WET SEASON FIELD REPORT ON ENVIRONMENTAL IMPACT ASSESSMENT (EIA) OF PART OF BIDA BASIN, NIGERIA

BY

KUTIGI TEAM

1. **Dr. Y. B. Alkali -Team Leader Geology Department**
2. **Dr. D. T. Ezekiel-Adewoyin (Mrs) Soil Science**
3. **Dr. E. Y. Shaba - Chemistry**

Submitted to
Project Coordination Team, FUT, Minna

September, 2021

INTRODUCTION

The EIA / Baseline information provides a description of the status and trends of environmental factors (e.g., rocks, soils, water, sediments) against which predicted changes can be compared and evaluated in terms of importance. It provides a means of detecting actual change by monitoring once a project has been initiated**.** This report derived from the Baseline data collected on the physical(geology, soils, sediments and water bodies in the environments of Wuya Kantin, Kutigi and Kudu areas (in Lavun and Edati LGA's of Niger State) located in Northern part of Bida Basin from the 17th to 19th September, 2021. The physical baseline data including geology, soil, and stream sediments, water and groundwater are summarized / presented in the following sections of this report and summarized below.

Location

The areas visited are Wuya Kantin, Kutigi and Kudu towns located in Lavun and Edati Local Government Areas of Niger States. It lies between latitude 9° 7' 26"N and Longitude 5 34' 49" and part Northern Bida Basin, Nigeria.

Geology

Geology of the exposed outcrops / sections around Wuya Kantin, Kutigi and Kudu areas were characterized by Sakpe Ironstones,Enagi Siltstone Formation and Batati Ironstones Formation and of varying thicknesses. The Outcrops are generally capped by ironstones and underlain by whitish to grey white, well sorted siltstones, sandstones massive clay stones especially around Kutigi. Structures such as graded beddings, cross laminations, bioturbation characterized the strata.

Methodology of the Baseline Data Collection

In each locality, rock samples were collected from the exposed sections at quarry site, mesas and road cuts by mapping and logging, while water from wells, boreholes and streams were collected in 400ml plastic bottles and stored in iced coolers in the field and refrigerated on returning from the field. Soil samples from farmlands as well as river/stream sediments were sampled for laboratory analysis. GPS reading of coordinates and elevation of the respective sampling points

were noted. Details of these activities in the field are summarized in the tables 1-4 below. Photographs of activities are also provided.

Sample Collection

Samples of rocks, water, soils and stream sediments were collected in and around Wuya Kantin (Wuya Kede, Wuyako), Kudu and Kutigi localities of Lavun and Edati Local Government area of Niger State between Friday, 17th September, 2021and Sunday 19th September, 2021 for the wet season baseline data. 19 rock samples from 5 locations, 3 stream sediments each from rivers Etan, Toro and Tekpa from Wuyako, Kutigi and Kudu respectively, 14 Soil samples were collected in polythene bags. 14 water samples were collected in duplicate for each sample location (for heavy metal analysis and microbial analysis) and stored in iced coolers in the field and refrigerated on returning from the field. In every community letter of introduction wer presented to the village chief or his representative

Table 1: Stream and Rock Samples Location, Coordinates

Sample Type	Location & Area	Coordinates	No. of Samples / Beds	Description	Elevation (m)
Stream Sediment	Wuyako stream (Locally called Etan)	$9^0$8’ 44” N $5^0$49’13” E	2	Sandy muddy sediments	
Stream Sediment	Kudu (River Takpa) Dam area	$9^0$15’ 18” N $5^0$20’42” E	2	Muddy sediment	
Stream Sediment	Kutigi (River Toro)	$9^0$11’ 38” N $5^0$35’40” E	2	Sandy sediment	
Rock	Wuya Kantin (Kede area)	$9^0$7’ 26” N $5^0$48’10” E	3		151.9
Rock	Kudu (Gini Super Tech Area)	$9^0$15’ 16” N $5^0$21’11” E	2		170.8
Rock	Kutigi (Enagi Rd After Science College, Kutigi	$9^0$10’ 35” N $5^0$35’35” E	2		215
Rock	Kutigi (Madina Area (Kusogi Junction)	$9^0$11’ 59” N $5^0$36’36” E	7		
Rock	Kutigi (Road Cut to Tessan Hajiya) Ruga Road	$9^0$21’ 56” N $5^0$35’47” E	5		263.52

