Proposal for Reconnaissance Survey (G4 Stage) for Bauxite & Bentonite in Khedawada Block (68 Sq. Km.) in parts of Sabarkantha District of Gujarat.

[Part of the Toposheet No. 46A/14]

Commodity: Bauxite & Bentonite

BY

Gemcokati Exploration Pvt. Ltd
E-77, MIDC, Ghughus Road,
Chandrapur, Maharashtra- 442406

Place: Chandrapur
Date: 15th June'2026

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www.gemcokati.com; Ph no: 07172-287200; Mail: subrata.sarkar@gemcokati.com

FOR SUBMITTING PROPOSAL FOR UNDERTAKING RECONNAISSANCE SURVEY

Chandrapur, Dated the 15th June'2026

From:
Subrata Sarkar,
Vice President (Projects & Planning),

Gemco Kati Exploration Private Limited
E-77, MIDC Road,
Near Nyara Petrol Pump,
Chandrapur-442406.

To:
The Director & HoD,
National Mineral Exploration Development Trust, Secretariat,
Ministry of Mines,
Room No-325 & 326, Wing-F, Udyog Bhawan,
Rafi Ahmed Kidwai Road,
Rajpath Area, Central secretariat
New Delhi – 110011.

Sir,

I am submitting the following details for granting 'in-principle' approval by NMET on the proposal of reconnaissance or prospecting surveys to NMET under the "Scheme for Engagement of Notified Private Exploration Agencies in Mineral Exploration directly through National Mineral Exploration Trust issued by Ministry of Mines vide OM No. F. No. CG-DL-E-21072025-264840, New Delhi, dt 18th July' 2025.

1. Name and address of the Applicant		
(a)	Name	GEMCO KATI EXPLORATION PVT.LIMITED
(b)	Postal address	Plot No-34, Bapat Nagar, Chandrapur-442401, Maharashtra.
(c)	Telephone No (Office)	07172 - 287200
(d)	Fax No (Office)	07172 – 287200 / 230562
(e)	Mobile No	+91 7044208900
(f)	Telephone No (Residence)	+91 7044208900
(g)	E-mail address	subrata.sarkar@gemcokati.com
2. Detail of Accreditation as Private Exploration Agencies and Notification under the proviso to Section 4 (1) of the MMDR Act.		
(a)	Date of accreditation granted by QCI-NABET	16th March'2022
(b)	Date of expiry of accreditation	6th March'2025
(c)	Date of Re-accreditation	23rd April'2025.
(d)	Date of expiry of Re-accreditation	22nd April'2028
(e)	Date of Notification under the proviso to Section 4 (1) of the MMDR Act.	7th April'2022
(f)	Date of expiry of notification	6th March'2025
(g)	Date of Re-notification	18th July 2025
(h)	Date of expiry of Re-notification	22nd April 2028
(i)	Category of the Exploration agency (Category A or B) under Notification	Under category 'A' Exploration Agency.
3. Location details of the area proposed		
(a)	State	Gujarat
(b)	District(s)	Sabarkantha
(c)	Nearby village(s)	Dedhrota, Kanada, Aaglod & Hasanpur,
(d)	Survey of India (SOI) Toposheet No (s)	**46A/14**
(e)	Area in Sq. Km	**68 Sq. Km**

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<table>
<tr><td rowspan="6">(f)</td><td rowspan="6">Boundary co-ordinates of the Proposed Block (in Decimal Degree)</td><td colspan="7">Khedawada Block (G4)</td></tr>
<tr><td colspan="4">LONGITUDE</td><td colspan="3">LATITUDE</td></tr>
<tr><td>(A)</td><td>72°</td><td>47’</td><td>40.20”</td><td>23°</td><td>39’</td><td>44.35”</td></tr>
<tr><td>(B)</td><td>72°</td><td>54’</td><td>20.30”</td><td>23°</td><td>39’</td><td>49.67”</td></tr>
<tr><td>(C)</td><td>72°</td><td>54’</td><td>20.91”</td><td>23°</td><td>35’</td><td>32.58”</td></tr>
<tr><td>(D)</td><td>72°</td><td>47’</td><td>42.92”</td><td>23°</td><td>35’</td><td>25.26”</td></tr>
<tr><td colspan="9">4. Mineral Potential of the area</td></tr>
<tr><td>(a)</td><td>Name of Mineral(s) identified/expected in the area/block</td><td colspan="7">Bauxite & Bentonite</td></tr>
<tr><td>(b)</td><td>Basis on which mineral potential of the area has been identified</td><td colspan="7">1. A Report on “Investigation of the china-clay deposits in the area around Eklara and Arsodia dist. Mehsana, Gujarat.” FSP: 1966-1967 by Kathiara R.S., Geological Survey of India.
2. Report on “Bauxite deposits of the Sabarkantha, Kaira Broach and surat districts, Gujarat state.” FSP: 1961-1962 by Sahasrabudhe Y.S. Kulkarni A.M. Geological Survey of India.</td></tr>
<tr><td>(c)</td><td>List of documents/references relied upon in support of item (b) above</td><td colspan="7">1. Block area on google map.
2. Location of the proposed block demarcated on Survey of India (SOI) & Toposheet(s) 46A/14)
3. Block area on Geological Map.</td></tr>
<tr><td colspan="9">5. Documents to be enclosed with the application</td></tr>
<tr><td>(i)</td><td colspan="8">Location of the proposed block demarcated on Survey of India (SOI) Toposheet (s) 46A/14</td></tr>
<tr><td>(ii)</td><td colspan="8">Documents mentioned in items 4 (C) above</td></tr>
<tr><td></td><td colspan="8">Place: - Chandrapur

Date –15.06.2026 Signature of the applicant</td></tr>
</table>

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[Part of the Toposheet No-46A/14]

