

COMPLIANCE OF ENVIRONMENTAL CLEARANCE CONDITIONS OF 45 MTPD NYLON-6 PROJECT**Ref.: Letter No. : SEIAA/GUJ/EC/5(e)/131 /2013 dated 05/07/2013 of SEIAA (GUJARAT)**

Sr.No	Condition	Compliance Status (Period October. 19 to March. '20)
A.	Specific Conditions :	
A.1	WATER :	
1.	The fresh water requirement for the 45 MTPD Nylon-6 Plant shall not exceed 110 KL/day and <	

		<p>without any penalty. Avg. water drawl for the period Oct.'19 to March'20 is 32.08 MLD for GSFC complex.</p> <p>Month wise records of water withdrawal from Mahi river for GSFC complex:</p> <table><tr><th>Month</th><th>Avg. (m3/D)</th><th>Minimum (m3/D)</th><th>Maximum (m3/D)</th><th>Maximum limit permission from VID (m3/D)</th></tr><tr><td>Oct-19</td><td>33913</td><td>28938</td><td>37252</td><td>39777.5</td></tr><tr><td>Nov-19</td><td>34015</td><td>29414</td><td>36129</td><td>39777.5</td></tr><tr><td>Dec-19</td><td>32288</td><td>29406</td><td>35272</td><td>39777.5</td></tr><tr><td>Jan-20</td><td>31356</td><td>29480</td><td>34184</td><td>39777.5</td></tr><tr><td>Feb-20</td><td>31261</td><td>28506</td><td>34872</td><td>39777.5</td></tr><tr><td>March- 20</td><td>29652</td><td>14506</td><td>35153</td><td>39777.5</td></tr></table> <p>Water balance diagram for the financial year 2019-20 is given as Annexure - II.</p> <p>Metering of water shall be done and Meter is provided for process requirement.</p> <p>Records of monthly water consumption shall be maintained. Records of monthly water consumption of nylon 6 plant are maintained.</p>	Month	Avg. (m3/D)	Minimum (m3/D)	Maximum (m3/D)	Maximum limit permission from VID (m3/D)	Oct-19	33913	28938	37252	39777.5	Nov-19	34015	29414	36129	39777.5	Dec-19	32288	29406	35272	39777.5	Jan-20	31356	29480	34184	39777.5	Feb-20	31261	28506	34872	39777.5	March- 20	29652	14506	35153	39777.5
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2.	Domestic wastewater shall be treated in the existing STP facility and utilized for irrigation and plantation within the GSFC complex.	<p>Complied. Domestic wastewater is treated in STP facility.</p> <p>Treated domestic wastewater is utilized for irrigation and plantation within GSFC complex.</p>																																			
3.	<p>Proposed Nylon 6 Plant shall be integrated with the latest Lactam Recovery System and recovered Lactam from it shall be recycled to the Reactor</p> <p>Whereas recovered water shall be recycled to the</p>	<p>Complied. Nylon 6-II Plant is integrated with the latest Lactam Recovery System.</p> <p>Recovered lactam is recycled to Pre- polymerizer section.</p> <p>Recovered evaporated water is recycled in extraction section.</p>																																			

	Extraction Section.																					
4.	Industrial effluent generation from the proposed 45 MTPD Nylon-6 Plant shall not exceed 50 KL/day, including 34 KL/day of process plant effluent and 16 KL/day of cooling tower blow-down water.	<p>Complied. Avg process effluent generation from 45 TPD Nylon 6 plant is 28.42 KL/day for compl. period Oct-19 to March-20 against limit of 34KL/day. Cooling tower of existing Nylon-6 plant is supplying required CW for 45MTPD Nylon-6 project and cooling tower blow down w.r.t Nylon-6 II is 13KL/day.</p> <p>Details of daily process effluent generation from Nylon-6 plant:</p> <table><tr><th>Month</th><th>Avg. KL/Day</th></tr><tr><td>Oct-19</td><td>28.32</td></tr><tr><td>Nov-19</td><td>25.16</td></tr><tr><td>Dec-19</td><td>30.09</td></tr><tr><td>Jan-20</td><td>30.29</td></tr><tr><td>Feb-20</td><td>27.86</td></tr><tr><td>March-20</td><td>28.80</td></tr><tr><td>Avg</td><td>28.42</td></tr><tr><td>Min</td><td>25.16</td></tr><tr><td>Max</td><td>30.29</td></tr></table>	Month	Avg. KL/Day	Oct-19	28.32	Nov-19	25.16	Dec-19	30.09	Jan-20	30.29	Feb-20	27.86	March-20	28.80	Avg	28.42	Min	25.16	Max	30.29
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5.	The process plant effluent to the tune of 34 KL/day shall be treated in the existing ETP (either in ETP-I for Caprolactam-I & existing Nylon-6 Chips Plants or in ETP-2 for Caprolactam-II plant).	Plant process effluent is treated at existing ETP-I. Effluent Quantity is given in condition 6 below.																				
6.	<p>The company shall upgrade its ETP's so as to make it adequate to treat increased quantum of industrial effluent from proposed Nylon 6 Plant.</p> <p>The ETP shall be operated regularly and efficiently to achieve the GPCB norms at the final outlet.</p>	<p>Complied. Existing ETPs have been revamped with addition of Panic Ponds, DAF unit, Ammonia Stripper and Fine bubble air diffuser system in addition to surface aerators in one compartment of existing aeration tank for enhancement of efficiency.</p> <p>Existing ETPs are operated regularly & efficiently. Contaminated effluent streams of existing plants are treated as per GPCB norms. Analysis of final discharged effluent is carried out daily in in-house laboratory and through NABL approved lab, M/s. Kadam Environmental Consultants, Vadodara (NABL NABL Certificate No: TC-7099, Validity: 26/03/2020), M/s. Ecosystem Resource Management Pvt. Ltd. (NABL Certificate No: TC-6603, Validity:</p>																				

