UNEP

Environmental Assessment of Ogoniland
Site Specific Fact Sheets

MUUBORGBARA- KPITE/BIARA

This fact sheet is part of a series prepared as part of the Environmental Assessment of Ogoniland by the United Nations Environment Programme (UNEP). It provides the observations and results from one of the individual sites studied in detail, plus the specific risk reduction measures for follow-up action.

This fact sheet should be read in conjunction with the main assessment report available at: www.unep.org/nigeria.

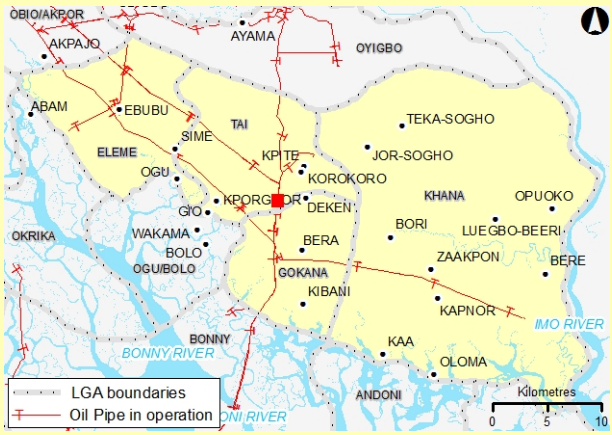
July 2011

Site fact sheet

See Guide to content and terminology on last page.

I - Site Description

Site Name	MUUBORGBARA- KPITE/BIARA
Site Number	qc_009-004
LGA	TAI
Main community	KPITE BIARA
Surrounding communities	KPITE KPITE BIARA
Investigated area (ha)	7.44
Category	Bunkering
Eastings (WGS 84, Zone 32N)	309171
Northings (WGS 84, Zone 32N)	520180



Recommendations for risk reduction	- Communities should be informed in community meetings about health and safety precautions. - A community based security and surveillance system should be put in place so that there is voluntary compliance with the restrictions which are needed to protect public health. - The impacted area should be demarcated and appropriate signage put in place to indicate that the site is impacted. - Highly contaminated core areas should be fenced and guarded until emergency cleanup measures have been carried out. - Floating oil on the surface, if any, should be collected and treated off site. - The site should be remodelled to prevent run off from the contaminated area into the downstream swamps. - Runoff from the area should be monitored and if necessary collected and treated while the cleanup plan is developed and implemented. - Additional soil sampling along with trial pits should be done at the contaminated site to delineate the site to be excavated for clean up. - A detailed plan should be prepared for clean up of the contaminated soil and risk reduction at site. - A system of ground water monitoring wells should be installed to act as early warning for communities which are not yet impacted by ground water contamination. - A detailed plan should be prepared for clean up of the contaminated water and risk reduction in the community. - While undertaking the clean up, management of excavation water should be handled properly to ensure that no pollutants are emitted into the environment without control.

II - Oilfield Infrastructure Type

Wells	No
Flowstations	No
Manifolds	No
Flaresites	No
Oil pipeline in operation	24" NKPOKU TO BOMU TRUNKLINE 36" RUMUEKPE TO NKPOKU TRUNKLINE 12" EGBERU M/F TO BOMU TRUNK LINE
NNPC crude line	No
NNPC product line	No