Commodity: Bauxite & Bentonite

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Summary of the Block for Reconnaissance Survey (G4 Stage) for Bauxite & Bentonite in Khedawada Block (68 Sq.Km.) in parts of Sabarkantha District of Gujarat. (Toposheet no.46A/14)		
	Features	**Details**
	Block ID	Khedawada Block [G4] (68 Sq. Km.)
	Current Exploration Agency	Gemco Kati Exploration Pvt.Ltd.
	Previous Exploration Agency	Geological Survey of India.
	G4 stage Geological Report (Previous stage Geological Report)	1. Bauxite deposits near Harsol were studied by Y.S.Sahasrabudhe and A.M.Kulkarni of Geological Survey of India (1961-62) during their regional survey of bauxite deposits in Sabarkantha, Kheda, Bharuch and Surat districts. **Five test pits were sunk by the G.S.I. party near Harsol and 0.27 million tonnes of bauxite of all grade was assessed.** 2. R.S.Kathiara of G.S.I. conducted investigation for China clay around Eklara and Arsodia areas of Sabarkantha and Mehsana districts (1966-67). 3. A.A.Waheed of The Directorate of Geology and Mining, Govt. of Gujarat mapped bauxite deposits of Harsol area in detail (1971-72).
	Commodity	**Bauxite & Bentonite**
	Mineral Belt	Bauxite capping with laterite and lateritic clay & Bentonitic clays of Sub recent to Pliocene age are **resting over altered traps & sandstones of Himatnagar series.**
	Completion Period with entire Time schedule to complete the project	**10 Months**
	Objectives	The work component proposed in the Khedawada Block area –68 sq.km, to fulfil the following objectives: 1. To carry out the geological and structural mapping on 1:12,500 scale of the block (68 sq km) to delineate various litho-units and their linear/ planar structural features. 2. To collect samples for WD-XRF for major oxides, ICP-MS analysis for major, minor and trace elemental study. 3. To collect (Pit/Trench) samples to test the catchment areas for trace elemental abundance and major oxides analysis. 4. Systematic stream sediments of first and second order streams in the areas overlaying targeted host rocks on need basis. 5. Petrographic, Ore Micrographic, SEM-EDX & XRD studies of possible host rock. 6. To asses G4 category (334) prospect in the Block, as per UNFC norms and Minerals (Evidence of mineral contents) Rules. 7. To decide the future course of exploration under G3.

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	Whether the work will be carried out by the proposed agency or throughout sourcing and details thereof. Components to be out sourced and name of the outsource agency	Work will be carried out by the proposed agency i.e. Gemco Kati Exploration Pvt. Ltd Not applicable
	Name/Number of Geoscientists	Two nos. Geoscientists
	Expected Field days (Geology, Geophysics, Surveyor)	Geologist Party days: 150 days (Field) + 45 days (HQ)
1.	**Location**	
	Latitude	23°23'44.26"N - 23°39'44.26"N
	Longitude	72°47'40.21"E - 72°54'20.28"E
	Villages	Dedhrota, Kanada, Aaglod & Hasanpur.
	Tehsil/Taluka	Himatnagar
	District	Sabarkantha
	State	Gujarat
2.	**Area (hectares / square kilo meters)**	
	Block Area	68 Sq. Km.
	Forest Area	NA
	Government Land Area	NA
	Private Land Area	Major part in agricultural area under Private Land
3.	**Accessibility**	
	Nearest Rail Head	The nearby railway station Himatnagar (5 km).
	Road	The national highway NH-55 passes through South eastern part of the block. The block is well connected with state capital Gandhinagar through national highway NH-48.
	Airport	The nearest Airport is Ahmedabad and located around 75 km Southwest of the proposed block.
4.	**Hydrography**	
	Local Surface Drainage Pattern (Channels)	Sub-dendritic
	Rivers/Streams	The major rivers flowing in the area are Sabarmati River and their tributaries. The creeks and rivers frequently overflow during the monsoon period, most of the rivers and tributaries drain towards South.
5.	**Climate**	
	Mean Annual Rainfall	The average rainfall in the area is 600 to 900 mm between June to September.
	Temperatures (December)(Minimum) Temperatures (May)(Maximum)	14^{o}C 41^{o}C
6.	**Topography**	Gently undulating with small hillocks.
	Toposheet Number	**46A/14**
	Morphology of the Area	The mean elevation of the area is 143m above the mean sea level and ranges between 168 to 118 m above msl. For most of the part of the proposed block the topography is gentle and flat represented by agricultural land.
7	**Availability of base line geosciences data**	
	Geological Map (1:50,000/25,000)	1:50,000 Scale Geological Map is available in public domain and was downloaded from GSI Portal (Bhukosh).

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	Geochemical Map	Not Applicable
	Geophysical Map (Aero-geophysical, Ground geophysical, Regional as well as local scale GP maps)	**NGPM:** Regional gravity and magnetic (TF) surveys were carried out in toposheet Nos. 46A/14 under the project National Geophysical Mapping (NGPM) in accordance with the field season programme 2020-21 by Kuntal Bhukta (Geophysicist), Jayashree Banerjee (Geophysicist), Anand Prakash Gokula (Geophysicist)
8.	**Justification for taking up G4 stage mineral exploration**	1. In this area mining activity is being carried out by M/s. Jai Mining Co. Bauxite of mixed grade is found which is being sorted out manually. 2. Occurrences of mixed-grade bauxite have been recorded near Ghari, Waghrota, Dungarpur M. (Morali–Dungari), and Badar–Muwari, with chemical analyses indicating pockets of good-grade material. Due to soil cover and absence of pitting, the deposit quantities could not be estimated. Detailed investigations are therefore recommended. 3. Bentonitic and sub-bentonitic clay occurrences near Jitor, Hapa, Tajpuri, Madheopura, Kundol, Ghed, and Katwar (Mewal) also warrant detailed assessment. 4. **NGPM:** The National Geophysical Mapping Programme (NGPM) was carried out during the Field Season 2020–21 by Kuntal Bhukta, Jayashree Banerjee, and Anand Prakash Gokula (Geophysicists). Based on the results of the study, high Bouguer gravity anomalies and gravity gradient zones have been observed in the northern part of toposheet 46A/14. Accordingly, the area has been recommended for detailed geological and geophysical investigations to delineate future target zones from a mineralization perspective.
9	**Documents to be enclosed with the application**	1. Block area on google map. 2. Location of the proposed block demarcated on Survey of India (SOI) & Toposheet(s) 46A/14. 3. Block area on Geological Map.

