UNEP

Environmental Assessment of Ogoniland
Site Specific Fact Sheets

WIIKAYAKO- KPEAN

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.

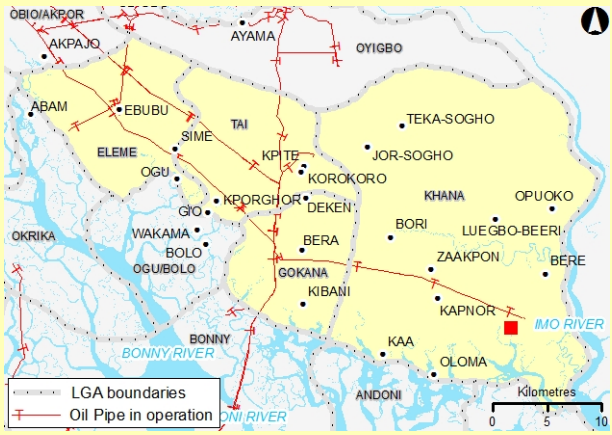
July 2011

Site fact sheet

See Guide to content and terminology on last page.

I - Site Description

Site Name	WIIKAYAKO- KPEAN
Site Number	qc_015-001
LGA	KHANA
Main community	WIIKAYAKO KPEAN
Surrounding communities	KPEAN WIIKAAYAKO KPEAN WIIKAYAKO KPEAN
Investigated area (ha)	11.38
Category	SPDC Operating Site
Eastings (WGS 84, Zone 32N)	330456
Northings (WGS 84, Zone 32N)	508660



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	YORLA-010 (producing)
Flowstations	No
Manifolds	No
Flaresites	No
Oil pipeline in operation	No
NNPC crude line	No
NNPC product line	No

III - Spill History

Spills reported by SPDC	Incident Number	Incident Date
	2001_00088	20010430
	1997_00220	19970930
Spill reported by community	Yes	