III - Spill History

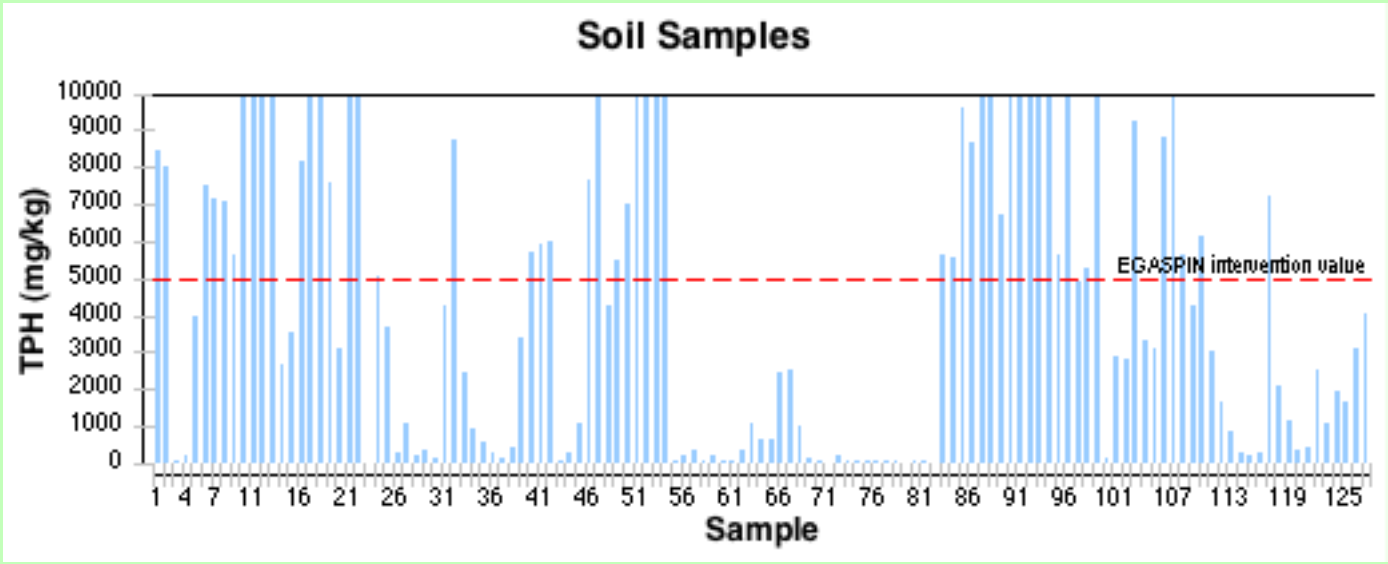
Spills reported by SPDC	Incident Number	Incident Date
	2003_00098	20030119
	2004_00132	20040105
	2005_00044	20050227
	1990_0087	19900226
	1990_0088	19900226
	2005_00098	20050523
	2009_00013	20090222
	439119	
	525051	
Spill reported by community	Yes	