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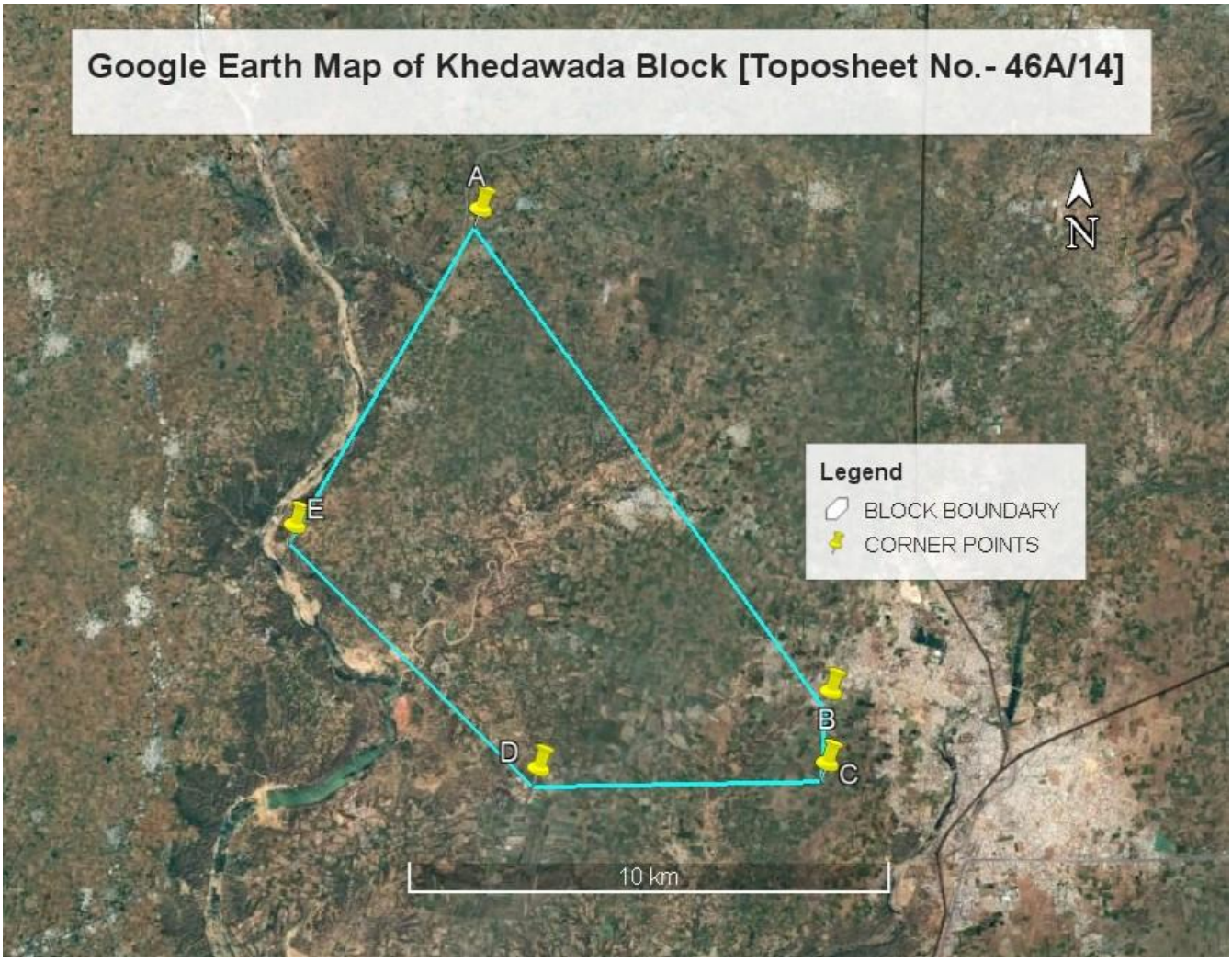
Map-01 Khedwada Block demarcated on Google Earth



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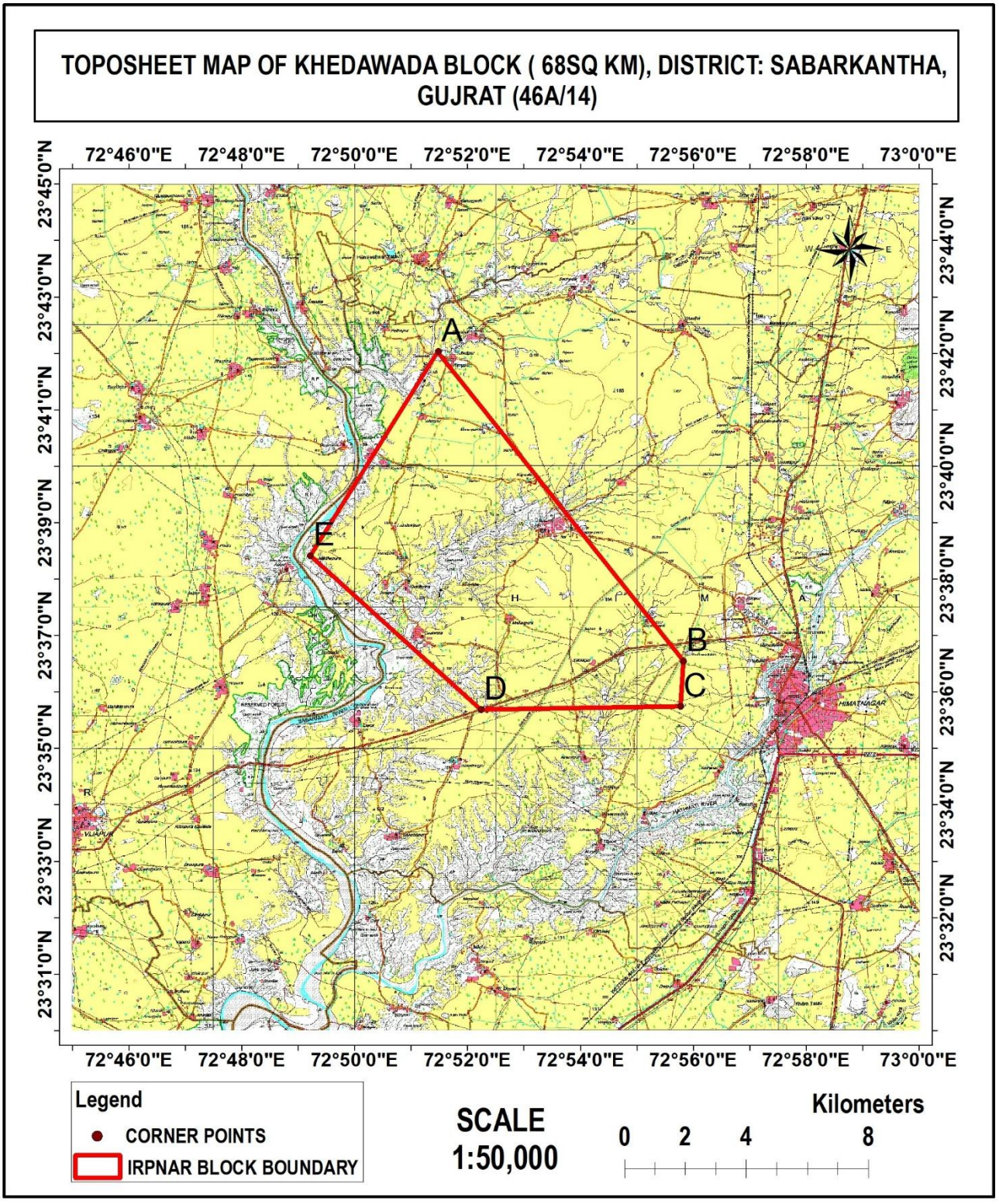
Map-02 Khedwada Block demarcated on Toposheet no.46A/14



