

## **Joint report of CPCB and GPCB on status of restoration processes in place for dumped Gypsum and ground water contamination**

### **Background:**

Hon'ble NGT (Principle Bench, Delhi) passed an order on 20.11.2019 in the matter of Marvada Amrutlal Becharlal vs. State of Gujarat (O.A. No 669 of 2018). In the said order, State PCB was directed to oversee different remedial actions initiated by the unit i.e. M/s Ashapura Perfoclay Ltd. and furnish action report in the matter. Further, point 7 of the order reads *"To sum up, it is clear that Gypsum dumps have caused contamination of ground water with respect to ammonia, electrical conductivity and total dissolved solids. To remedy the situation, restoration processes are placed and these need to be examined by the GPCB and CPCB"*.

In accordance with the order, following officials of CPCB and GPCB carried out inspection / survey of alleged Gypsum dumping areas and ground water restoration processes on dated 31.12.2019, 05-06.02.2020 & 16.03.2020.

1. Dr. N. Semwal, Scientist-C, Regional Directorate (West), CPCB, Vadodara.
2. Dr. S. N. Agravat, I/c-Regional Officer, RO-Kutch (West), GPCB.
3. N. P. Chaudhari, DEE, RO-Kutch (West), GPCB.
4. S. S. Chauhan, AEE, RO-Kutch (West), GPCB.

### **(A) Status of waste Gypsum dumping and its removal / disposal as on 31.12.2019**

As per the information provided by the complainant to GPCB, the unit M/s Ashapura Perfoclay Ltd. dumped the waste Gypsum at 39 locations in and around 10 Km area. The joint team visited all 39 locations on 31.12.2019 to verify the ground status of Gypsum dumping and its removal process. The summary of observations is as follows:

(Detail observations about all 39 locations are given in the table placed as an **Annexure-1**).

1. Gypsum was not observed on 20 out of 39 locations. Reportedly the unit M/s. Ashapura Perfoclay Ltd. has lifted the Gypsum from these sites.
2. Gypsum was found dumped in 18 out of 39 locations in low lying areas / abandoned mines / mixed with soil.
3. Gypsum lifting activity was observed on 01 location out of 39 locations.

**Disposal of lifted Gypsum:** As per CCA issued by GPCB, the unit has to dispose the waste Gypsum to cement units. However, M/s. Ashapura Perfoclay Ltd. has obtained permission vide CCA no. H-103222 dated 29.07.2019, which is valid up to 24.06.2023 for the alternate mode of disposal of Gypsum waste for the back filling of abandoned mines of M/s. Ashapura Minechem Ltd. at Survey no. 189/P, Village: Mata na Madh, Taluka: Lakhpat, Dist: Kutch when Cement industries are not in operation and/or not accepting the Gypsum. The mines were visited to observe the status of disposal. Following are the observations:

1. HDPE liner (0.2 mm) has been provided in about 2000 M<sup>2</sup> area of mine (Photograph shown below).
2. Storage /stacking of lifted Gypsum was observed around mines. Dumping of Gypsum in mines was yet to be started (Photograph shown below).

3. As per record submitted by the unit in GPCB, 8382 MT Gypsum has been lifted & stored at mines site during last three months.
4. It is informed that back filling capacity of mine is 5 lakh MT.
5. During visit rain water was observed stored /accumulated in one portion i.e. the south side of mines (Photograph shown below).



#### **(B) Status of waste Gypsum dumping and its removal / disposal as on 06.02.2020**

The industry informed to GPCB that they are in process of removing Gypsum from another 04 locations out of 19 locations where Gypsum was observed dumped during 31.12.2019. The joint team visited those 04 locations and mines site on 05.02.2020 & 06.02.2020 to verify the status. The summary of observations is as follows:

(Detail observations about all 04 locations are given in the table placed as an **Annexure-2**).

1. Dumped Gypsum has been lifted from 01 out of 04 locations.
2. Lifting of Gypsum was under progress on 03 out of 04 locations.
3. Thus out of 39 locations, waste Gypsum has been lifted from 21 locations and process of removal is under progress on 03 locations. Rest 15 locations are still occupied with waste Gypsum.

#### **Disposal of lifted Gypsum:**

1. The joint team has observed during inspection on 05-06.02.2020 that the unit has started back filling of mines with waste Gypsum at Survey no. 189/P, Village: Mata no Madh, Taluka: Lakhpat, Dist: Kutch (Photograph shown below).
2. As per record provided in GPCB, unit has disposed 85739 MT Gypsum waste to cement industries for co-processing & 14864 MT for the back filling of abandoned mines during Jan-2019 to Jan-2020.