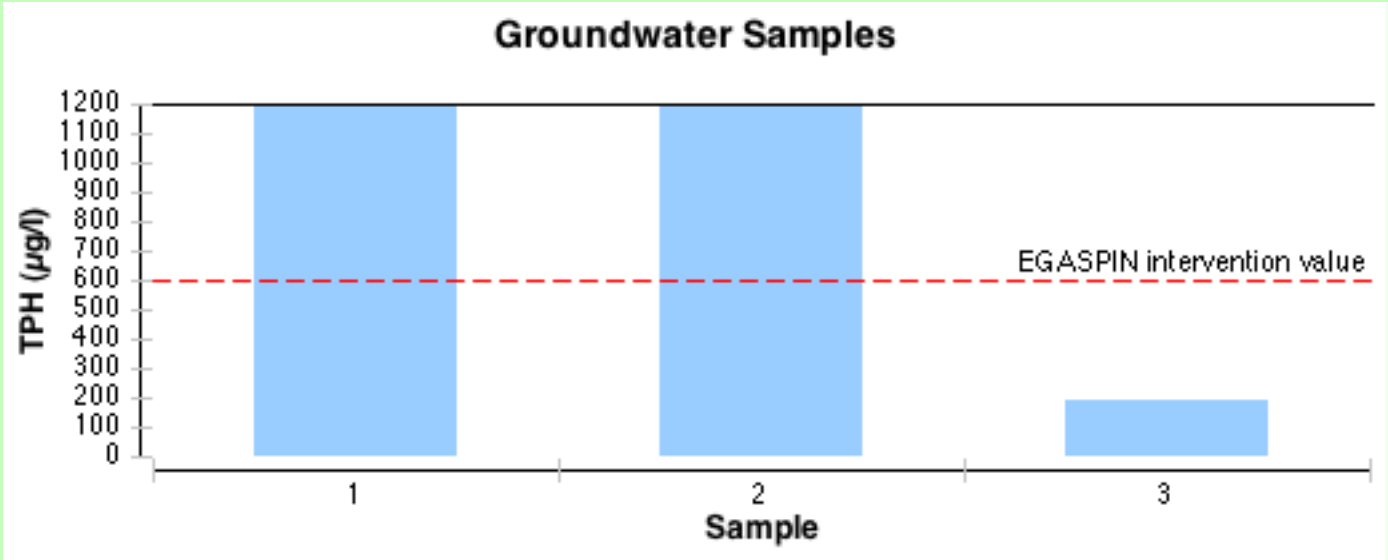
IV - Data Screening

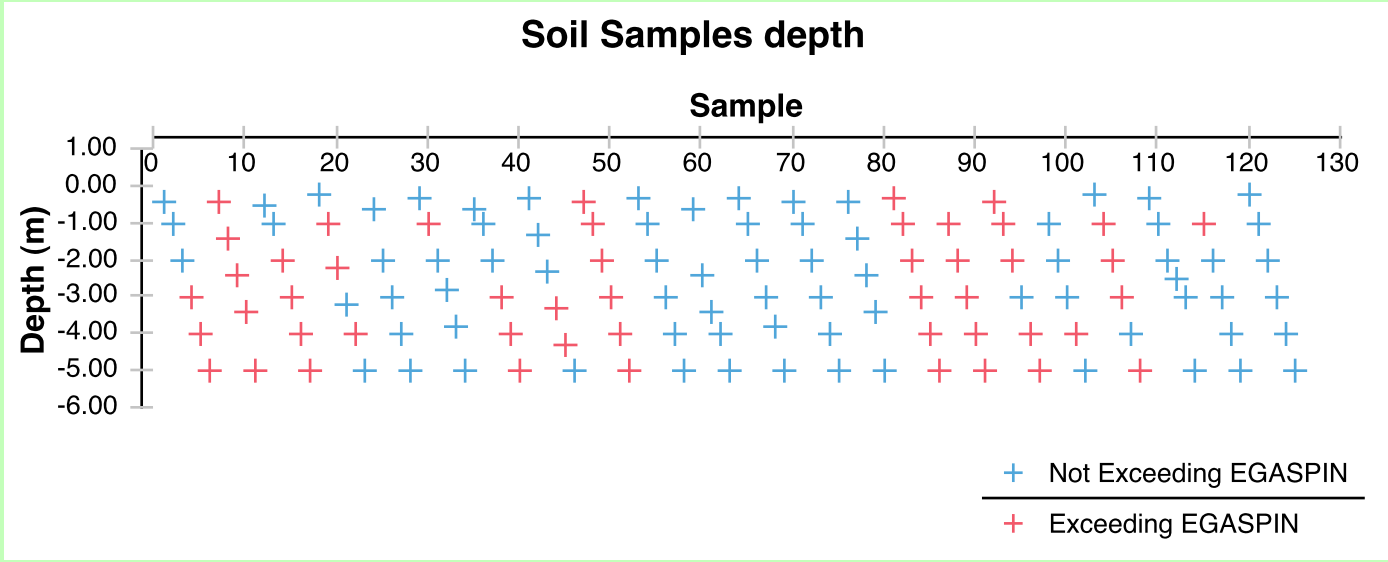
Assessment criteria

Soil contamination	Nigerian standards EGASPIN (intervention value 5000 mg/kg; target value 50 mg/kg)
Groundwater contamination	Nigerian standards EGASPIN (intervention value 600 µg/l; target value 50 µg/l)
Sediment contamination	Nigerian standards EGASPIN (intervention value 5000 mg/kg; target value 50 mg/kg)
Drinking water contamination	WHO guidelines (benzene: 10 µg/l) Nigerian drinking water standards (mineral oils: 3 µg/l)

Number of soil samples	127
Deepest investigation (m)	5
Maximum soil TPH (mg/kg)	23,100.000
Number of soil measurements greater than EGASPIN intervention value	51
Deepest sample greater than EGASPIN (m)	5
Number of soil measurements below 1m	106
Number of soil measurements below 1m greater than EGASPIN intervention value	45
Number of ground water samples	3
Maximum groundwater TPH (µg/l)	74,700
Number of groundwater measurements greater than EGASPIN intervention value	2
Number of community well samples	0
Presence of hydrocarbons in community wells	Not applicable
Number of CL sediment samples	0
Maximum CL sediment TPH (mg/kg)	Not applicable
Number of CL sediment measurements greater than EGASPIN intervention value	0
Presence of hydrocarbons in sediment above EGASPIN intervention value	Not applicable


Soil Samples
TPH (mg/kg)
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
EGASPIN intervention value
1 4 7 11 16 21 26 31 36 41 46 51 56 61 66 71 76 81 86 91 96 101 107 113 119 125
Sample