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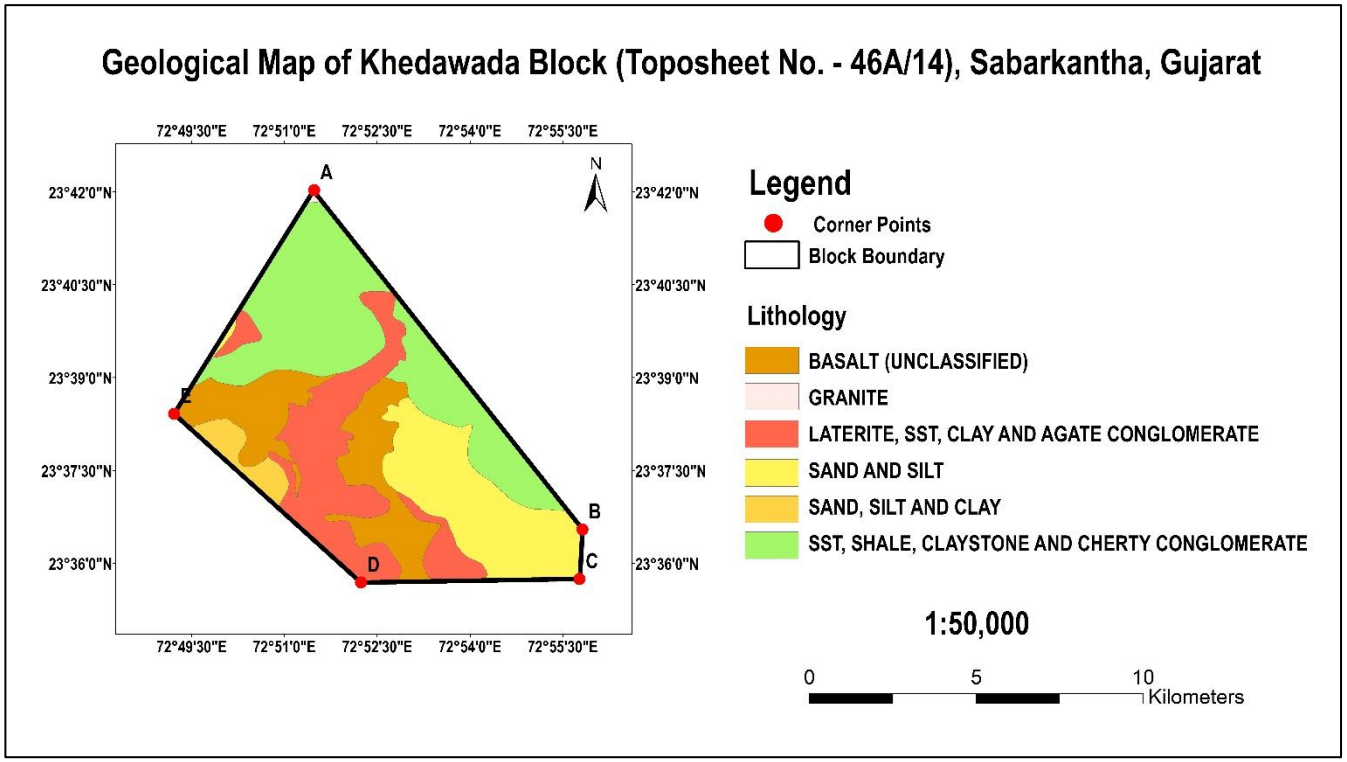
Map-03 Geological Map of Khedwada Block



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Detailed Project Report [DPR]

1. Block Summary:

1.1 Physiography:

The topography of the proposed block for G4-stage exploration is generally gentle and flat, predominantly represented by agricultural land. The mean elevation of the area is approximately 143 meters above mean sea level (MSL), with elevations ranging from 113 meters to 168 meters above MSL. Geologically, the litho-units in the area comprise small mounds of laterite, intercalated with lateritic clays and Deccan Trap rocks, indicative of extensive past lava flows. These volcanic rocks overlie sedimentary formations of Lower Cretaceous age, which in turn rest upon the Idar Granite. The drainage pattern in the area is predominantly dendritic, flowing in all directions. This pattern has developed over the surface, with erosion progressively deepening the terrain. At places, the surface has been considerably cut down to depths of 15 to 20 meters, while 3 to 6 meters of incision is commonly observed. The Sabarmati and Hathmati rivers, along with their tributaries, dominate the regional hydrology. The Hathmati River merges with the Sabarmati River near Sangpur Juna. These water bodies may frequently overflow during the monsoon season, contributing to seasonal waterlogging in low-lying areas. As the area is far from the sea, winters are cold and summers are considerably hot. The monsoon generally begins by mid-June, and July, August, and September are the main rainy months. All major rivers in the area are perennial. The groundwater conditions in the area are generally poor, as the sandstone, which is the main water-bearing stratum, occurs at greater depths towards the south and south-west of Himatnagar.

1.2 Back Ground Geology & Regional Geology of the Block:

Regional Geology

Geologically, Sabarkantha District presents a variety of geological units right from Lower Proterozoic to Recent. The area was systematically mapped on 1:63,360 scale during 1976-1977 Field Season Programme of the Geological survey of India. The area mapped is covered in Survey of India Toposheet No. 46A/14. The oldest formation in the area is Aravallis Super group comprises of various meta sediments belongs to Lower Proterozoic. The rock types encountered in the area are sedimentary, meta-sedimentary, volcanic and metamorphic rocks. Among the different rock types, the rocks of Aravallis and Delhi Super group cover a large area in the northern and eastern part of the district. The regional stratigraphic is established by the Geological Survey of India is as follows:

GEOLOGICAL AGE	SUPERGROUP	GROUP	FORMATION	LITHOLOGY
Holocene			Varah Formation	Flood plain and channel fill deposits
			Katpur Formation	Flood plain and channel fill deposits
			Jantral formation	Sand sheet and sand dune deposits
Palacocene			Mata no madh formation	Ferruginous sandy beds, sandstone, clay, laterite and conglomnerate.
Cretaceous to	Deccan Taps		Basalt	Porphyritic and