14/11/2021) & EPA approved M/s Pollucon Lab.
Analysis results of final discharged effluent done by external NABL approved lab (min, max, avg and comparison with GPCB norms) for Compliance Period

Oct.19 to March.20:

Parameters	UNIT	Permissible Limit	Avg	Min	Max
pH value	-	6.5 to 8.5	7.51	6.64	8.49
Colour	Pt.Co.	100	52	25	80
S.S	mg/l	100	31	10	64
COD	mg/l	250	183	81	240
BOD	mg/l	50	36	23	45
Oil & Grease	mg/l	10	1.12	1.0	1.4
Ammonical Nitrogen	mg/l	50	20.51	0.08	40.0
Ph.compounds	mg/l	1	<0.02	<0.02	<0.02
Fluorides	mg/l	2	0.71	0.44	1.51
Cyanides	mg/l	0.2	<0.05	<0.05	<0.05
Sulphides	mg/l	2	0.11	0.1	0.12
Copper	mg/l	3	0.23	0.2	0.29
Arsenic	mg/l	0.2	<0.01	<0.01	<0.01
Total Chromium	mg/l	2	0.1	0.08	0.12
Hexavalent Chromium	mg/l	0.1	<0.02	<0.02	<0.02
Zinc	mg/l	5	0.35	0.3	0.43
Nickel	mg/l	3	0.29	0.3	0.43
Cadium	mg/l	2	<0.01	<0.01	<0.01
Lead	mg/l	0.1	<0.02	<0.02	<0.02
Mercury	mg/l	0.01	<0.001	<0.001	<0.001
Chlorides	mg/l	600	469.67	208	564

Copies of test reports are enclosed separately. As per GPCB's Schedule-I Env. Audit Report for the year 2019-20: Insecticide/pesticide – Nil; Bio-assay – 100%survival.