*Backfilling of abandoned mine is in-progress*

**(C) Status of waste Gypsum dumping and its removal/disposal as on 16.03.2020**

The industry informed to GPCB that they are in process of removing Gypsum from another 05 locations out of 18 locations where Gypsum was observed dumped during 06.02.2020. The joint team visited those 05 locations on 16.03.2020 to verify the status. The summary of observations is as follows:

(Detail observations about all 05 locations are given in the table placed as an **Annexure-3**).

1. Dumped Gypsum has been lifted from 05 out of 05 locations.
2. Thus out of 39 locations, waste Gypsum has been lifted from 26 locations. Rest 13 locations are still occupied with waste Gypsum.
3. As per record provided in GPCB, unit has disposed 85739 MT Gypsum waste to cement industries for co-processing & 22445.93 MT for the back filling of abandoned mines during Jan-2019 to Feb-2020.

The unit has obtained permission from GPCB for back filling of another abandoned mine of M/s. Manico Minerals international Pvt. Ltd. (QL no. 17654) located at survey no. 420/23, Vill: Pundi, Ta. Mandvi, Dist. Kutch, vide CCA no. H-107040 dated 13.03.2020, which is valid up to 24.06.2023.

**(D) Status of ground water remediation/restoration as on 31.12.2019**

The unit M/s Ashapura Perfoclay Ltd. had appointed M/s. Kadam Environmental Consultanat, Baroda for conducting the ground water quality restoration and geo-hydrological study in the area. The ground water restoration scheme suggested by M/s Kadam Environmental Consultanat in their report “**Groundwater Remediation Action Plan at Ashapura Perfoclay Limited, Bhujodi, Bhuj, Kutch District**” which is part of Interim Action Taken Report submitted in Hon’ble NGT and mentioned in the Hon’ble NGT order dated 20.11.2019 at para 6.2.1 has been adopted by the unit which is as follows:

*Pumping of ground water @ 70 M<sup>3</sup>/Day from contaminated borewell to a collection tank (150 M<sup>3</sup>) inside the unit premises. The tank is provided with sprinkler system along with*

aeration. The water after aeration is fed to the RO system (already existing) and the permeate is used in the process and reject is sent to existing evaporation pond.



**RCC Tank with sprinkler system along with aeration**

Besides the above described ground water restoration process, the unit is using fresh lime for neutralization of spent sulphuric acid and stopped using ammonia contaminated lime from GNFC (Gujarat Narmada Valley Fertilisers & Chemicals). As per the record provided, the unit has consumed 6905 MT of fresh lime during last month. The bills for purchase of fresh lime were randomly verified with the compiled record submitted by the unit to GPCB and it was found in order.

GPCB carried out ground water sampling of 10 bore-wells on 23.12.2019 in and around the unit premises (Unit and sampling locations are depicted on google image below).



S. No.	Location	Latitude/Longitude	S. No.	Location	Latitude/Longitude
GW-1	Nr. Gate No. 2 of unit	23°11'58.22"N 69°44'29.67"E	GW-6	Vasudev Pindoriya	23°12'12.53"N 69°44'55.18"E
GW-2	Samavandh samiti	23°12'6.53"N 69°44'24.78"E	GW-7	Govind Hirji Gorasia	23°12'18.47"N 69°44'46.05"E
GW-3	Admin block of	23°12'12.53"N	GW-8	Ranubha Jadeja	23°12'0.42"N

	unit	69°44'30.09"E			69°44'55.25"E
<b>GW-4</b>	Shyamji Velji Gorasia	23°12'28.15"N 69°44'35.17"E	<b>GW-9</b>	Hetubha Jadeja	23°12'6.43"N 69°45'40.66"E
<b>GW-5</b>	Ramesh Pindoriya	23°12'13.65"N 69°44'55.45"E	<b>GW-10</b>	Dinesh maharaj Wadi	23°11'56.65"N 69°46'48.14"E

The analysis results are placed as an **Annexure-4** with this report.

The analysis results shows that NH<sub>3</sub>-N concentration is significantly higher on 04 out of 10 locations i.e. 11.76 mg/l, 7.28 mg/l, 55.44 mg/l and 33.04 mg/l as compared to remaining 06 locations with very low concentration in the range of 0.28 to 1.12 mg/l.

The TDS concentration is generally higher on all the locations (1772 – 3940 mg/l) owing to the hydrogeology of the area, however it was significantly higher (7824 and 6238 mg/l) on two locations where NH<sub>3</sub>-N concentration was also found higher.