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Eocene				amygdaloidal basalt flow with intertrappcan sediments
Upper Cretaceous			Lameta Formation	Várigated clay, banded chert and limestone
Lower Cretaceous			Himatnagar formation	Conglomerate, variegated sandstone, shale, claystone and chert
Upper Proterozoic	Malani Igneous Suite			
			Idar Granite	Granite, Quartz porphyry, quartzitic vein
			Godhra Granite	Granite
Middle Proterozoic			Sendra – Ambaji Granite	Granite and leucogranite with quartzo -feldspathic veins
			Pholad Ophiolite Suite	Epidorite, hornblende schist, amphibolite, pyroxenc granulite and gabbro
Lower to Middle Proterozoic	Delhi Supergroup	Kumbhalgarh group	Todgarh formation	Calc-gneiss, calc-schist, calc gnciss, impure marble, calcitic marble, biotite schist, calc-biotite schist, biotite gnciss/migmatite
		Gogunda Group	Kelwara Formation	Biotite schist, calc-biotite schist and phyllite
			Antalia formation	Quartzite and quartz sericite schist, biotite schist and calc biotite schist
Lower Proterozoic	Aravalli Supergroup	Lunavada Group	Kadana Formation	Mica schist and meta-subgraywacke, quartzite
		Intrusive	Rakhaldev Ultramafic suite	Serpentinite and talc-carbonate rock
		Jharol Group	Samlaji Formation	Garnetiferous mica schist, quartzite, calc-amhibolite, feldspathiscd mica schist
			Goran Formation	Phyllite, chlorite-mica schist, quartzite

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Geology of the block:

Block proposed for the exploration is falls under the toposheet no. 46A/14, Sabarkantha district, Gujarat. Geologically presents a variety of the litho-units from Lower Proterozoic to recent. The study has brought the presence of distinct lithological and structural association in the area. The general stratigraphic sequence of the rock types in the area is as below:

Recent to Sub recent	Soil, sand, alluvium, kankers etc.
Sub recent to Pliocene	Bauxite, laterite, bentonite clays etc.
Upper cretaceous:	Deccan traps.
Lower cretaceous:	Himatnagar series-sandstones intercalated with shales, clays etc. and conglomerate
……. Unconformity…….	
Lower cuddapah (Delhi system)	Idar granites

Idar Granite: Idar granites are not encountered in the area under investigation.

Himatnagar sandstones: Himatnagar sandstones are well exposed along Hathmati river. These sandstones are inter-calated with clays. At places huge boulders of quartzite are noticed in the riverbed near Piplodi and Hapa. These boulders seem to be transported by river form the upper areas. The sandstones are varying in color from dirty white, pink, violet to dark reddish. The cementing material is siliceous and very little calcareous and is often it is coated with ferruginous materials. Two layers of clay intercalated with sandstone were examined along Hathmati river cutting near Katwar (Mewasi) while at other places only one layer was seen. These clays are varying in color from light pink, violet, yellowish, chocolate brown and dark-reddish. They are very soft and have tendency to crumble when exposed after excavation.

Deccan traps: Deccan traps are underlain by Himatnagar sandstones. Trap exposures were noticed near village Hathmati, Wajapur and Warwara. Highly weathered traps are exposed along Khari River cuttings in south west of Waghrota village. They are fine to medium grained and amygdaloidal. The amygdaloidal are filled with secondary minerals quartz and chalcedony. They are gently tilted towards west.

Bauxite capping with laterite: Bauxite is fine-grained, hard, compact, and nodular, exhibiting color variations from light grey and pinkish grey to light reddish and dark reddish. Laterite shows a range of colors including dark reddish, yellowish, and reddish-violet. It is very hard, compact, and contains lime.

Irregular and isolated pockets of laterite and bauxite, trending nearly north–south and roughly parallel to the 73° longitude, occur in the vicinity of Wadhrota, Ghari, and Dungarpur M. (Morali–Dungari) villages. These bauxite capping, along with laterite and lateritic clay, rest upon altered Deccan Trap basalts and are overlain by approximately 5–10 m thick sandy lateritic soil.

According to Y. S. Sahasrabudhe, **the laterite and bauxite deposits were formed by in situ alteration of supra-trappean limy sediments that filled depressions created by local structural deformations during the Tertiary period.** The pronounced variation in bauxite composition is interpreted as reflecting differences in the original composition of the residual material.

Bentonitic clays: Along the river cuttings, bentonitic clays overlie the Himatnagar Sandstone. The bentonite is light

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grey to grey and yellowish in colour, with a waxy appearance and a soapy feel. On immersion in water, it shows rapid dispersion due to its swelling property

1.3 Mineral potentiality based on geology:

Sabarkantha district is in rich mineral reserves including Limestone, Granite, Building Stone, Quartzite, Black Trap, Calcite and China Clay etc. **Bauxite, China clay, Pipe clay, Fire clay, building stone, Quartzite, Black Trap, Bentonite and Granite are found in Himatnagar taluka.** Granite, Sand stone, Building stone and quartzite is found in Idar Taluka. Bauxite and Black trap are available in Talod taluka, Lime stone and Granite is found in Khedbrahma taluka of the district.

1.4 Scope for proposed exploration

Sr. No	Nature of Work	Proposed Work	
1	**Mapping on 1:12,500 scale**		
1a	Large-Scale Mapping (1:12,500 scale)	68 Sq. Km	
2	Surface sampling (BRS)	30 nos	
3	Pitting	160 Cum. 40 Pits, [each 2m (L) X 1m (W) X2m(D)]	
3a	Pit Samples	80 nos.	
4	**Survey work**		
4a	DGPS Survey for BH fixation & RL determination	8 boreholes	
4b	Charges of Surveyor (1 party) for Geophysical survey layout work & Block boundary demarcation	8	
5	**Exploratory Drilling**		
5a	Scout Drilling	No. of boreholes	8 nos.
		Depth	30 meter
		Total Drilling	240 meter
5b	Core logging	240 meter	
5c	Core sampling	240 nos.	
6	**Chemical analysis**		
6a	Major Oxides by WD-XRF	297 Nos. (30 BRS+80 Pit samples +160 core samples + 27 check samples)	
6b	Trace elements analysis by ICPMS for 34 Elements	88 Nos. (30 BRS+10 Pit samples+ 40 core samples +8 check samples)	
6c	Determination of insitu Bulk Density	8 nos.	
6d	Combined determination of Trihydrate Alumina (THA-140° C), Monohydrate Alumina (MHA-240° C) & Reactive Silica	8 nos.	
7	**Laboratory analysis**		
7a	XRD study for identification of minerals	10 nos.	
7b	PS	10 Nos.	
7c	OM	10 Nos.	
8	Geological Report preparation		

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1.5 Recommendations

1. Occurrences of mixed-grade bauxite have been recorded near Ghari, Waghrota, Dungarpur M. (Morali–Dungari), and Badar–Muwari, with chemical analyses indicating pockets of good-grade material. Due to soil cover and absence of pitting, the deposit quantities could not be estimated. Detailed investigations are therefore recommended in the Waghrota and Dungarpur M. (Morali–Dungari) areas.