WATER

Table 2: Water Sample Locations with Coordinates,and Measured parameters

S/No.	Water Sources	Town and Area	Coordinates	Parameters				Elevation (m)
				pH	Conductivity (µS/cm)	Turbidity (mg/L)	Temperature (°C)	
1.	Well water	Wuyakant in (Tsauni)	9^0 8′ 39″ 5^0 49′ 17″	6	250	11	29.6	80.5
2.	Borehole Water	Wuyakant in (Wuyako)	$9^0$8′ 38″ $5^0$49′ 10″	5.4	10	0	30.7	85.7
3.	Stream Water	Wuyakant in (River Etan)	9^0 8′ 38″ 5^0 49′ 12″	6.4	40	10	29.2	77.8
4.	Borehole Water	Kudu (Besides Village Head Compound)	9^0 16′ 05″ 5^0 20′ 57″	6.5	150	70	28.9	176.3
5.	Well Water	Kudu	9^0 16′ 7″ 5^0 20′ 56″	6.2	680	330	28.8	179.3
6.	Well Water	Kudu	9 ^{0}16′ 56″ 5^0 20′ 51″	6.8	1320	650	30.1	167.8
7.	Well Water	Kudu	9^0 16′ 13″ 5^0 21′ 48″	6.6	240	0	29.4	173.2
8.	Well Water	Kudu	9 ^{0}16′ 06″ 5^0 21′ 42″	6.3	770	370	30.8	169.6
9.	Stream Water	Kudu	9^0 15′ 18″ 5^0 21′ 43″	6.0	280	130	30.2	157.7
10	Borehole	Kutigi (Close to Mana Hospital)	9^0 11′ 19″ 5^0 35′ 36″	5.9	140	60	31.4	197.6
11.	Stream Water	Kutigi (River Toro)	9^0 12′ 37″ 5^0 36′ 40″	6.3	360	170	32.1	182.4
12.	Borehole Water	Kutigi (Beside Ezonuwa n's House)	9^0 12′ 53″ 5 ^{0}35′ 29″	6.3	510	240	34.4	203.7

13.	Well Water	Kutigi (Kpegegi)	9^0 12’ 59” 5^0 36’ 43”	6.2	760	370	31.4	200
14.	Borehole Water	Kutigi (Madinat Area by Kusogi Road Junction)	9 ^{0}12’ 56” 5^0 36’ 7”	5.7	80	30	30.4	228

Table 3: Soil Samples Location, Coordinates, Elevation, Depth of Sampling and Sample Description

S/No.	Location/Area	Coordinates	Elevation (m)	Depth of Sampling and Sample Description	
				0 -15 cm	15-30 cm
1.	Wuyakantin/Tsauni	9^0 08’ 39” N 5^0 49’ 17” E	109	Brownish / Fine Grain	Brownish / Fine Grain
2.	Wuyako	9^0 08’ 38” N 5^0 49’ 10” E	120	Brownish / Fine Grain	Brownish / Fine Grain
3.	Wuyakantin/Beside Etan Stream / Rice Farm	9^0 08’ 30” N 5^0 49’ 14” E	103	Brownish / Fine Grain	Brownish / Fine Grain
4.	Wuyakede/ Close to the Outcrop	9^0 07’ 26” N 5^0 48’ 11” E	168	Reddish / Fine Grain	Reddish / Fine Grain
5.	Kudu / Besides Village Head’s House	9^0 26’ 82” N 5^0 34’ 92” E	176	Dark Brown / Fine Grain	Dark Brown / Fine Grain
6.	Kudu/ Close to Monday Market Kudu	9^0 26’ 85” N 5^0 35’ 29” E	170	Dark Brown / Fine Grain	Dark Brown / Fine Grain
7.	Kudu / Close the Express	9^0 26’ 82” N 5^0 34’ 49” E	166	Brownish / Fine Grain	Brownish / Fine Grain
8.	Kudu/ 100 m away from Express Road	9^0 26’ 82” N 5^0 34’ 49” E	168	Light Brown / Fine Grain	Light Brown / Fine Grain
9.	Kudu / Farm lands close to the Stream Tekpa, Kudu	9^0 25’ 50” N 5^0 34’ 52” E	155	Brownish / Very Fine	Brownish / Very Fine Grain
10.	Kutigi/Close to Ezonuwa’s Compound	9^0 19’ 31” N 5^0 36’ 09” E	187	Light Brown/ Silty	Light Brown/ Silty
11.	Kutigi /Close to River Toro	9^0 25’ 50” N 5^0 34’ 53” E	155	Dark Brown / Very Fine Grain	Light Brown / Very Fine Grain
12.	Kutigi/Kusogi Road Junction	9^0 12’ 00” N 5^0 36’ 09” E	240	Reddish / Fine Grain	Reddish / Fine Grain
13	Kutigi/Ruga:Tessan Hajiya Rd /After the Road Cut	9^0 21’ 54” N 5^0 59’ 69” E	263	Reddish / Very Coarse Grain	Reddish / Very Coarse Grain

Fig 1: Visit to village head of Wuyako with two members of the team before the commencement of the exercise

Fig 2: Taking borehole water sample from Wuyako 9^{o} 8’ 38” N 5^{o} 49’ 10” E

Fig 3: Section of rock at a quarry site (Wuyako Kede) 9^{o} 7’ 26”N 5^{o} 48’ 10”E