The unit has informed GPCB that restoration process has been started for one contaminated bore-well situated at Rameshbhai Pindoriya, vill. Ler where NH<sub>3</sub>-N concentration was found 33.04 mg/l. The joint team visited the said bore-well and treatment facility in the unit on 31.12.2019. The observations are as follows:

During visit, pumping from the borewell of Rameshbhai Pindoriya was in progress. There was no flow measurement device either at pumping site or at receiving site (collection tank provided inside unit premises) to ascertain the actual ground water quantity withdrawn from individual borewell. The unit was not maintaining the separate record of contaminated water fed in the RO. It was informed that the restoration process for the aforesaid borewell has been in progress since 20.12.2019.

#### **(E) Status of ground water remediation / restoration as on 06.02.2020**

The unit has informed GPCB that pumping from the bore-well of Rameshbhai Pindoriya, vill. Ler and Vasudev Kanji Pindoriya, vill. Ler on alternate basis is in progress (both bore-wells are having higher NH<sub>3</sub>-N concentration (33 and 55 mg/l respectively). The joint team again visited the bore-well sites and treatment facility in unit premises on 06.02.2020. The observations are as follows:

During visit pumping from the bore-well of Rameshbhai Pindoriya, vill. Ler was in progress. Now the unit has provided one flow meter at the ground water collection tank. It is informed that the flow meter was installed on 02.01.2020. The flow meter reading was 2519.7 M<sup>3</sup>. It can be inferred that the unit has collected and utilized (within unit premises) 2519.7 M<sup>3</sup> ground water since 02.01.2020.

GPCB carried out ground water sampling of all the above described 10 bore-wells on 24.01.2020.

The analysis results are placed as an **Annexure-5** with this report. The analysis results shows that NH<sub>3</sub>-N concentration decreases slightly on 03 out of 04 significantly contaminated locations but increases marginally on 01 location.

Similarly the TDS concentration which was reported significantly higher on 03 locations previously, has further increased on two location (6238 to 7108 mg/l & 5664 to 6522 mg/l) and decreased on another location (7824 to 6428 mg/l).

As per the record provided, the unit has consumed 6373 MT of fresh lime during last month. The bills for purchase of fresh lime were randomly verified with the compiled record submitted by the unit to GPCB and it was found in order.

**(F) Status of ground water remediation / restoration as on 16.03.2020**

The unit has informed GPCB that pumping from the bore-well of Rameshbhai Pindoriya, vill. Ler and Vasudev Kanji Pindoriya, vill. Ler on alternate basis is in progress (both bore-wells are having higher NH<sub>3</sub>-N concentration (35 and 53 mg/l respectively). The joint team again visited the bore-well sites and treatment facility in unit premises on 16.03.2020. The observations are as follows:

During visit pumping from the bore-well of Rameshbhai Pindoriya, vill. Ler was in progress. The flow meter provided at the ground water collection tank reading was 5248.4 M<sup>3</sup> at the time of visit. It can be inferred that the unit has collected and utilized (within unit premises) 5248.4 M<sup>3</sup> ground water since 02.01.2020.

GPCB carried out ground water sampling of all the above described 10 bore-wells on 27.02.2020. The analysis results are placed as an **Annexure-6** with this report. The analysis results shows that NH<sub>3</sub>-N concentration on 04 (where it was significant during earlier monitoring) out of 10 locations have shown decreasing concentration. The decrease in concentration was significant on two locations and marginal on other two locations.

Similarly the TDS concentration which was reported significantly higher on 03 locations previously, has further increased on one location (6522 to 6612 mg/l) and decreased on two locations (7108 to 6476 mg/l & 6428 to 6172 mg/l).

As per the record provided, the unit has consumed 5062 MT of fresh lime during last month. The bills for purchase of fresh lime were randomly verified with the compiled record submitted by the unit to GPCB and it was found in order.

**(G) Trend analysis of ground water samples**

As per the information gathered during the visit, the ground water restoration process of contaminated bore-wells started from 20.12.2019. GPCB has carried out ground water sampling of 10 nos. bore-wells in and around the industry during 23.12.2019, 24.01.2020 and 27.02.2020. The compiled analysis results for NH<sub>3</sub>-N and TDS are given in the table below:

Location	NH <sub>3</sub> -N			TDS		
	23.12.2019	24.01.2020	27.02.2020	23.12.2019	24.01.2020	27.02.2020
GW-1	11.76	9.52 ↓	8.4 ↓	3808	4098	3642
GW-2	0.28	0.28	0.28	3670	4116	4068
GW-3	0.28	0.28	0.28	3846	4268	3934
GW-4	0.28	0.28	0.28	3940	4584	4544
GW-5	33.04	35.84 ↑	21.28 ↓	6238	7108 ↑	6476 ↓
GW-6	55.44	53.20 ↓	48.16 ↓	7824	6428 ↓	6172 ↓
GW-7	1.12	0.84	0.84	5694	6522 ↑	6612 ↑
GW-8	7.28	6.72 ↓	1.68 ↓	3474	3284	2804
GW-9	0.28	0.28	0.28	2814	2394	2582
GW-10	0.28	0.28	0.28	1772	1694	1724

Presently, the ground water restoration process is under progress for two locations i.e. GW-5 and GW-6. The analysis results shows that concentration of Ammonical Nitrogen ( $\text{NH}_3\text{-N}$ ) on GW-5 location first increased slightly from 33 to 35 mg/l and then decreased from 35 to 21 mg/l and on GW-6 location the Ammonical Nitrogen concentration decreased from 55 to 48 mg/l. Similar trend was observed for TDS parameter also.

The unit is in the process of establishing one ground water recharge well at 100 m south-west side from unit (outside premises). The well is provided with perforated concrete conduit in the middle (reportedly 460 feet deep) to recharge the ground water strata (**Photographs shown below**).



## (H) Conclusion

1. **Gypsum removal and Disposal:** The observations of 31.12.2019, 06.02.2020 and 16.03.2020 shows that the unit is engaged in the removal of Gypsum from the dumped sites and lifted the dumped Gypsum from 26 out of 39 locations. However, Gypsum was still found unattended on 13 locations.

The unit has disposed total 108185.48 MT Gypsum waste during Jan-2019 to Feb-2020, out of which 85739 MT was disposed to cement industries for co-processing & 22445.93 MT for the back filling of abandoned mines.

2. **Ground water restoration:** The available records shows that unit is using fresh lime for neutralization process and stopped using ammonia contaminated lime from GNFC and thus eliminated the source of contamination. The analysis trend of ground water samples shows that concentration of Ammonical Nitrogen decreases on both the contaminated Bore-wells where restoration process is in place, however the concentration levels are still significantly high. The concentration of TDS has increased on one location and decreased on another location. It is therefore difficult to infer conclusion about the impact of restoration process on the ground water quality at this juncture. Although keeping in view the complexity of ground water profile, three months restoration period is not sufficient and consistent long term efforts will be required to restore the water quality to satisfactory level. However, the daily withdrawal quantity of 70 M<sup>3</sup> from the contaminated bore-wells appears inadequate and unit should explore possibility to expedite the restoration process.

Further, the unit is in the process of establishing one ground water recharge well which may help in reduction of contamination level. It is worth to mention that Kutch region of Gujarat is a rain deficient area and unit is extracting ground water for restoration process, therefore the unit may be directed to provide such additional rainwater harvesting wells on suitable locations for speedy restoration as well as recharging of ground water strata.



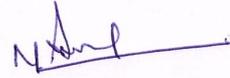
(S. S. Chauhan)  
AEE,  
RO-Kutch (West),  
GPCB



(N. P. Chaudhari)  
DEE,  
RO-Kutch (West),  
GPCB



(Dr. S. N. Agravat)  
I/c-Regional Officer,  
RO-Kutch (West),  
GPCB



(Dr. N. Semwal)  
Scientist-C,  
Regional Directorate (West),  
CPCB, Vadodara

Status Report of Gypsum Lifting Activity as on 31.12.2019			
Sr. No.	Location/Area	As on 31/12/2019	Photograph
1.	Behind Lehriya Hanuman Temple, Old stone mine, Kukma Village  Geographical Coordinates 23° 13' 21" N, 69° 46' 21" E	The site is an abandoned stone mine. Gypsum was observed dumped in the mine.	
2.	Opposite to Lehriya Hanuman Temple, Kukma-Bhuj Road, Kukma Village  23° 13' 13" N 69° 46' 17" E	The site is an abandoned area. Gypsum was not observed at this site and top surface is covered with silica sand. Reportedly, the unit has lifted the dumped Gypsum from this site.	