2. Bentonitic and sub-bentonitic clay occurrences near Jitor, Hapa, Tajpuri, Madheopura, Kundol, Ghed, and Katwar (Mewal) also warrant detailed assessment.

3. **NGPM, FS-2020-21 by Kuntal Bhukta, Jayashree Banerjee, and Anand Prakash Gokula (Geophysicists):** The National Geophysical Mapping Programme (NGPM) was carried out during the Field Season 2020–21 by Kuntal Bhukta, Jayashree Banerjee, and Anand Prakash Gokula (Geophysicists). Based on the results of the study, high Bouguer gravity anomalies and gravity gradient zones have been observed in the northern part of toposheet 46A/14. Accordingly, the area has been recommended for detailed geological and geophysical investigations to delineate future target zones from a mineralization perspective.

1.6 Objective

The work component proposed in the Khedawada Block area –68 sq.km, to fulfil the following objectives:

1. To carry out the geological and structural mapping on 1:12,500 scale of the block (68 sq km) to delineate various litho-units and their linear/ planar structural features.
2. To collect samples for WD-XRF for major oxides, ICP-MS analysis for major, minor and trace elemental study.
3. To collect (Pit/Trench) samples to test the catchment areas for trace elemental abundance and major oxides analysis.
4. Systematic stream sediments of first and second order streams in the areas overlaying targeted host rocks on need basis.
5. Petrographic, Ore Micrographic, SEM-EDX & XRD studies of possible host rock.
6. To asses G4 category (334) prospect in the Block, as per UNFC norms and Minerals (Evidence of mineral contents) Rules.
7. To decide the future course of exploration under G3.

2. Previous work:

The geology of the study area has been investigated by several workers over the last century. The earliest account was provided by Middlemiss (1921), followed by detailed studies in the Himmatnagar region by Gupta and Mukerjee (1935). Subsequent investigations focused mainly on specific mineral deposits, particularly china clay and laterite. These include brief visits by Mehta (1952), Sahasrabudhe and Mahajan (1956), and Vonkoba Rao (1969), while Koster (1963) carried out an extensive and detailed study of the laterites of Kot and Padhamli.

Extensive geological mapping in the region was undertaken earlier, and the regional geology was firmly established by Heron and Ghosh (1938). They suggested that the granites of the area form part of the Erinpura Granite and intrude the rocks of the Delhi System (now Delhi Supergroup). Later studies by Oza (1962–67) and Balasubramanyam (1968–69) focused on groundwater resources and revealed that large parts of the area are

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covered by thick Quaternary sediments belonging to the Cambay Basin.

Bhan (1971–72) proposed that granitic intrusions occurred during the later phase of orogeny and emphasized the formation of migmatites during the early stages of acidic magma emplacement into metasediments and metabasic rocks. Gupta et al. (1980) assigned the metasediments to the Kumbhalgarh Group of the Delhi Supergroup and interpreted the granitoids as syn-orogenic, belonging to the Sendra–Ambaji suite.

Further geological investigations by R. Mukhopadhyay (1982) in the Mehsana and Banaskantha districts confirmed the dominance of metasediments of the Kumbhalgarh Group intruded by syn-orogenic Sendra–Ambaji granitoids. The metasediments mainly comprise calcsilicates, with subordinate quartz–muscovite schist and quartz–chlorite–sericite schist, while the granitoids range in composition from alkali feldspar quartz syenite to granodiorite.

Systematic geological mapping by S. Chowdhury and I. Chowdhury (1990) in parts of Sabarkantha District further refined the geological framework. They reported that the Delhi Supergroup in the area is represented chiefly by quartzites and weathered mica schists, intruded by granites, pegmatites, and quartz veins. Three distinct granite types were recognized based on colour, mineral composition, and grain size, with pink porphyritic granite being the most widespread.

3. Block description:

Khedawada Block (G4)						
LONGITUDE				LATITUDE		
(A)	72°	47’	40.20”	23°	39’	44.35”
(B)	72°	54’	20.30”	23°	39’	49.67”
(C)	72°	54’	20.91”	23°	35’	32.58”
(D)	72°	47’	42.92”	23°	35’	25.26”

4. Planned methodology

- Geological Mapping (LSM): The geological mapping [LSM] on a 1:12,500 scale is to be carried out in and around 68 sq km area by taking traverses. The geological map would be prepared by adding geological features, attitudes of beds, structural features etc. to be picked up and plotted during mapping.

- Chemical Analysis: The collected samples shall be analyzed by WD XRF through Borate Fusion Bead for radicals like Fe (Total), SiO2, Al2O3, S, P, MnO, P2O5, TiO2, MgO, CaO, Na2O, K2O, Fe2O3, SO3, BaO, V2O5, SrO, LOI (18 Radicals) and radicals to be analysed through ICPMS (REE &Trace elements) are Al, Ba, Ca, Fe, K, Mg, Mn, Na, P, S, Ti, Ag, As, B, Be, Si, Bi, Cd, , Co, Cr, Cs, Cu, Ga, Ge, In, Li, Mo, Nb, Ni, Pb, Rb, Sb, Sc, Se, Sn, Sr, Ta, Te, Tl, V, W, Y, Zn, Zr. La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Hf, Th, U (61 Radicals).

- Petrological studies (PS & OM).
- Combined determination of Trihydrate Alumina (THA-140° C), Monohydrate Alumina (MHA-240° C) & Reactive Silica.
- XRD study for identification of minerals
- Exploration Report: Generate a detailed report (Final G4 stage Report) along with a Geological Map identifying and establishing the deposit with quantity and quality of resources worthy of being raised to a G-4 scheme of exploration as per MEMC-2015. Data generated from G-4 level works, shall be presented in the Report as per the guidelines laid down in provisions of MINERAL (EVIDENCE OF CONTENTS) RULES-2015 in the NMET prescribed format for Peer Review.