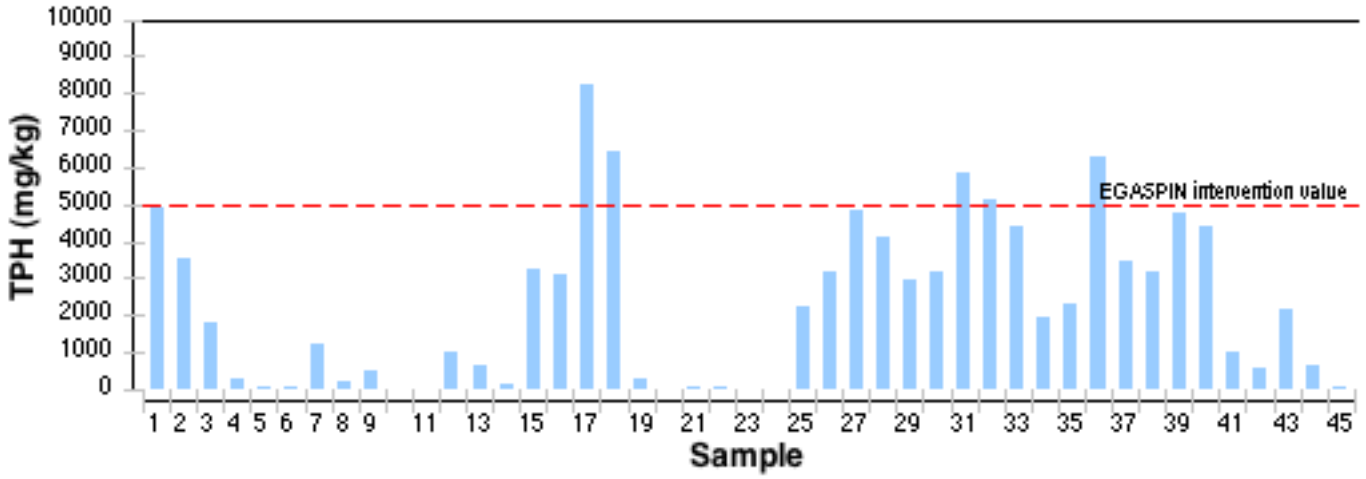
IV - Data Screening

Assessment criteria

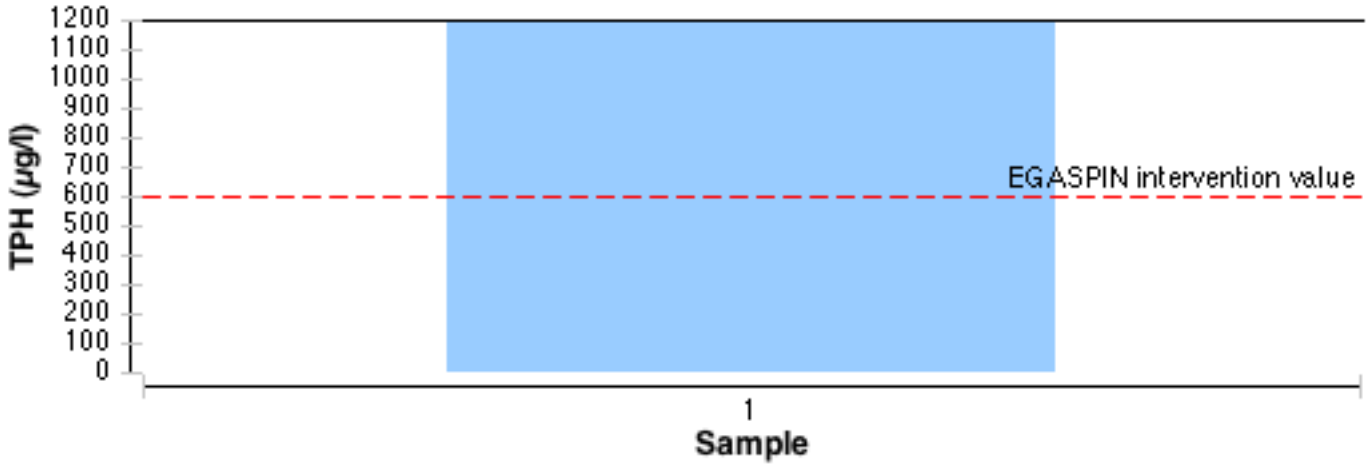
Soil contamination	Nigerian standards EGASPIN (intervention value 5000 mg/kg; target value 50 mg/kg)
Groundwater contamination	Nigerian standards EGASPIN (intervention value 600 µg/l; target value 50 µg/l)
Sediment contamination	Nigerian standards EGASPIN (intervention value 5000 mg/kg; target value 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	45
Deepest investigation (m)	3.5
Maximum soil TPH (mg/kg)	8,200.000
Number of soil measurements greater than EGASPIN intervention value	5
Deepest sample greater than EGASPIN (m)	3
Number of soil measurements below 1m	27
Number of soil measurements below 1m greater than EGASPIN intervention value	2
Number of ground water samples	2
Maximum groundwater TPH (µg/l)	358,000
Number of groundwater measurements greater than EGASPIN intervention value	1
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

