsenic as As (Total)	0,008	0,034	0,016	0,06	mg/L (ppm)	3114 B	
Cadmium as Cd (Total)	<0.02	<0.02	<0.02	<0.02	mg/L (ppm)	3111 B	
Aluminium as Al (Total)	<0.2	<0.2	0,2	<0.2	mg/L (ppm)	3111D	
Bismuth as Bi (Total)	-	-	-	-	mg/L (ppm)	3111 B	
Silver as Ag (Total)	-	-	-	-	mg/L (ppm)	3111 B	
Antimony as Sb (Total)	<0.2	<0.2	<0.2	<0.2	mg/L (ppm)	3111 B	
Cobalt as Co (Total)	-	-	-	-	mg/L (ppm)	3111 B	

Selenium as Se (Total)	-	-	-	-	mg/L (ppm)	3114B	
Barium as Ba (Total)	-	-	-	-	mg/L (ppm)		
Beryllium as Be (Total)	-	-	-	-	mg/L (ppm)		
Boron as B (Total)	-	-	-	-	mg/L (ppm)		
Molybdenum as Mo (Total)	<0.2	<0.2	<0.2	<0.2	mg/L (ppm)	3111D	
Thallium as Tl (Total)	-	-	-	-	mg/L (ppm)		
Uranium as U (Total)	-	-	-	-	mg/L (ppm)		
Vanadium as V (Total)	-	-	-	-	mg/L (ppm)		

	Field pH	Lab pH
<b>PA 60 Fetish</b>	6,70	8,60
<b>PA61 Fobinso North</b>	7,00	7,10
<b>PA62 Fobinso South</b>	5,30	3,80
<b>PA63 Abnabna</b>	7,90	7,50