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5. Nature and Quantum of work

Sr. No	Nature of Work	Proposed Work	
1	**Mapping on 1:12,500 scale**		
1a	Large-Scale Mapping (1:12,500 scale)	68 Sq. Km	
2	Surface sampling (BRS)	30 nos	
3	Pitting	160 Cum. 40 Pits, [each 2m (L) X 1m (W) X2m(D)]	
3a	Pit Samples	80 nos.	
4	**Survey work**		
4a	DGPS Survey for BH fixation & RL determination	8 boreholes	
4b	Charges of Surveyor (1 party) for Geophysical survey layout work & Block boundary demarcation	8	
5	**Exploratory Drilling**		
5a	Scout Drilling	No. of boreholes	8 nos.
		Depth	30 meter
		Total Drilling	240 meter
5b	Core logging	240 meter	
5c	Core sampling	240 nos.	
6	**Chemical analysis**		
6a	Major Oxides by WD-XRF	297 Nos. (30 BRS+80 Pit samples +160 core samples + 27 check samples)	
6b	Trace elements analysis by ICPMS for 34 Elements	88 Nos. (30 BRS+10 Pit samples+ 40 core samples +8 check samples)	
6c	Determination of insitu Bulk Density	8 nos.	
6d	Combined determination of Trihydrate Alumina (THA-140° C), Monohydrate Alumina (MHA-240° C) & Reactive Silica	8 nos.	
7	**Laboratory analysis**		
7a	XRD study for identification of minerals	10 nos.	
7b	PS	10 Nos.	
7c	OM	10 Nos.	
8	Geological Report preparation		

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6. Time Schedule

Time Schedule/ Action Plan for Reconnaissance Survey (G-4) for Bauxite & Accosiated Critical Minerals for Khedwada Block, Saberkantha District, Gujarat. Area 68 sq. km, No. of BH-8, (8 x 30 m = 240 m); Schedule timeline- 10 months [Review: After 3rd and 6th Months]													
SL NO.	Item of work	1	2	3		4	5	6		7	8	9	10
1	Camp setting and Geological Mapping (1:12,500)												
2	Excavation of Pit & Sample collection												
3	Drilling, Collection of core samples & DGPS Survey for BH fixation				REVIEW				REVIEW				
4	Laboratory Studies												
5	PS, OM & XRD studies												
6	Interpretation of analytical data, Finalization of lithologies, plates												
7	Review and report preperation/ Peer review												
8	Final Submission												

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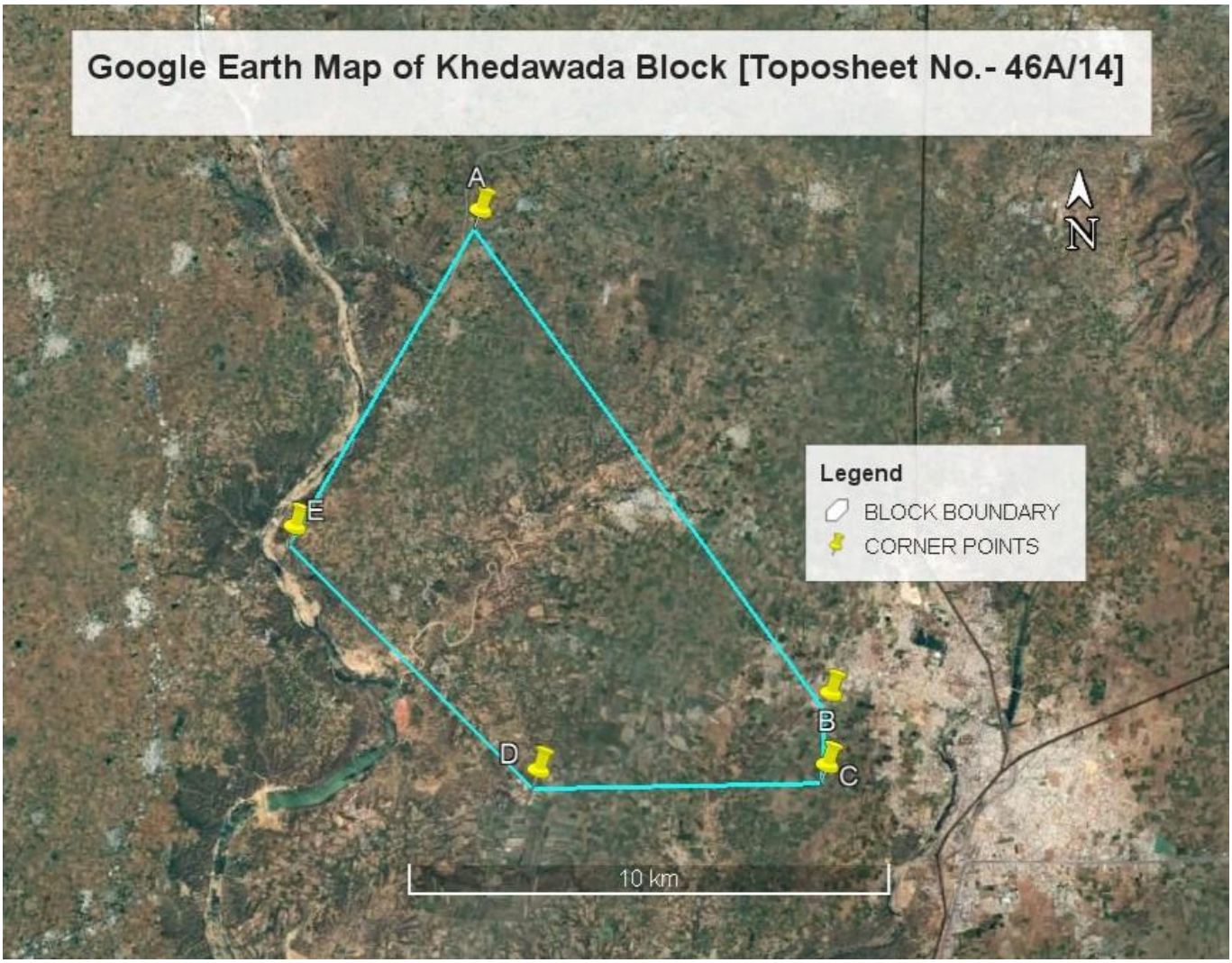
Map-01 Khedwada Block demarcated on Google Earth.