<p>3.</p>	<p>Besides Lehriya Hanuman Temple, Kukma Village</p> <p>23° 13' 24" N 69° 46' 19" E</p>	<p>The site is an abandoned area. Gypsum was not observed at this site and top surface is covered with soil. Reportedly, the unit has lifted the dumped Gypsum from this site.</p>	
<p>4.</p>	<p>Old stone mine of Prakash Patel, Survey No:331, Besides old HotMix plant, Kukma Village</p> <p>23° 13' 16" N 69° 46' 3" E</p>	<p>The site is low lying abandoned area (abandoned stone mine). Gypsum was found spread in about 700 -800 M<sup>2</sup> area.</p>	

<p>5.</p>	<p>Behind khatri mills (Besides site described at S. No. 4 above), Traverse survey no: 331, government land, Kukma Village</p> <p>23° 13' 20" N 69° 45' 58" E</p>	<p>The site is an abandoned stone mine. Gypsum was observed dumped in the mine.</p>	
<p>6.</p>	<p>Besides water tank of GWIL Sump, Kukma Village</p> <p>23° 13' 18" N 69° 45' 46" E</p>	<p>The site is an abandoned area. Gypsum was not observed at this site and top surface is covered with loose soil. Reportedly, the unit has lifted the dumped Gypsum from this site.</p>	

<p>7.</p>	<p>Natural drain between farm of Dinesh Maharaj and Govind Vanker, survey no : 218, Kukma Village</p> <p>23° 11' 56" N 69° 46' 47" E</p>	<p>The site is an agricultural land. Gypsum is mixed with soil on this agricultural land. Also some Gypsum is dumped on sides of the farm for making bund. During inspection Caster crop is observed in the farm.</p>	
<p>8.</p>	<p>Vavdi Village</p> <p>23° 11' 35" N 69° 49' 42" E</p>	<p>The site is an abandoned low lying area. Gypsum was not observed at this site and top surface is covered with silica sand. Reportedly, the unit has lifted the dumped Gypsum from this site.</p>	

<p>9.</p>	<p>Vavdi Village, opposite to survey no: 85/1</p> <p>23° 11' 31" N 69° 49' 45" E</p>	<p>The site is an abandoned low lying area. Gypsum was not observed at this site and top surface is covered with loose soil and silica sand. Reportedly, the unit has lifted the dumped Gypsum from this site.</p>	
<p>10.</p>	<p>Kukma- Lakhond villageRoad</p> <p>23° 13' 50" N 69° 46' 48" E</p>	<p>The alleged site is along Kukma- Lakhond villageRoad. Gypsum is dumped along the low lying side of the road in about 1 KM stretch.</p>	

<p>11.</p>	<p>Vrundavan Gir Gaudham, ShreeSwaminarayan Mandir, BesidesAshapura Colony,Bhachau Road</p> <p>23° 13' 49" N 69° 46' 48" E</p>	<p>The site is open barren land. Gypsum was observed spread in about 2000M<sup>2</sup> flat land which is covered with silica sand.</p>	
<p>12.</p>	<p>Behind AshapuraFoundation School,AshapuraColony, Bhachau road, Kukma</p> <p>23° 14' 7" N 69° 46' 26" E</p>	<p>The site is agricultural land. Gypsum was observed stacked on one corner of the land (small quantity) and also mixed with soil. However gypsum lifting activity through tractor was under progress.</p>	

<p>13.</p>	<p>Farm on Lakhond Road</p> <p>23° 13' 49" N 69° 46' 52" E</p>	<p>The site is agricultural land. Gypsum was observed on this site mixed with soil and spread in about 1000 M<sup>2</sup> area.</p>	
<p>14.</p>	<p>Land of Lakhond Village</p> <p>23° 15' 12" N 69° 46' 41" E</p>	<p>The site is a barren land where Gypsum is dumped in low lying areas.</p>	

<p>15.</p>	<p>Adjacent to the site mentioned above at S.No. (14). Land of Lakhond Village</p> <p>23° 15' 11" N 69° 46' 40" E</p>	<p>The site is an abandoned land where Gypsum was found dumped in voids and corners.</p>	
<p>16.</p>	<p>Lakhond- kali Talavadi Road, Village Lakhond</p> <p>23° 15' 03" N 69° 46' 48" E</p>	<p>The site is an abandoned low lying area along Lakhond- kali Talavadi Road. Gypsum was observed dumped on this site (probably for filling of low lying area) which is covered with silica sand.</p>	

<p>17.</p>	<p>China Clay mine of Vastabhai, Village lakhond, Abandoned mine</p> <p>23° 15' 39" N 69° 47' 17" E</p>	<p>The site is an abandoned china clay mine. Gypsum was observed dumped in the mine.</p>	
<p>18.</p>	<p>Government land on Padhdhar village</p> <p>23° 14' 29" N 69° 48' 44" E</p>	<p>The site is an abandoned location where Gypsum was found spread on top soil in about 1000 M<sup>2</sup> area.</p>	