Analysis of final discharged effluent is also carried out on daily basis at in-

		<p>house lab. Avg. in-house results of final discharged effluent for the period Oct.'19 to March'20 are well within the GPCB norms.</p> <p>Analysis results of final discharged effluent done in-house (min, max, avg and comparison with GPCB norms): For compliance period October.19 to March.20::</p> <table><tr><th>Parameters</th><th>pH</th><th>SS</th><th>AN</th><th>TN</th><th>COD</th><th>BOD</th></tr><tr><td>Avg</td><td>7.6</td><td>47.9</td><td>20.6</td><td>45.9</td><td>190.1</td><td>38.5</td></tr><tr><td>Min</td><td>7.3</td><td>41.8</td><td>17.3</td><td>36.8</td><td>155</td><td>31</td></tr><tr><td>Max</td><td>7.9</td><td>54.5</td><td>23.4</td><td>58.6</td><td>204.8</td><td>47</td></tr><tr><td>Norms</td><td>6.5-8.5</td><td>100</td><td>50</td><td>100</td><td>250</td><td>50</td></tr></table> <p>*All parameters are in mg/l except pH.</p> <p>Moreover, Real time-Online Monitoring System is in operation from July 2014 for the effluent parameters i.e. pH, COD, BOD, TSS, NH4-N and it is connected to GPCB as well as CPCB server. Details of OMS analysis are as:</p> <p>OMS data for compliance period October.19 to March.20:</p> <table><tr><th></th><th>ETP Ammonical Nitrogen (Norms: 50mg/l)</th><th>ETP BOD (Norms: 50mg/l)</th><th>ETP COD (Norms: 250mg/l)</th><th>ETP TSS (Norms: 100mg/l)</th><th>ETP pH (Norms: 6.5-8.5 mg/l)</th></tr><tr><td>Avg</td><td>19.5</td><td>31</td><td>98.5</td><td>24.8</td><td>7.1</td></tr><tr><td>Min</td><td>10</td><td>21</td><td>70</td><td>10</td><td>6.6</td></tr><tr><td>Max</td><td>27.9</td><td>42</td><td>155</td><td>43.5</td><td>7.5</td></tr></table>	Parameters	pH	SS	AN	TN	COD	BOD	Avg	7.6	47.9	20.6	45.9	190.1	38.5	Min	7.3	41.8	17.3	36.8	155	31	Max	7.9	54.5	23.4	58.6	204.8	47	Norms	6.5-8.5	100	50	100	250	50		ETP Ammonical Nitrogen (Norms: 50mg/l)	ETP BOD (Norms: 50mg/l)	ETP COD (Norms: 250mg/l)	ETP TSS (Norms: 100mg/l)	ETP pH (Norms: 6.5-8.5 mg/l)	Avg	19.5	31	98.5	24.8	7.1	Min	10	21	70	10	6.6	Max	27.9	42	155	43.5	7.5
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7.	Cooling tower blow-down water to the tune of 16 KL/day shall be collected directly into final Lean Discharge Ponds along with treated effluent from the ETPS.	Complied. There is no separate cooling tower for 45MTPD Nylon-6-IIproject. Cooling tower of existing Nnylon-6 plant is utilized for 45MTPD nylon 6 plant and blow-down water is collected in to lean effluent discharge pond.																																																											

8.	The treated industrial effluent from Lean Discharge Ponds conforming to the GPCB norms shall be discharged into the common effluent conveyance channel of VECL (ECPL) for its ultimate disposal in estuary of river Mahi.	Complied. Treated industrial effluent from final discharge ponds conforming to GPCB norms is discharged in to common effluent conveyance channel of VECL for its ultimate disposal in estuary of river Mahi.
9.	The unit shall provide metering facility at inlet and outlet of the ETPS and maintain records for the same.	Complied. Metering facility is provided (Magnetic flow meter) on effluent discharge line going from Nylon 6-II plant to ETP. Flow meters are already provided at inlet of ETPs and on final effluent discharge lines. Quantity of final discharged effluent based on flow meter reading is given in point no. 11 & also connected real time data to GPCB & CPCB server. Documentary evidence are given below:



57 FLOW TOTALIZER

	TAG	CURRENT FLOW	TOTAL FLOW	
LACTAM TO PRE POLYMERIZER	1001FGT02	1223.2 lph	5792716.00 kg	RESET
LACTAM TO TILNER	1001FGT03	111.43 lph	333401.22 kg	RESET
LACTAM FROM OSBL TO H01V01	1001FGT06	1351.8 lph	3168469.25 kg	RESET
LACTAM FROM MELTER TO H01V01	1001FGT07	-43.07 lph	40487.00 kg	RESET
CW SUPPLY TO YAM	1108FGT01	317.17 m ³ /hr	1165533.83 m ³	RESET
STL SUPPLY TO YAM	1108FGT02	1963.0 lph	7454497.60 kg	RESET
CHWS TO CONSUMERS	1108FGT03	226.20 m ³ /hr	896218.00 m ³	RESET
YS SUPPLY AT BATTERY LIMIT	1120FGT01	158.35 lph	50867.72 kg	RESET
DOW SUPPLY AT BATTERY LIMIT	1116FGT01	7173.3 lph	10463866.0 kg	RESET
RW SUPPLY AT BATTERY LIMIT	1114FGT01	8.23 lph	366148.97 kg	RESET
CW SUPPLY AT BATTERY LIMIT	1111FGT01	487.00 m ³ /hr	1943945.50 kg	RESET
CONDENSATE EXPORT	1118FGT01	8.86 lph	5186468.50 kg	RESET
RECOVERED STL FROM H10V01 TO STL HEADER	1118FGT02	3216.81 lph	6355.08 kg	RESET
STM SUPPLY AT BATTERY LIMIT	1117FGT01	1874.4 lph	5266526.56 kg	RESET
LACTAM / WATER TO T02V01	7021FGT03	210.21 lph	392597.81 kg	RESET
RECOVERED LACTAM TO M0300H	7021FGT03	318.11 lph	1187136.75 kg	RESET
STL SUPPLY AT BATTERY LIMIT	1118FGT03	3217.3 lph	1188816.0 kg	RESET
EFFLUENT TO ETP	8010FGT01	10.10 m ³ /hr	14397.58 m ³	RESET