Fig 4: Measuring the parameters of stream water at River Etan, Wuyako 9^{o} 8’ 38” N 5^{o} 49’ 12” E

Fig 5: Sampling borehole water at Kudu
9° 16′ 06″ N 5° 20′ 57″ E

Fig 6: Well from which water was sampled
9° 16′ 56″ N 5° 20′ 51″ E

Fig 7: Taking the various parameters of water samples with aid of HANNA multimeter

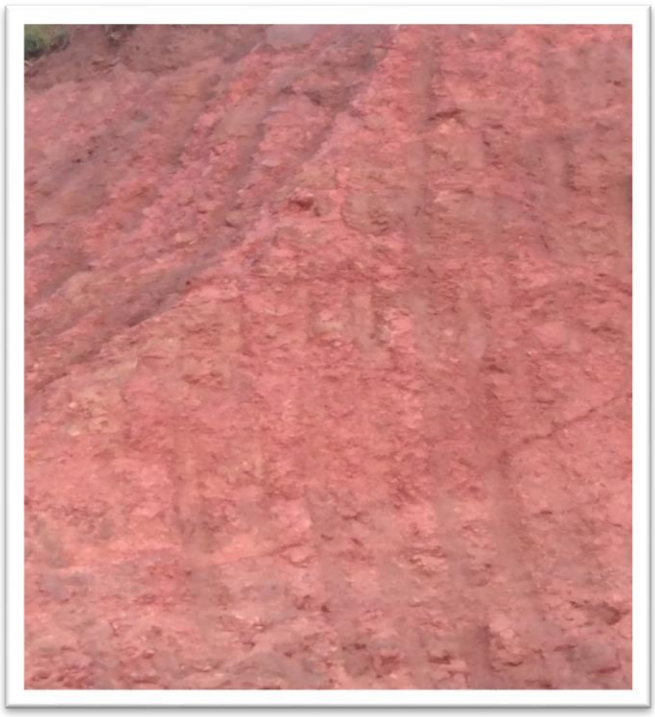
Fig 8: The team was received by son of Ezonuwa of Kutigi at kutigi

Fig 9: Sampling soil at 0-15 cm and 15-30 cm depth at a farm in Kudu

$9^0$11’ 59”N$5^0$36’36”E

Laminated poorly sorted whitish sandstone at Kutigi

Exposed section of claystone bed at Kutigi $9^0$11’ 59”N$5^0$36’36”E



Exposed Sectionof redddish brown sandstone at a road cut from Kutigi to Tessan Hajiya (Ruga road)

Sampling of stream water at River Toro, Kutigi

9° 12′ 37″ N 5° 36′ 40″ E

Poorly sorted sandstone

Whitish Sandstone exposed at the base of an outcrop at Kutigi (Kusogi Junction)

Claystone deposit exposed and quarried at Kutigi (Close to Kusogi Junction)
9^0 11’ 59” N5^0 36’36” E

Soil Sampling at 0-15 cm and 15-30 cm with the aid of a cutlass at one of the location

Massive bed of poorly sorted sandstone at Kudu (**9^0 15’ 16”N5^0 21’11”E)**

Drawing well water at a location close to Village Head Compound at Kudu

Taking the values of the various water parameters with the aid a Multimeter at one of the locations at Kudu

The team's meeting with the Village Head of Wuya Kantin before commencing the exercise

Limitations

Time / Period of exercise was not adequate for intense coverage particular for the fieldwork and the questionnaires. The respondents were mainly stakeholders who are in the cabinet and therefore, close to leadership of the various communities. For security reasons: there was much restrictions on our movement and choice of locations. Completing the questionnaire was difficult for majority of the people. Also, many of the respondents could not complete the questionnaire themselves. Members of the team males and Females stay with them to assist in capturing and completing the questionnaires in most cases. That limited the pace of work and coverage.

Recommendations

We recommend that prior notice of survey visit should be sent in subsequent reports because this will actually ease the project and it will equally enable the investigation team to interact more people. Carrying out such research needs the present of civil servants. So we recommend that such research should be carryout not only weekends but also during the week days which will enable the research team to meet with civil servants for interaction. Subsequent attempt may need more simplified questionnaire. We believe results of analysis will be useful in guiding decision making in the events of the exploration and development of the Oil & Gas as well as other solid mineral resources in the region.

Acknowledgements

We appreciate the commendable report of the Ezonuwa of Kutigi, Bima of Enagi , Etsuyankpa of Wuya Kede, Wuya Kantin , Kudu and the other traditional rulers in the various communities we visited. All the traditional rulers detailed their aids to take us to all the communities visited. All the communities in the Kutigi axis are now well sensitized about proposed NNPC exploration programme in the Bida Basin.