<p>19.</p>	<p>Land opposite and besides of Paddhar village police station.</p> <p>23° 14' 29" N 69° 48' 38" E</p>	<p>The site is an abandoned low lying area where no Gypsum was observed. Reportedly the unit has lifted the dumped Gypsum from this site.</p>	
<p>20.</p>	<p>Behind Balaji Petrol Pump, ShaikhpirChokdi, Bhuj Anjar Highway.</p> <p>23° 13' 41" N 69° 45' 44" E</p>	<p>Gypsum was not observed on this location. Some heaps of loose soil were observed at the site. Reportedly, dumped Gypsum has been lifted from this site by the unit.</p>	

<p>21.</p>	<p>Near Matiyadev Mandir, Kukmavillage, Near kukma water distribution tank</p> <p>23° 14' 03" N 69° 46' 15" E</p>	<p>The site is a barren area. No Gypsum was observed at this site. Reportedly, the unit has lifted the dumped Gypsum from this site.</p>	
<p>22.</p>	<p>Land between Swaminarayan Vadi and water sump of GWIL, Kukma Village</p> <p>23° 14' 05" N 69° 45' 45" E</p>	<p>The site is a barren land. Gypsum was not observed on this site and top surface is covered with loose sandy soil. Reportedly, the unit has lifted the dumped Gypsum from this location.</p>	
<p>23.</p>	<p>Natural Drain near Sanjot Nagar, Behind Swaminarayan Vadi</p> <p>23° 14' 05" N 69° 45' 45" E</p>	<p>The site is a barren area. Gypsum was not observed on this site and top surface is covered with loose soil. Reportedly, the unit has lifted the dumped Gypsum from this location.</p>	

24.	<p>North side of Swaminarayan Vadi.</p> <p>23° 12' 50" N 69° 46' 9" E</p>	<p>The site is an open area. Gypsum was not observed on this site and top surface is covered with loose soil. Reportedly, the unit has lifted the dumped Gypsum from this location.</p>	
25.	<p>Besides Balubha Rathod's Lake, Ler Village.</p> <p>23° 11' 47" N 69° 46' 17" E</p>	<p>The site is kaccha internal road of Ler village along agricultural fields. Gypsum was observed dumped on sides of kaccha road and also mixed with soil for agricultural purpose.</p>	

<p>26.</p>	<p>Pithoradada Mandir, Ler Village.</p> <p>23° 10' 23" N 69° 46' 05" E</p>	<p>The site is outer boundary of Pithoradada Mandir. Gypsum is dumped on the side slope of temple boundary.</p>	
<p>27.</p>	<p>Land of Hetubha Jadeja. Ler Village</p> <p>23° 12' 07" N 69° 45' 34" E</p>	<p>The site is a low lying barren area. No gypsum was observed on this site and loose soil was found spread on slopes. Reportedly, the unit has lifted the dumped Gypsum from this location.</p>	

<p>28.</p>	<p>Dargah, Village: Lakhond</p> <p>23° 15' 31" N 69° 46' 55" E</p>	<p>The site is an abandoned area where Gypsum was not observed, however the site was covered with loose soil. Reportedly the unit has lifted the dumped Gypsum from this site.</p>	
<p>29.</p>	<p>Village: Lakhond</p> <p>23° 15' 39" N 69° 46' 44" E</p>	<p>The site is an abandoned low lying area where Gypsum was not observed, however dumps of loose soil was observed. Reportedly the unit has lifted the dumped Gypsum from this site.</p>	

30.	<p>Village: Lakhond</p> <p>23° 15' 36" N 69° 46' 48" E</p>	<p>The site is an abandoned area where Gypsum was not observed. The site is covered with loose soil. Reportedly the unit has lifted the dumped Gypsum from this site.</p>	
31.	<p>At near Toll Gate, Lakhond</p> <p>23° 15' 36" N 69° 46' 48" E</p>	<p>The site is an abandoned land where Gypsum was not observed. The site is covered with loose soil. Reportedly the unit has lifted the dumped Gypsum from this site.</p>	

32.	At Shekhpur parle road 23° 13' 40" N 69° 45' 33" E	Gypsum was observed spread on top surface and also on sides at this site in about 1.5 KM area.	
33.	At Shekhpur parle road 23° 13' 33" N 69° 45' 28" E	Some heaps of Gypsum was observed on this site, although the quantity was small.	