Flow totalizer provided on Nylon-6 II DCS of flow meter installed on Nylon-6 II effluent line to ETP

Flow meter installed on final effluent discharge line:



10.	The unit shall provide online monitoring system for monitoring of pH, TOC & flow of treated effluent with an arrangement to reflect the monitored data on the company's server, which can be accessed by the GPCB on real time basis.	<p>Complied. Real Time Online Monitoring System (RTOMS) has been installed and commissioned by GSFC at final effluent discharge lines since July 2014 for the effluent parameters like pH, COD, BOD, TSS, NH₄-N and flow etc. and same is verified by M/s VECL on regular basis. Data is received in GSFC's server. Data is also connected to GPCB server on real time basis and also connected to CPCB. Details of OMS data for compliance period Oct.'19 to March '20 in minimum, maximum, average and comparison with GPCB norms are given in specific condition 6.</p> <p>Apart from this, Regular sample from New Nylon 6 plant is sent to Capro-I Lab for analysis of effluent.<u>Oct-19 to March-20:</u></p> <table border="1" data-bbox="1070 611 1971 1050"> <thead> <tr> <th></th><th>pH</th><th>COD mg/l</th></tr> </thead> <tbody> <tr> <td>Set Limit</td><td>6.5 -8.5</td><td>5250</td></tr> <tr> <td>Oct-19</td><td>7.458</td><td>1502</td></tr> <tr> <td>Nov-19</td><td>7.33</td><td>1469</td></tr> <tr> <td>Dec-19</td><td>7.422</td><td>1961</td></tr> <tr> <td>Jan-20</td><td>7.674</td><td>1320</td></tr> <tr> <td>Feb-20</td><td>7.127</td><td>2245</td></tr> <tr> <td>March-20</td><td>7.475</td><td>1796</td></tr> <tr> <td>AVG</td><td>7.414</td><td>1715</td></tr> <tr> <td>Min</td><td>7.127</td><td>1320</td></tr> <tr> <td>Max</td><td>7.674</td><td>2245</td></tr> </tbody> </table>		pH	COD mg/l	Set Limit	6.5 -8.5	5250	Oct-19	7.458	1502	Nov-19	7.33	1469	Dec-19	7.422	1961	Jan-20	7.674	1320	Feb-20	7.127	2245	March-20	7.475	1796	AVG	7.414	1715	Min	7.127	1320	Max	7.674	2245
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11.	A proper logbook of the ETP operation, effluent discharge quality and quantity, power consumption, chemical consumption etc. shall be maintained and	<p>Complied. EC Div. is maintaining proper logbook of the ETPs operation, effluent discharge quality and quantity, power consumption, chemical consumption etc. Details are given below:</p> <p><u>Avg. Quantity of Effluent Discharged for October-19 to March-'20:</u></p> <table border="1" data-bbox="1070 1201 2067 1401"> <thead> <tr> <th>Month</th><th>Effluent Discharged in m3/month</th><th>GPCB Permissible Limit (m3/month)</th></tr> </thead> <tbody> <tr> <td>Oct-19</td><td>365480</td><td>535692</td></tr> <tr> <td>Nov-19</td><td>379603</td><td>535692</td></tr> <tr> <td>Dec-19</td><td>352167</td><td>535692</td></tr> </tbody> </table>	Month	Effluent Discharged in m3/month	GPCB Permissible Limit (m3/month)	Oct-19	365480	535692	Nov-19	379603	535692	Dec-19	352167	535692																					
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		Jan-20	342900	535692
		Feb-20	279822	535692
		Mar-20	305614	535692
		Power consumption and Chemical consumption at ETPs/STP:		
		Month	Power Consumption (KWH)	Chemical Consumption
				HCL31-32% Caustic-100%
				MT MT
		Oct-19	430712	112.5 58.981
		Nov-19	420299	94.8 67.124
		Dec-19	441456	29.23 54.357
		Jan-20	443113	26.18 67.588
		Feb-20	411932	24.44 55.637
		Mar-20	436827	72.33 44.592
		All the details are submitted to GPCB as a part of Monthly Patrak/Env. Audit/Env. Statement.		
12.	The unit shall join and participate financially and technically for any common environmental facility / infrastructure as and when the same is taken up either by the GIDC or GPCB or any such authority created for this purpose by the Govt. / GIDC.	GSFC is agreed to join and participate financially and technically for any common environmental facility / infrastructure as and when the same is taken up either by the GIDC or GPCB or any such authority created for this purpose by the Govt. /GIDC.		
A.2	AIR			
13.	Off gas streams from various emission points from the continuous Nylon 6 processes shall be scrubbed in the washing tower before releasing it in the atmosphere.	Complied. Off-gases streams from various emission points of the plant are scrubbed in the washing tower and then emitted to the atmosphere.		