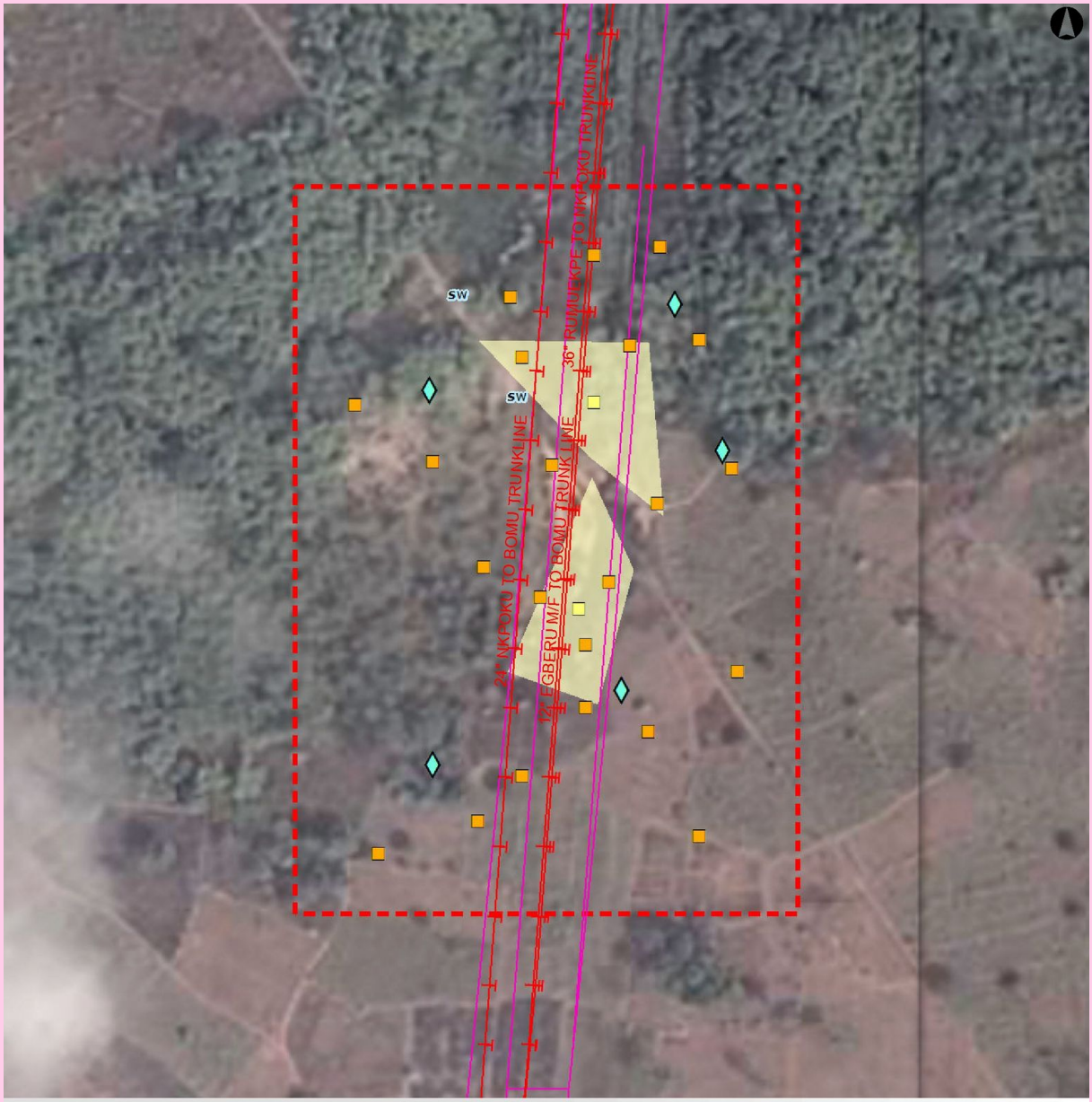

Groundwater Samples
TPH (µg/l)
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
EGASPIN intervention value
1
2
3
Sample


Soil Samples depth
Sample
Depth (m)
1.00
0.00
-1.00
-2.00
-3.00
-4.00
-5.00
-6.00
0 10 20 30 40 50 60 70 80 90 100 110 120 130
Not Exceeding EGASPIN
Exceeding EGASPIN

V - Maps

Satellite image of the site

Sampling location map



Oil Facilities

- SPDC Right of way
- Wells
- Manifold
- FlowStation

Pipeline

- NNPC Crude
- NNPC Refined product
- SPDC Oil Pipe in operation

Soil samples

- Grassplot centroid
- Soil samples
- Soil Samples from GW monitoring well
- Grassplot sampling area
- Approximate site investigation area (that area does not correspond to contamination extent).