<p>34.</p>	<p>At Block factory, Village Ler</p> <p>23° 12' 06" N 69° 45' 34" E</p>	<p>The site is an open land area where cement brick manufacturing activity was in process. No Gypsum was observed at this location. Reportedly, the unit has lifted the dumped Gypsum from this location.</p>	
<p>35.</p>	<p>Near Block factory (adjacent to the site mentioned at s.no. 34), Village: Ler</p> <p>23° 12' 5" N 69° 45' 35" E</p>	<p>The site is open barren land. No gypsum was observed on this location and top surface is covered with loose soil. Reportedly, the unit has lifted the dumped Gypsum from this location.</p>	

36	<p>Near Block factory (adjacent to the site mentioned at s.no. 34 &amp; 35), Village: Ler</p> <p>23° 12' 03" N 69° 45' 34" E</p>	<p>The site is open barren land. No gypsum was observed on this location and top surface is covered with loose soil. Reportedly, the unit has lifted the dumped Gypsum from this location.</p>	
37.	<p>Land near Village Ler</p> <p>23° 12' 43" N 69° 44' 28" E</p>	<p>The site is open barren land alongside agricultural fields. No gypsum was observed on this location. Reportedly, the unit has lifted the dumped Gypsum from this location.</p>	

38.	<p>Maldhari Mangal Mandir Chhatralay, Bhujodi</p> <p>23° 13' 45" N 69° 44' 09" E</p>	<p>The site is open land of about 100 × 150 M<sup>2</sup>. Gypsum was found spread in this land area covered with white silica on top.</p>	
39.	<p>Shri Vakal Mata Mandir, Village: Bhujodi</p> <p>23° 13' 35" N 69° 44' 41" E</p>	<p>Gypsum was observed on this site in about 1.5 KM area. Most of the Gypsum was mixed with soil where new plantation was observed on some patches. Also Gypsum was observed stacked on sides of the land area.</p>	

Status Report of Gypsum Lifting Activity as on 06.02.2020			
Sr. No.	Location/Place	As on 06/02/2020	Photograph
1.	Behind Ashapura Foundation School, Ashapura Colony, Bhachau road, Kukma  23° 14' 7" N 69° 46' 26" E	Dumped gypsum is lifted from this location and top surface is covered with loose soil.	
2	Besides BalubhaRathod's Lake, Ler Village.  23° 11' 47" N 69° 46' 17" E	Dumped Gypsum was collected from the area and stacked at one place from where it is loading in tractor trolley for disposal.	

3	At Shekhpurparle road 23° 13' 40" N 69° 45' 33" E	Gypsum was observed on the site, however gypsum lifting activity was under progress.	 A photograph showing a yellow excavator loading a red truck with gypsum. The truck is parked on a dirt road, and a person is standing next to it. The background shows a clear blue sky and some trees.
4	At Shekhpurparle road 23° 13' 33" N 69° 45' 28" E	Gypsum was observed stacked on two places and lifting activity was under progress.	 A photograph showing a red truck parked on a dirt road. In the background, there are stacks of gypsum and some trees. The sky is clear and blue.

Status Report of Gypsum Lifting Activity as on 16.03.2020			
Sr. No.	Location/Area	As on 16/03/2020	Photograph
1.	Farm on Lakhond Road 23° 13' 49" N 69° 46' 52" E	Dumped gypsum is lifted from this location and top surface is covered with loose soil.	
2.	Lakhond- kali Talavadi Road, Village Lakhond 23° 15' 03" N 69° 46' 48" E	Dumped gypsum is lifted from this location and top surface is covered with silica sand.	

3.	Besides Balubha Rathod's Lake, Ler Village.  23° 11' 47" N 69° 46' 17" E	Dumped gypsum is lifted from this location and top surface is covered with loose soil.	
4.	At Shekhpur parle road  23° 13' 40" N 69° 45' 33" E	Dumped gypsum is lifted from this location and top surface is covered with loose soil.  The main entrance gate was found locked.	

5.	At Shekhpur parle road 23° 13' 33" N 69° 45' 28" E	Dumped gypsum is lifted from this location and top surface is covered with loose soil/silica sand.	
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Groundwater Analysis Report											Sampling date: 23/12/2019			
Sr. No.	Bore well location	BOD	Chloride	COD	Colour	Fluoride	SAR	NH <sub>3</sub> -N	Nitrate	pH	Sulphate	Total Hardness	TDS	Temp (°C)
GW-1	Nr. Gate No. 2 of unit	1.2	1050	12	C.less	1.6	4.85	11.76	0.8	6.81	1178	1980	3808	29
GW-2	Samavandh Samiti	1.14	1120	9	C.less	1.7	5.32	0.28	2.6	7.04	875	1690	3670	29
GW-3	Admin Block of unit	2.1	1140	10	C.less	1.6	6.01	0.28	1.6	6.92	1056	1602	3846	29
GW-4	Shyamji Velji Gorasiya	1.36	1390	8	C. less	1.3	6.1	0.28	0.8	6.79	885	1696	3940	29
GW-5	Rameshbhai Pindoriya	1.6	1480	12	C.less	1.8	6.89	33.04	8.6	6.96	2150	3076	6238	28
GW-6	Vasudev Pindoriya	2.1	1360	14	C.less	1.8	6.49	55.44	7.3	6.79	3267	3504	7824	28
GW-7	Govind Hariji Gorasiya	1.7	1630	12	C.less	1.8	7.17	1.12	3.2	6.93	1590	2584	5694	28
GW-8	Ranubha Jadeja	1.7	820	10	C.less	1.6	4.12	7.28	0.7	6.83	1228	1616	3474	28
GW-9	Hetubha Jadeja	1.6	800	8	C.less	1.3	4.24	0.28	0.4	6.86	750	1050	2814	28
GW-10	Dinesh Maharaj Wadi	1.8	630	8	C.less	1.5	3.4	0.28	0.2	6.98	370	740	1772	28