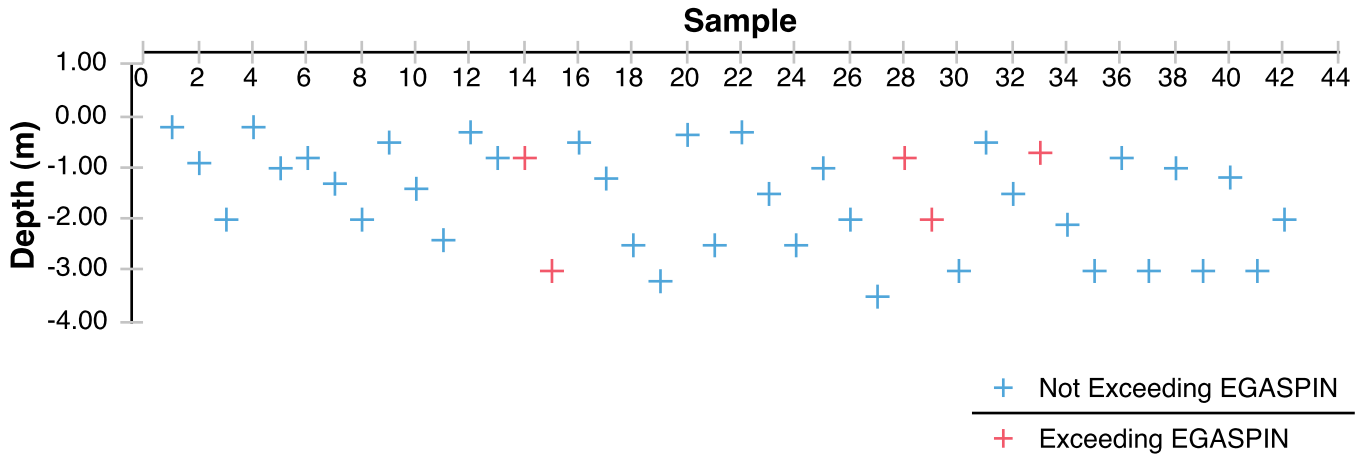
Soil Samples



Groundwater Samples

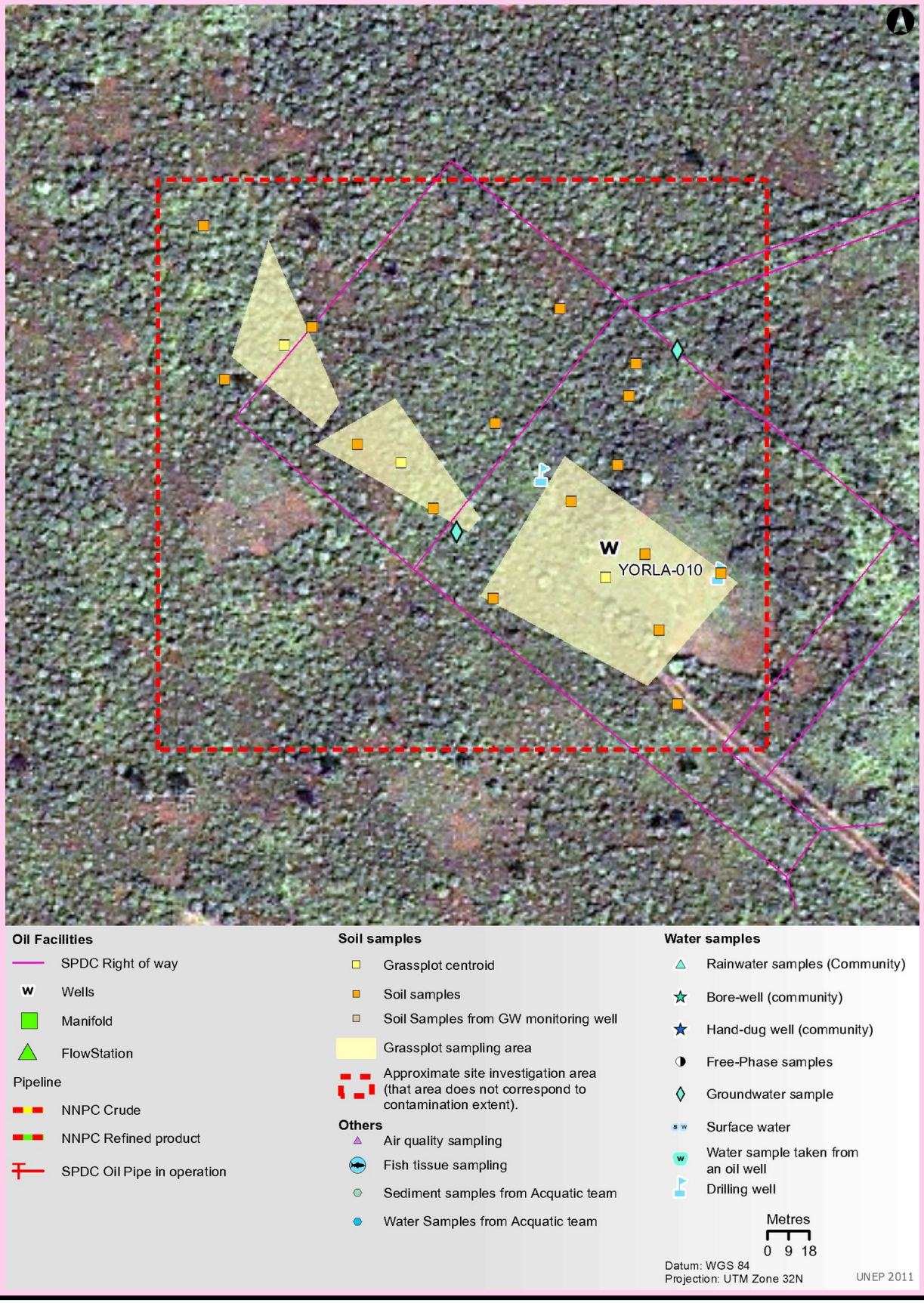


Soil Samples depth

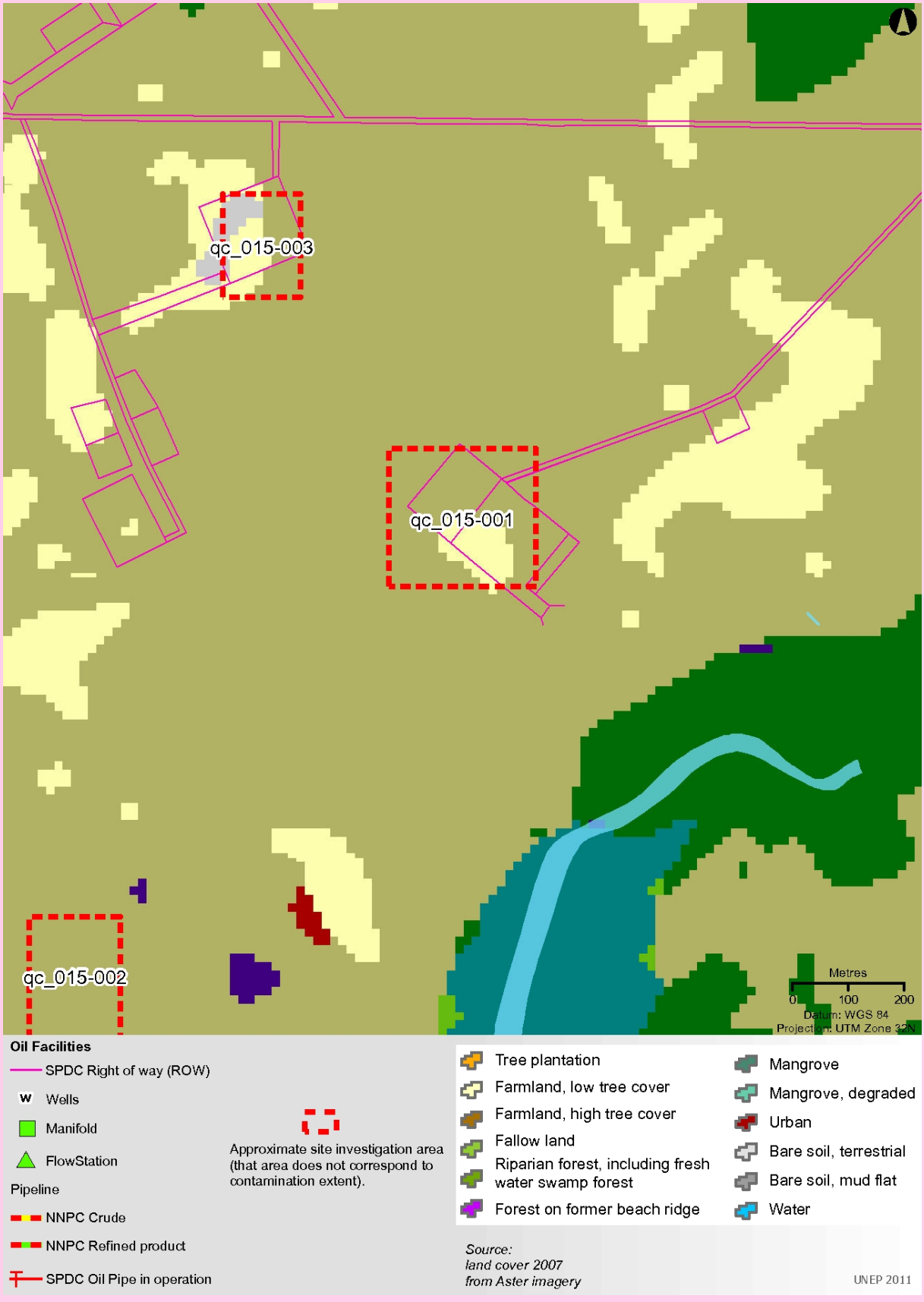


Satellite image of the site

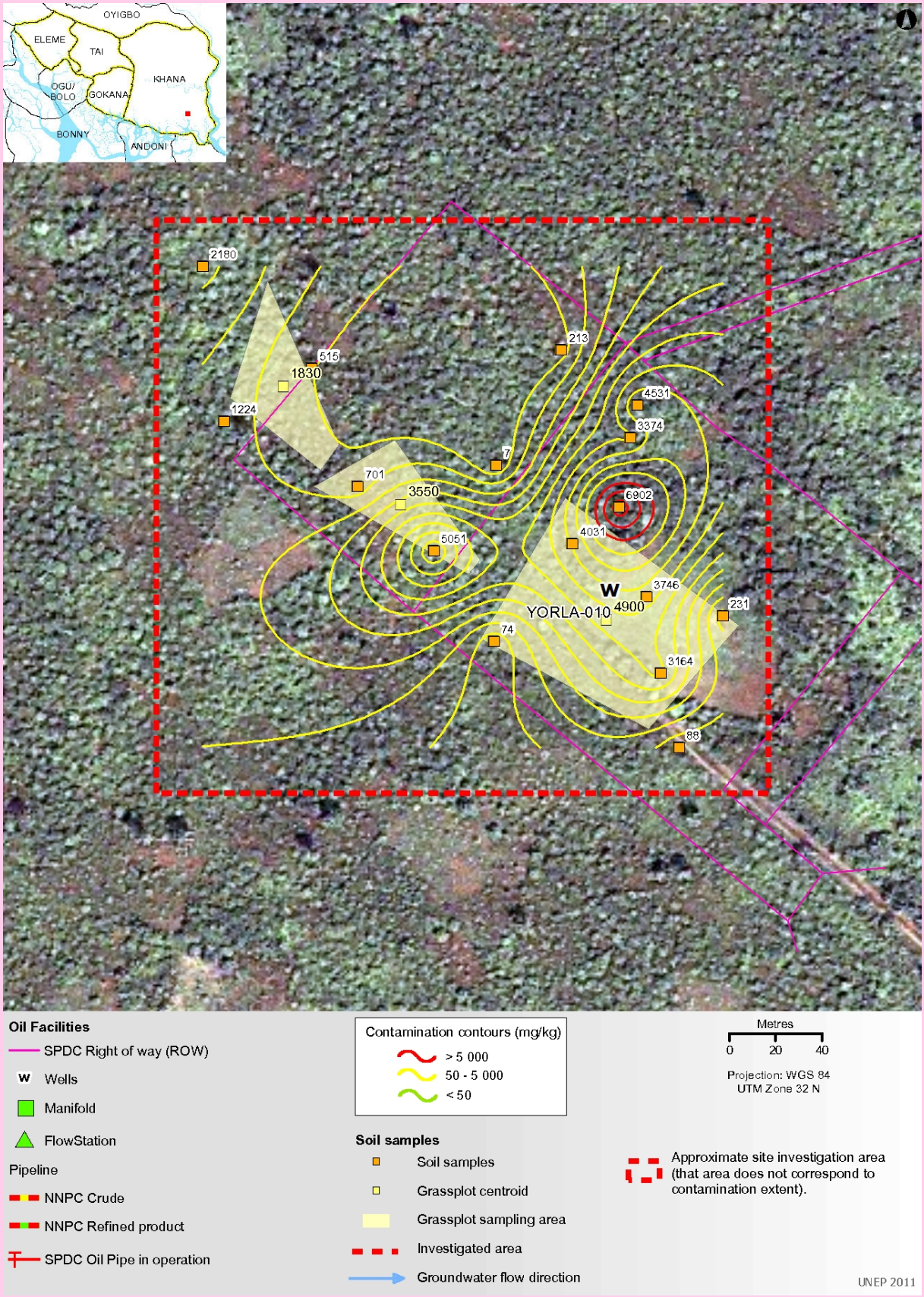
Sampling location map



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

Ground photograph

VII - Sample List

Soil sample list

Sample Identifier	Total petroleum hydrocarbon (mg/kg)	Depth (m)	Easting	Northing
1813925	3,130.000	0.80	330541	508588
1813946	2,300.000	1.50	330343	508764
1813964	1,220.000	0.20	330568	508613