14.	The Off-gas Treatment Unit (OTU) shall be operated efficiently and effectively to achieve the norms prescribed by the GPCB at stack outlet.	<p>Complied. Off-gas Treatment Unit is operated efficiently and effectively. PM analyses of off gas treatment unit gases carried out by third party are given below. Test reports are enclosed herewith in hard copy.</p> <table border="1"> <thead> <tr> <th>Compliance Period</th><th>Nylon-6 II</th><th>PM (mg/Nm³)</th></tr> </thead> <tbody> <tr> <td rowspan="3">Oct-19 to March '20</td><td><i>Avg.</i></td><td>13.9</td></tr> <tr> <td><i>Max</i></td><td>20.4</td></tr> <tr> <td><i>Min</i></td><td>6.2</td></tr> <tr> <td>GPCB Norms</td><td>mg/Nm³</td><td>150</td></tr> </tbody> </table>	Compliance Period	Nylon-6 II	PM (mg/Nm ³)	Oct-19 to March '20	<i>Avg.</i>	13.9	<i>Max</i>	20.4	<i>Min</i>	6.2	GPCB Norms	mg/Nm ³	150
Compliance Period	Nylon-6 II	PM (mg/Nm ³)													
Oct-19 to March '20	<i>Avg.</i>	13.9													
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GPCB Norms	mg/Nm ³	150													
15.	There shall be no additional flue gas stack and steam for the proposed Nylon-6 plant shall be sourced from the existing steam boilers using natural gas as a fuel.	Complied. There is no additional flue gas stack. Steam for Nylon-6-II plant is supplied by existing steam boilers of utility plant using natural gas as fuel.													
16	All the vessels used in the manufacturing process shall be close to reduce the fugitive emission. Adequate ventilation system shall be provided in work areas.	Complied. All the vessels used in the manufacturing process are closed to reduce the fugitive emission. Adequate ventilation system has been provided in work areas.													
17.	<p>The fugitive emission in the work place environment shall be monitored.</p> <p>The emission shall conform to the standards prescribed by the concerned authorities from time to time (e.g. Directors of industrial Safety & Health).</p>	<p>Complied. The fugitive emission from process vessels is treated in off gas treatment unit and discharge emission is monitored. Details are given in Point No.14.</p> <p>For existing plants, work place monitoring is carried out at 52 different locations in different existing plants through third party.</p> <p>For existing plants, Emissions in the work place are confirmed to limits imposed by DISH i.e. NH₃&NO_x<25ppm; SO₂<2ppm, F<3ppm, Benzene<0.5ppm. Summary in terms Max., min., avg and test reports is enclosed herewith in hard copy.</p>													