Others

- Air quality sampling
- Fish tissue sampling
- Sediment samples from Acquatic team
- Water Samples from Acquatic team

Water samples

- Rainwater samples (Community)
- Bore-well (community)
- Hand-dug well (community)
- Free-Phase samples
- Groundwater sample
- Surface water
- Water sample taken from an oil well
- Drilling well

Metres
0 8 16

Datum: WGS 84
Projection: UTM Zone 32N

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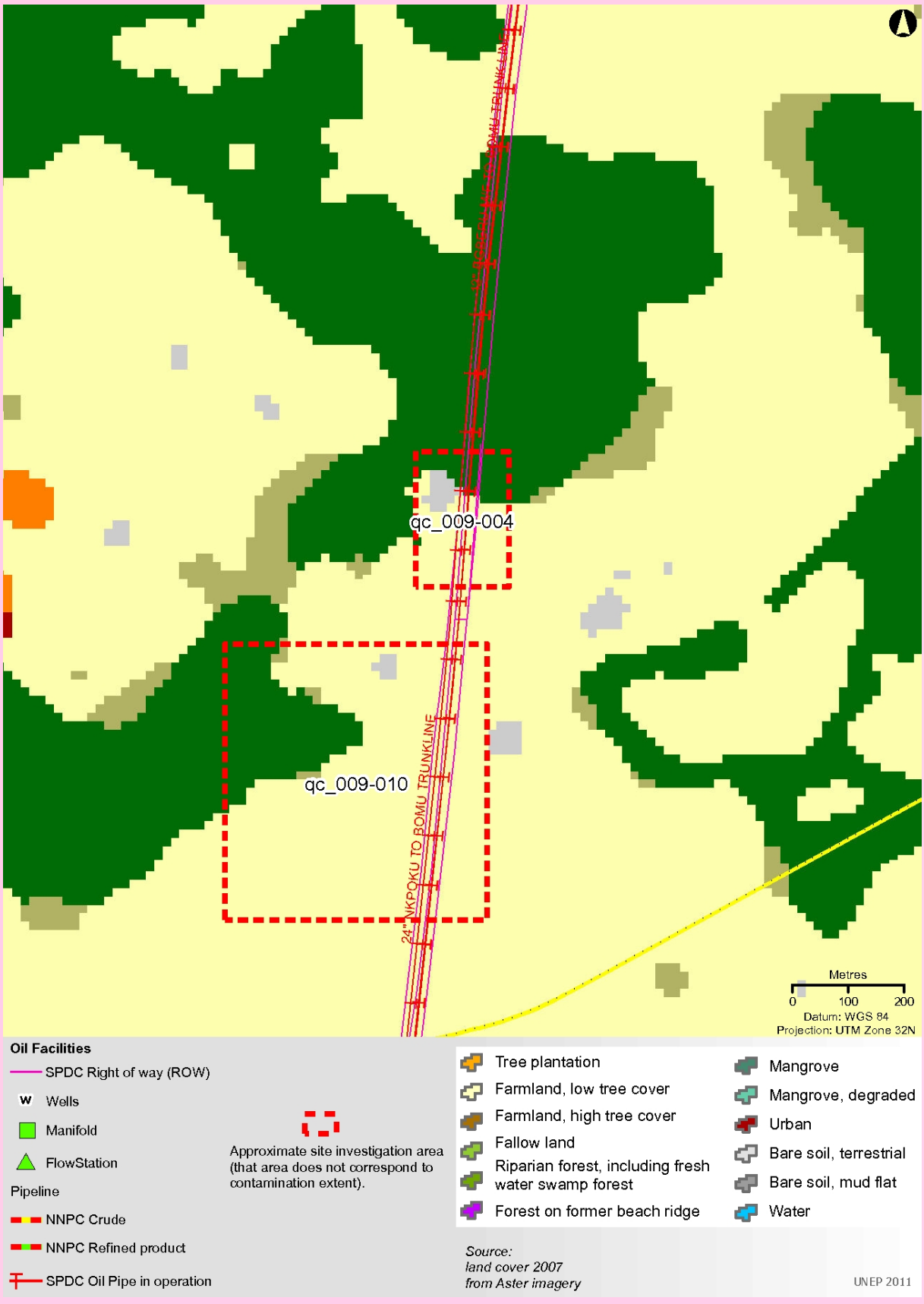
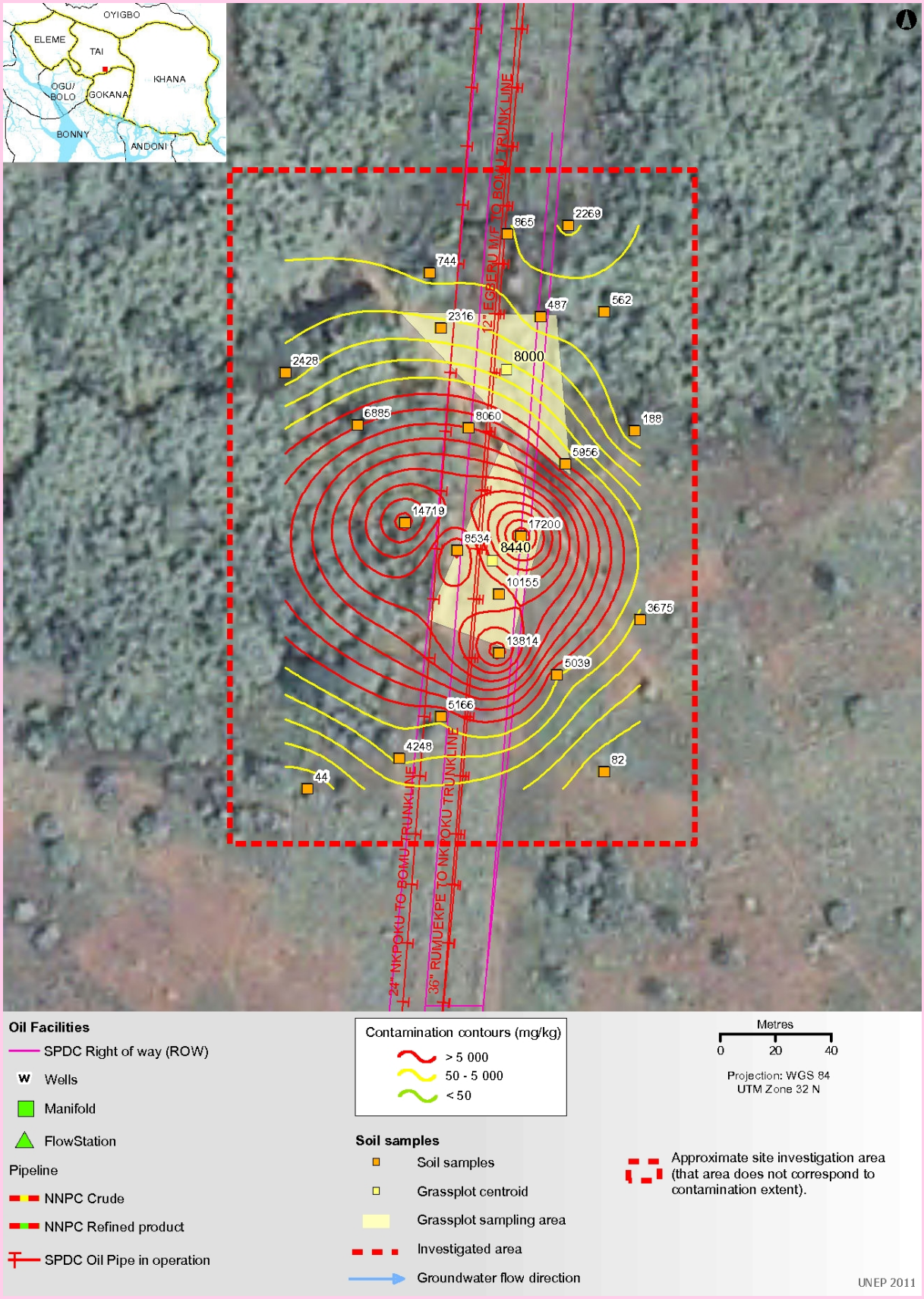
Landcover 2007



Soil Contamination Map



The values shown next to soil sample points represent the average TPH value for all samples taken from the borehole at that location.