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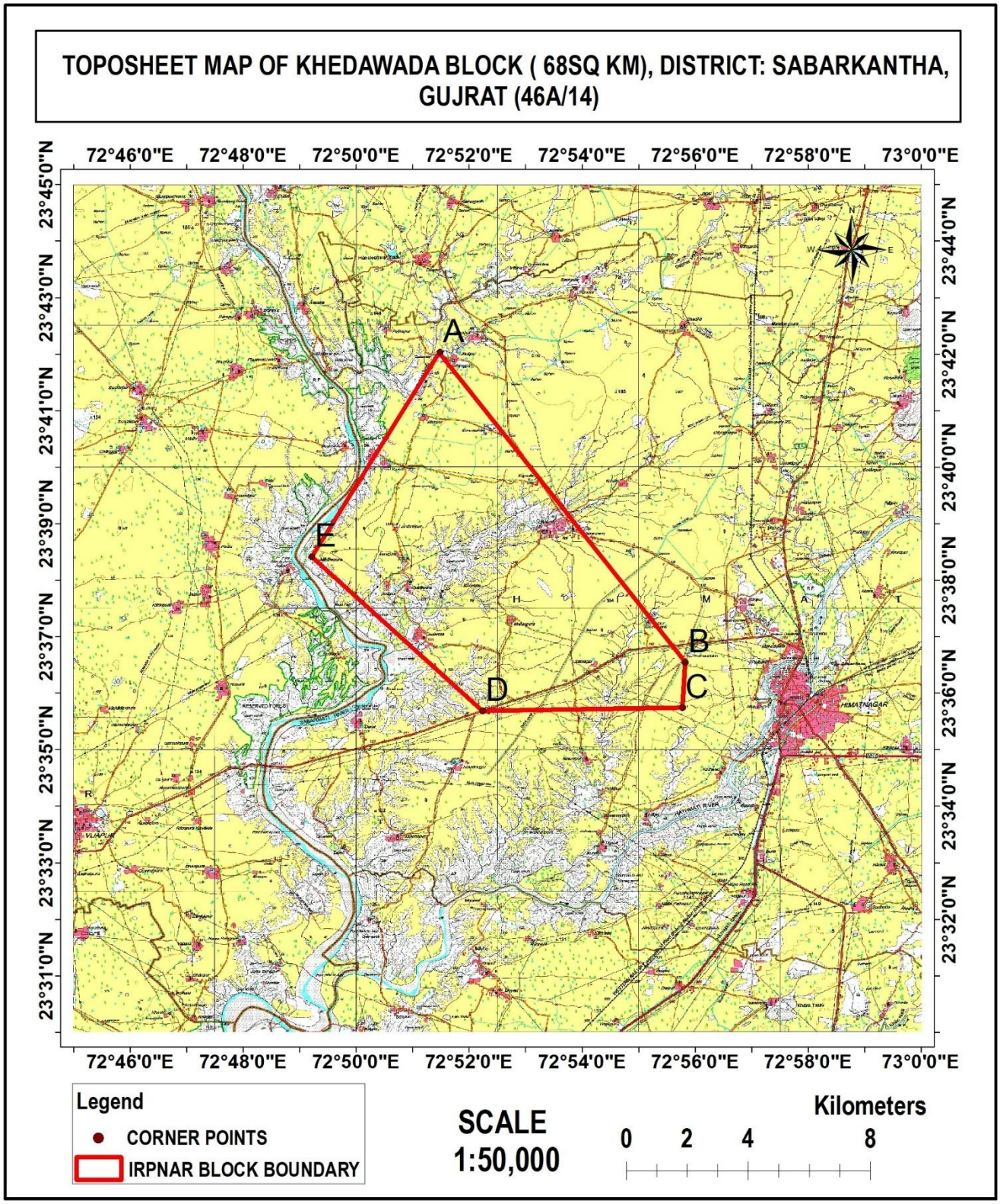
Map-02 Khedwada Block demarcated on Toposheet no.46A/14.



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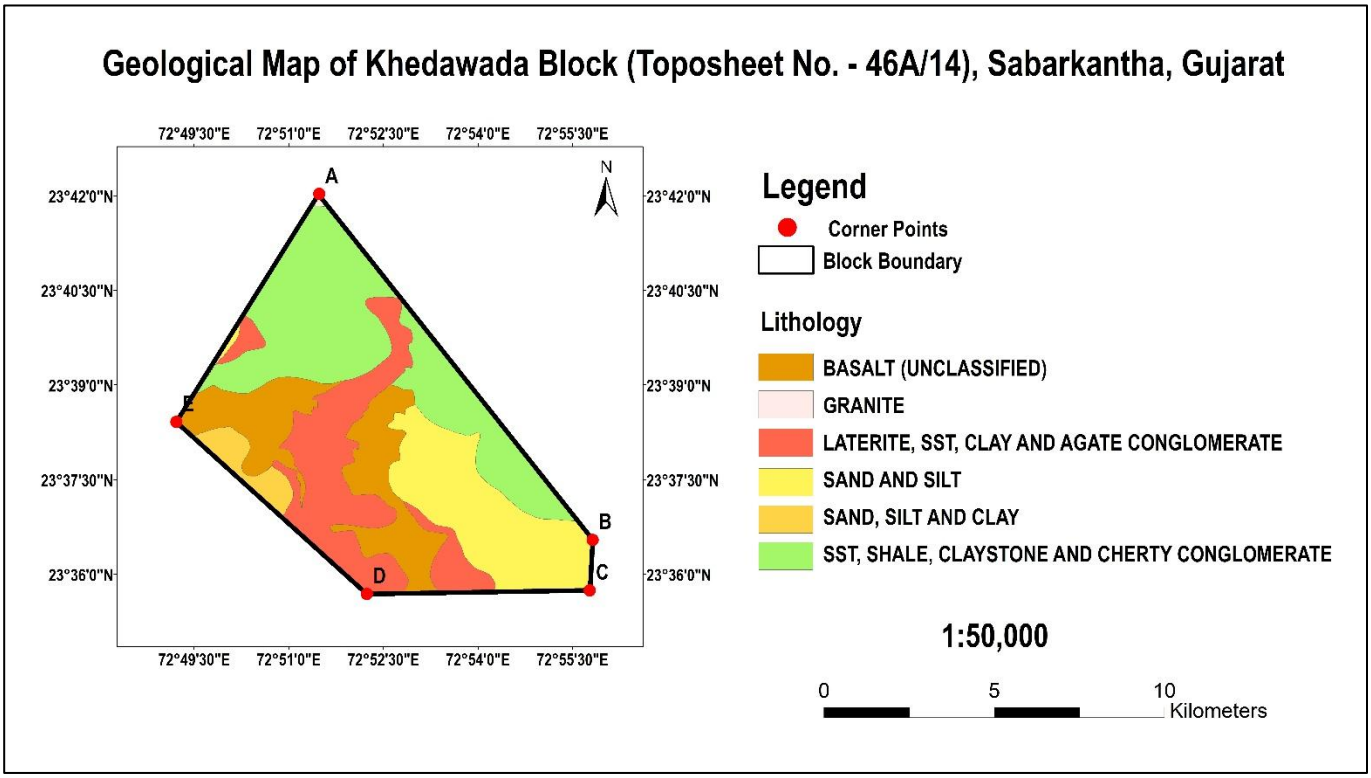
Map-03 Geological Map of Khedwada Block.



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