		For Compliance period October.19 to March.'20:																																																		
		<table><tr><th>Parameters</th><th>NH3 (ppm)</th><th>SO2 (ppm)</th><th>HF (ppm)</th><th>NOX (ppm)</th><th>BENZENE (ppm)</th></tr><tr><td>Avg</td><td>10.75</td><td>0.38</td><td>0.24</td><td>2.18</td><td>0.11</td></tr><tr><td>Min.</td><td>2.4</td><td>0.09</td><td>0.13</td><td>1.3</td><td>0.05</td></tr><tr><td>Max.</td><td>19.2</td><td>0.9</td><td>0.41</td><td>3.6</td><td>0.17</td></tr><tr><td>Limit</td><td>25.00</td><td>2.00</td><td>3.00</td><td>25.00</td><td>0.50</td></tr></table>	Parameters	NH3 (ppm)	SO2 (ppm)	HF (ppm)	NOX (ppm)	BENZENE (ppm)	Avg	10.75	0.38	0.24	2.18	0.11	Min.	2.4	0.09	0.13	1.3	0.05	Max.	19.2	0.9	0.41	3.6	0.17	Limit	25.00	2.00	3.00	25.00	0.50																				
Parameters	NH3 (ppm)	SO2 (ppm)	HF (ppm)	NOX (ppm)	BENZENE (ppm)																																															
Avg	10.75	0.38	0.24	2.18	0.11																																															
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Max.	19.2	0.9	0.41	3.6	0.17																																															
Limit	25.00	2.00	3.00	25.00	0.50																																															
18.	<p>Regular monitoring of ground level concentrations of SO2, NOx, NH3, PM10 and PM2.5 shall be carried out in the impact zone and its records shall be maintained.</p> <p>Ambient air quality levels shall not exceed the standards stipulated by the GPCB. If at any stage these levels are found to exceed the prescribed limits, necessary additional control measures shall be taken immediately. The location of the stations and frequency of monitoring shall be decided in consultation with the GPCB.</p>	<p>Complied, 4 nos. of online ambient air quality monitoring station (AAQMS) are installed in Nov. 13 at the periphery of premises after intimation to GPCB having PM10, PM2.5, NO_x, SO2 & NH3 monitoring facility</p> <p>Moreover, Ambient air monitoring is carried out at 4 Nos. locations through NABL approved lab, M/s. Ecosystem Resource Management, Surat (NABL Certificate No: TC-6603, Validity: 14/11/2021) and are well within standards stipulated by GPCB.</p> <p>Ambient air analysis reports for compliance period Oct.19 to March'20:</p> <table><tr><th></th><th colspan="3">SO2, Limit - 80 micro gm/m3</th><th colspan="3">NOX, Limit - 80 micro gm/m3</th><th colspan="3">NH3, Limit - 400 micro gm/m3</th></tr><tr><th>LOCATI ON</th><th>AVG</th><th>MIN</th><th>MAX</th><th>AVG</th><th>MIN</th><th>MAX</th><th>AVG</th><th>MIN</th><th>MAX</th></tr><tr><td>Vadnagar Tank Farm</td><td>2.6</td><td>2.1</td><td>4.5</td><td>10.5</td><td>9.9</td><td>11.3</td><td>1.7</td><td>1.3</td><td>3.1</td></tr><tr><td>Dashrath Village</td><td>15.0</td><td>14.7</td><td>15.4</td><td>17.6</td><td>17.4</td><td>18</td><td>6.4</td><td>5.7</td><td>7.4</td></tr><tr><td>Nr. Godama Pump, Channi</td><td>5.4</td><td>4.8</td><td>6.9</td><td>10.7</td><td>9.2</td><td>13.5</td><td>3.8</td><td>3.4</td><td>5.1</td></tr></table>		SO2, Limit - 80 micro gm/m3			NOX, Limit - 80 micro gm/m3			NH3, Limit - 400 micro gm/m3			LOCATI ON	AVG	MIN	MAX	AVG	MIN	MAX	AVG	MIN	MAX	Vadnagar Tank Farm	2.6	2.1	4.5	10.5	9.9	11.3	1.7	1.3	3.1	Dashrath Village	15.0	14.7	15.4	17.6	17.4	18	6.4	5.7	7.4	Nr. Godama Pump, Channi	5.4	4.8	6.9	10.7	9.2	13.5	3.8	3.4	5.1
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Dec-19	33.2	16.3	65.4	25.3
Jan-20	29	18.3	88	35.1
Feb-20	33.4	17.2	86.2	40.8
Mar-20*	37.8	23.5	65.4	25.3

*Data Up to 19.03.2020 due to COIVD-19 pandemic.

Annual (Yr. 2018-19) wind pattern & percentage in & around GSFC:

WIND DIRECTION	WIND VELOCITY, m/sec.			
	0.5 – 3.6	3.6 – 8.8	≥8.8	TOTAL
N	2.08	-	-	2.08
NE	-	5.21	15.63	20.84
E	-	-	-	-
SE	-	-	-	-
S	10.04	-	-	10.04
SW	-	20.05	30.87	50.92
W	1.25	12.79	-	14.04
NW	2.08	-	-	2.08
CALM	0	0	0	0