VI - Photos

Aerial photograph

Ground photograph

VII - Sample List

Soil sample list

Sample Identifier	Total petroleum hydrocarbon (mg/kg)	Depth (m)	Easting	Northing
2501767	14,800.000	0.40	309173	520208
2501768	5,650.000	1.00	309173	520208
2501769	10,700.000	2.00	309173	520208
2501770	4,910.000	3.00	309173	520208
2501771	5,280.000	4.00	309173	520208
2501773	10,100.000	5.00	309173	520208
2501775	5,650.000	0.30	309184	520148
2501790	219.000	0.40	309222	520084
2501791	45.000	1.00	309222	520084
2501792	56.100	2.00	309222	520084
2501793	88.500	3.00	309222	520084
2501794	69.600	4.00	309222	520084
2501795	80.300	5.00	309222	520084
2501797	2,550.000	0.20	309107	520228
2501798	1,100.000	1.00	309107	520228
2501799	1,980.000	2.00	309107	520228
2501801	1,650.000	3.00	309107	520228
2501802	3,090.000	4.00	309107	520228
2501803	4,030.000	5.00	309107	520228
2501804	6,700.000	1.00	309192	520169
2501805	14,300.000	2.00	309192	520169
2501807	22,700.000	3.00	309192	520169
2501808	19,200.000	4.00	309192	520169
2501809	23,100.000	5.00	309192	520169
2501810	146.000	1.00	309235	520139
2501811	2,860.000	2.00	309235	520139
2501812	2,830.000	3.00	309235	520139
2501813	9,220.000	4.00	309235	520139
2501814	3,320.000	5.00	309235	520139
2501816	3,020.000	0.30	309187	520278
2501817	1,630.000	1.00	309187	520278
2501819	283.000	2.50	309187	520278
2501820	222.000	3.00	309187	520278
2501822	274.000	5.00	309187	520278
2501826	8,000.000	-	309187	520229
2501827	8,440.000	-	309182	520160
2501835	886.000	2.00	309187	520278
2503763	5,530.000	1.00	309184	520148
2503764	9,610.000	2.00	309184	520148
2503766	8,700.000	3.00	309184	520148

Sample Identifier	Total petroleum hydrocarbon (mg/kg)	Depth (m)	Easting	Northing
2503768	10,300.000	4.00	309184	520148
2503769	16,600.000	5.00	309184	520148
2503794	3,110.000	0.20	309133	520209
2503795	8,790.000	1.00	309133	520209
2503796	10,800.000	2.00	309133	520209
2503797	5,600.000	3.00	309133	520209
2503799	4,230.000	4.00	309133	520209
2503801	6,140.000	5.00	309133	520209
2521079	1,180.000	3.00	309209	520281
2521082	393.000	4.00	309209	520281
2521084	68.900	2.40	309115	520078
2521089	39.600	0.40	309115	520078
2521092	440.000	5.00	309209	520281
2521094	76.500	3.40	309115	520078
2521100	20.500	5.00	309115	520078
2521102	27.300	1.40	309115	520078
2521104	7,240.000	1.00	309209	520281
2521106	2,090.000	2.00	309209	520281
2525060	42.500	0.40	309163	520104
2525061	207.000	1.00	309163	520104
2525062	3,980.000	2.00	309163	520104
2525063	7,480.000	3.00	309163	520104
2525066	7,150.000	4.00	309163	520104
2525067	7,080.000	5.00	309163	520104
2525068	5,630.000	0.40	309184	520127
2525070	11,300.000	1.40	309184	520127
2525071	12,700.000	2.40	309184	520127
2525072	12,900.000	3.40	309184	520127
2525074	18,700.000	5.00	309184	520127
2525075	2,690.000	0.50	309169	520164
2525076	3,550.000	1.00	309169	520164
2525078	8,140.000	2.00	309169	520164
2525079	12,400.000	3.00	309169	520164
2525080	11,400.000	4.00	309169	520164
2525081	7,610.000	5.00	309169	520164
2525084	3,130.000	0.20	309208	520195
2525085	10,500.000	1.00	309208	520195
2525086	10,900.000	2.20	309208	520195
2525087	not analyzed for TPH	3.20	309208	520195
2525088	5,020.000	4.00	309208	520195