1813977	10.500	2.00	330498	508728
1813998	3,200.000	3.00	330503	508644
1814011	4,780.000	0.80	330531	508704
1814253	2,220.000	0.30	330535	508621
1814254	2,160.000	1.18	330352	508697
1814255	268.000	0.20	330549	508556
1814256	4,100.000	1.00	330528	508690
1814257	3,180.000	3.50	330528	508690
1814259	5,830.000	0.80	330443	508641
1814260	1,940.000	0.50	330343	508764
1814262	617.000	3.00	330352	508697
1814270	4.810	2.50	330470	508678
1814303	19.000	0.35	330470	508678
1814321	4,870.000	2.50	330535	508621
1814336	3,190.000	1.50	330535	508621
1814405	1,010.000	1.00	330410	508669
1814409	6.700	1.30	330498	508728
1814426	6,430.000	3.00	330523	508660
1814445	8,200.000	0.80	330523	508660
1814668	6,280.000	0.70	330503	508644
1814747	683.000	1.40	330390	508720
1814772	37.100	3.20	330469	508602
1814857	3,220.000	0.30	330541	508588
1814872	547.000	3.00	330410	508669
1814896	32.700	1.20	330469	508602
1814921	51.800	0.90	330549	508556
1814939	257.000	0.50	330469	508602
1814967	5,100.000	2.00	330443	508641
1814990	4,440.000	3.00	330531	508704
1815015	4,370.000	3.00	330443	508641
1815035	72.300	2.00	330549	508556
1815058	1,000.000	0.50	330390	508720
1815076	3,440.000	2.10	330503	508644
1815142	520.000	0.80	330498	508728
1815164	191.000	1.00	330568	508613
1815204	121.000	2.40	330390	508720
1815240	64.200	2.00	330568	508613

Sample Identifier	Total petroleum hydrocarbon (mg/kg)	Depth (m)	Easting	Northing
1815264	46.200	2.50	330469	508602
1824018	2,940.000	2.00	330528	508690
1824019	4,900.000	-	330518	508611
1824020	3,550.000	-	330429	508661
1824021	1,830.000	-	330378	508712

Groundwater sample list

Sample Identifier	Total petroleum hydrocarbon (µg/l)	Easting	Northing
2778764	not analyzed for TPH	330453	508631
2778765	358,000	330549	508710

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