A.3	HAZARDOUS / SOLID WASTE :																									
19.	<p>The company must strictly comply with the rules and regulations with regards to handling and disposal of Hazardous waste in accordance with the Hazardous Waste (MHTM) Rules 2008, as may be amended from time to time.</p> <p>Authorization from the GPCB must be obtained for collection / treatment / storage / disposal of hazardous wastes.</p>	<p>Complied. Hazardous wastes are handled and disposed as per the Authorization and Hazardous Waste Rules. Details of Hazardous Waste are given in condition no. 21.</p> <p>Authorization under HWMH Rules has been obtained for ETP sludge, Organic Waste, Used Oil, Spent Catalyst, Sulphur Muck and Contaminated discarded containers etc. from GPCB vide CCA order No.AWH-78404, valid up to 31/12/21.</p>																								
20.	<p>Hazardous wastes shall be dried, packed and stored in separate designated hazardous waste storage facility with pucca bottom and leachate collection facility, before its disposal.</p>	<p>Complied. Hazardous wastes are dried, packed and stored in separate designated hazardous waste storage facility with pucca bottom and leachate collection facility, before its disposal.</p>																								
21.	<p>Plastic, Paper & Cotton Bags from Caprolactam recovery, Lactam Bag discharge, Nylon6 (Granulation Waste), Fibre Fleece with Nylon6 Particles, Nylon 6 dust, Low Quantities of Nylon6, Bio Sludge, Spent Oil and Empty Drums, etc. shall be disposed off in accordance with the Authorization from the GPCB.</p>	<p>Complied. Disposal of wastes is done as per authorization of GPCB.</p> <p>Nylon 6 waste – Quantity send to vendor – Period Octl-19 to March -20: 0 MT Nylon 6 Dust - Quantity send to vendor – Period Oct-19 to March-20: 0.0 MT</p> <p><u>Details of Hazardous Waste generated from existing premises are given below:</u></p> <table><tr><th>S.no</th><th>Name of waste</th><th>Authorization from GPCB</th><th>Generated during period Oct. 19- March'20 MT</th></tr><tr><td>1</td><td>ETP Bio-Sludge</td><td>40 MT/Year</td><td>7.00</td></tr><tr><td>2</td><td>Used Oil</td><td>250 MT/Year</td><td>63.5</td></tr><tr><td>3</td><td>Discarded Containers</td><td>10,000 Nos./Year</td><td>2288 Nos.</td></tr><tr><td>4</td><td>Spent Catalyst (Acidic)</td><td>35 MT/Year</td><td>6.00</td></tr><tr><td>5</td><td>Spent Catalyst (Alkaline)</td><td>275 MT/Year</td><td>12</td></tr></table>	S.no	Name of waste	Authorization from GPCB	Generated during period Oct. 19- March'20 MT	1	ETP Bio-Sludge	40 MT/Year	7.00	2	Used Oil	250 MT/Year	63.5	3	Discarded Containers	10,000 Nos./Year	2288 Nos.	4	Spent Catalyst (Acidic)	35 MT/Year	6.00	5	Spent Catalyst (Alkaline)	275 MT/Year	12
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		6	Organic Waste	20 MT/Year	10.355
		7	Sulphur Muck	350 MT/Year	117.51
		8	Carbon residue	7.7 MT/Year	Nil
		9	Molten Salt	66 MT (in span of 07 years)	Nil
		10	High Boiling Hydro Carbon	8.25 MT (in span of 07 years)	Nil
		11	Spent Resin	80 MT/Year	10.4
		12	Insulation waste	75 MT/year	45.44
		13	Contaminated Cotton rags & other cleaning material	5 MT/Year	0.74
		Details of Hazardous waste management:			
		Sr. No	Name of Waste	Method of Collection/ Storage	Method of Disposal
		1	ETP Sludge	Bio sludge dried on Sludge Drying Bed	Given to farmers for use as manure
				Generated during cleaning of tank/pond, packed in HDPE bags	Dispose at NECL
		2	Used Oil	Drums/Tanks in Room	Sell to registered refiner
		3	Discarded Containers	Storage Yard	Sell to Vendor
		4	Spent Catalyst (Acidic)	Drums in Room	Dispose at TSDF/ Sell to register recycler

		5	Spent Catalyst (Alkaline)	Drums in Room	Sell to register recycler
		6	Organic Waste	Drums/Bags stored in Room	Dispose at NECL's /SEPPL's incineration facility
		7	Sulphur Muck	Stored in the yards	Reuse/ authorized secured Disposal facility.
		8	Carbon residue	Store in bags & keep on pallets at specified waste storage area	Dispose at TSDF site.
		9	Molten Salt		Reuse/ or disposal at authorized TSDF site.
		10	High Boiling Hydro Carbon		Dispose at incineration facility (BEIL)
		11	Spent Resin	In Bags / Drums at Utility Plant	Disposal at TSDF facility at M/s. NECL/ co-processing sites.
		12	Insulation waste	Stored in bags at specified storage area.	Disposal at M/s. NECL – TSDF.
		13	Contaminated Cotton rags & other cleaning material		Disposal at M/s. NECL/co-processing sites.
		Authorization under HWMH Rules has been obtained from GPCB vide CCA order No. AWH-78404, valid up to 31/12/21.			
A.4	SAFETY :				
22.	The project management shall strictly comply with the provisions made in the Factories Act, 1948 as well as Manufacture, Storage and Import of Hazardous Chemicals Rules 1989 as amended in 2000 for handling of hazardous chemicals.	Complied. HTM i.e. Dowtherm is used as heating media. All the safety precautions are taken for safe handling and storage i.e. Illumination of its piping and storage area, ensuring leak proof system, use of PPE, keeping eye on all the process parameters day to day through DCS on round the clock basis, required trips and alarm system etc. Safety department co-ordinates for necessary compliance pertaining to Factory Act and Manufacture, Storage and Import of Hazardous Chemicals Rules.			