Sample Identifier	Total petroleum hydrocarbon (mg/kg)	Depth (m)	Easting	Northing
2525089	3,660.000	5.00	309208	520195
2525091	280.000	0.60	309199	520248
2525092	1,090.000	2.00	309199	520248
2525093	230.000	3.00	309199	520248
2525094	347.000	4.00	309199	520248
2525095	164.000	5.00	309199	520248
2525098	4,270.000	0.30	309163	520244
2525101	8,730.000	1.00	309163	520244
2525102	2,460.000	2.00	309163	520244
2525103	942.000	2.80	309163	520244
2525105	593.000	3.80	309163	520244
2525107	316.000	5.00	309163	520244
2525108	152.000	0.60	309148	520089
2525109	423.000	1.00	309148	520089
2525110	3,420.000	2.00	309148	520089
2525111	5,680.000	3.00	309148	520089
2525113	5,910.000	4.00	309148	520089
2525114	5,970.000	5.00	309148	520089
2525116	98.400	0.30	309205	520119
2525118	262.000	1.30	309205	520119
2525120	1,090.000	2.30	309205	520119
2525121	7,630.000	3.30	309205	520119
2525122	13,200.000	4.30	309205	520119
2525123	4,260.000	5.00	309205	520119
2525124	5,500.000	0.40	309150	520174
2525125	6,990.000	1.00	309150	520174
2525126	10,900.000	2.00	309150	520174
2525127	19,100.000	3.00	309150	520174
2525129	20,100.000	4.00	309150	520174
2525130	17,100.000	5.00	309150	520174
2525131	95.400	0.30	309233	520207
2525132	250.000	1.00	309233	520207
2525134	352.000	2.00	309233	520207
2525135	78.000	3.00	309233	520207
2525137	211.000	4.00	309233	520207
2525138	94.200	5.00	309233	520207
2525139	108.000	0.60	309222	520250
2525141	344.000	2.40	309222	520250
2525142	1,100.000	3.40	309222	520250
2525143	657.000	4.00	309222	520250

Sample Identifier	Total petroleum hydrocarbon (mg/kg)	Depth (m)	Easting	Northing
2525144	632.000	5.00	309222	520250
2525145	2,430.000	0.30	309159	520264
2525146	2,520.000	1.00	309159	520264
2525148	996.000	2.00	309159	520264
2525149	173.000	3.00	309159	520264
2525151	71.500	3.80	309159	520264
2525152	not analyzed for TPH	5.00	309159	520264

Groundwater sample list

Sample Identifier	Total petroleum hydrocarbon (µg/l)	Easting	Northing
2521110	15,100	309214	520262
2521113	190	309230	520213
2525153	74,700	309132	520233

Guide to content

The Site Fact Sheets present more detailed data from UNEP's environmental assessment of Ogoniland on a site-by-site basis. Note that all data is based on the analysis of samples taken during the fieldwork period. The period of most intensive fieldwork ran from April to December 2010. The final sampling visit was completed in January 2011.

Here is a guide to the terms and abbreviations used. Please refer to the Environmental Assessment of Ogoniland report for details of EGASPIN target and intervention values.

Terminology

Site number	Reference number allocated by UNEP to identify a study site
Area (ha)	Estimated surface area (in hectares) of a given study site
Well	Oil well, also referred to as a production well
Fugro well	New well installed by Fugro at UNEP's request to enable scientific sampling and monitoring
Community well	Wells belonging to communities which are used to collect water for drinking and sanitation needs
Contamination contour	Maps that display the geographical distribution of oil contamination concentrations in an analyzed receptor
Flare site	Indicates whether the burning of unwanted gas through a pipe (or flare) takes place at a given site
Flow station	Separation facilities (also called gathering centres) which separate natural gas and water from crude oil extracted from production wells
Incident number	Numbers as supplied from the SPDC oil spills database
Manifold	An arrangement of piping or valves designed to control, distribute and often monitor fluid flow

Abbreviations

BDL	Below Detection Limit
CL	Contaminated Land
EGASPIN	Environmental Guidelines and Standards for Petroleum Industries in Nigeria
GW	groundwater
LGA	Local Government Area
mbgs	metre/s below ground surface
NNPC	Nigerian National Petroleum Corporation
SPDC	Shell Petroleum Development Company of Nigeria
TPH	total petroleum hydrocarbons
UNEP	United Nations Environment Programme

Explanatory Note

1. The recommendations given are for initial risk reduction. Final clean up would need significant additional site specific engineering as well as consultation work.
2. Spill reported by SPDC has the date format YYYYMMDD
3. Assessment is done based on a screening of the measured value against a Nigerian or international standard
4. In the soil sample maps, the highest value has been cut-off to 2 times the intervention value. This was done to visually express the excedences above intervention values. Actual values are given in the sample tables.
5. The values of soil contamination listed in the Soil Contamination Maps are average values of all samples taken at that sampling location