## ANNEXURE-5

Groundwater Analysis Report												Sampling date: 24/01/2020		
Sr. No.	Bore well location	BOD	Chloride	COD	Colour	Fluoride	SAR	NH <sub>3</sub> -N	Nitrate	pH	Sulphate	Total Hardness	TDS	Temp (°C)
GW-1	Nr. Gate No. 2 of unit	1.48	980	10	C.less	1.4	9.19	9.52	0.76	6.89	1343	1598	4098	31
GW-2	Samavandh Samiti	1.36	1180	9	C.less	1.8	9.73	0.28	2.33	7.01	1093	2032	4116	30
GW-3	Admin Block of unit	2.32	1220	9	C.less	1.7	10.22	0.28	1.71	6.88	1147	3038	4268	30
GW-4	Shyamji Velji Gorasiya	1.58	1460	10	C.less	1.4	10.57	0.28	0.72	6.82	1107	1766	4584	31
GW-5	Rameshbhai Pindoriya	1.88	1640	13	C.less	1.9	9.49	35.84	7.92	7.06	2225	3970	7108	29
GW-6	Vasudev Pindoriya	2.32	950	13	C.less	1.9	10.02	53.2	7.78	6.88	2060	4380	6428	30
GW-7	Govind Hariji Gorasiya	1.96	1810	11	C.less	1.7	10.88	0.84	2.98	6.98	1709	2642	6522	29
GW-8	Ranubha Jadeja	1.88	760	11	C.less	1.6	10.42	6.72	0.74	6.89	860	1404	3284	26
GW-9	Hetubha Jadeja	1.76	650	9	C.less	1.5	8.54	0.28	0.38	6.92	780	1122	2794	29
GW-10	Dinesh Maharaj Wadi	1.92	590	10	C.less	1.6	8.16	0.28	0.19	7.01	372	966	1694	31

## ANNEXURE-6

Groundwater Analysis Report												Sampling date: 27/02/2020		
Sr. No.	Bore well location	BOD	Chloride	COD	Colour	Fluoride	SAR	NH <sub>3</sub> -N	Nitrate	pH	Sulphate	Total Hardness	TDS	Temp (°C)
GW-1	Nr. Gate No. 2 of unit	1.74	1010	9	C.less	1.4	9.04	8.4	0.81	6.79	1100	1764	3642	30
GW-2	Samavandh Samiti	1.66	1220	10	C.less	1.9	10.16	0.28	1.86	6.91	1158	1874	4068	30
GW-3	Admin Block of unit	2.46	1140	10	C.less	1.6	9.88	0.28	1.64	6.86	983	1758	3934	30
GW-4	Shyamji Velji Gorasiya	1.66	1410	8	C.less	1.4	11.02	0.28	0.92	6.79	1267	1994	4544	30
GW-5	Rameshbhai Pindoriya	2.06	1510	12	C.less	1.8	10.69	21.28	8.76	7.01	2120	3784	6476	30
GW-6	Vasudev Pindoriya	2.12	1060	14	C.less	1.8	10.56	48.16	7.56	6.81	2291	4102	6172	30
GW-7	Govind Hariji Gorasiya	2.08	1780	11	C.less	1.8	12.42	0.84	3.06	6.93	1743	2874	6612	30
GW-8	Ranubha Jadeja	1.82	780	8	C.less	1.5	8.76	1.68	0.66	7.03	800	1284	2804	30
GW-9	Hetubha Jadeja	1.7	710	7	C.less	1.6	6.63	0.28	0.32	6.82	740	1014	2582	31
GW-10	Dinesh Maharaj Wadi	1.74	620	8	C.less	1.5	5.47	0.28	0.23	6.96	375	818	1724	30