23.	Fire hydrant system shall be installed as per the TCA/NFPA norms for each plant and building.	Complied. Fire hydrant system is installed as per TCA norms. And fire water network is designed and installed as per DISH requirement. The regular fire & safety audit are being conducted.
24	All necessary precautionary measures shall be taken to avoid any kind of accident during storage and handling of flammable and combustible materials.	Complied. As such there is no storage area; however we have Safe Design as per international standards, with DCS for close control and monitoring of process parameters. We have close safety supervision by plant team. Trained and experienced manpower for handling any emergency. Work permit system in place for all the jobs. Fire water network for tackling any emergency. Fire station with competent team and facility manned for 24 hours. ECC for any emergency, Good housekeeping is maintained in the area. Plant commissioning started in February 16 and production started in June 16, there is no accident is reported, during the activities of these chemicals, as We have taken all precautionary steps and safety measures for its handling .i.e. Leak proof system, using of all PPE, avoid spillage, cleaning of the strainers, or filters of these systematic.
25.	Proper ventilation shall be provided in the work areas.	Complied. Proper ventilation is provided in the work area through openings, sufficient no of windows, doors etc.
26.	Storage and use of hazardous materials shall be minimized to the extent possible and all necessary precautions shall be taken to mitigate the risk generated out of it.	Complied Molten caprolactam is stored in storage tank with Nitrogen blanketing, breather valve. Necessary alarms/trips/interlocks like high level, temperature are installed in the hazardous material handling area.
27.	Hazardous materials storage shall be at an isolated designated location, bund/dyke walls shall be provided for storage tanks for Hazardous Chemicals.	Complied Caprolactam melter has been installed in designated area and necessary safety precautions have been provided.
28.	All the storage tanks shall be fitted with appropriate controls to avoid any leakages. Close handling system for chemicals shall be provided.	Complied. All the storage tanks are fitted with appropriate controls to avoid any leakages. Close handling system for chemicals is provided
29.	Personal Protective Equipment shall be provided to workers and its usage shall be ensured and supervised.	Complied. Personal Protective Equipments are provided to workers. Its usage is also ensured and supervised by plant & safety dept.

30.	First Aid Box and required Antidotes for the chemicals used in the unit shall be made readily available in adequate quantity at all the times.	Complied. First aid box is available in the control room of Nylon 6 – II plant. Necessary antidote is available at Factory Medical Unit (FMU) and medical centre.																						
31.	Necessary tie up with the nearby doctor qualified for occupational health shall be made to ensure that the medical treatment is given within the shortest possible time in case of any adverse condition.	Complied. Medical treatment to all employees is available in FMU as well as Medical centre. Tie up with the nearby hospitals (Bhailal Amin general Hospital, Sterling Hospital, Satyam hospital, Narhari hospital, banker, Baroda heart) in Vadodara city has been made to ensure that the medical treatment is given within the shortest possible time in case of any adverse condition.																						
32.	Training shall be given to all workers on safety and health aspects of handling chemicals.	<p>Complied. Regular training on safety and health aspects are organized by safety and medical services department and workers are deputed for the same. Safety training details imparted to workers are given below.</p> <p>Safety training imparted to workers/employees detail for compliance period October'19- March'20:</p> <table border="1"> <thead> <tr> <th>Month</th><th>Training Topic</th><th>Nos. of members present</th></tr> </thead> <tbody> <tr> <td rowspan="2">Oct'19</td><td>Training on "Transport Safety"</td><td>04</td></tr> <tr> <td>...DO....</td><td>18</td></tr> <tr> <td rowspan="4">Nov'19</td><td>Training program on ' work permit system with detail in confined space Entry permit' for staff employees/Officers</td><td>09</td></tr> <tr> <td>Contract Sup. Training.</td><td>04</td></tr> <tr> <td>Shutdown Safety Site Talk</td><td>32</td></tr> <tr> <td>....DO.....</td><td>13</td></tr> <tr> <td rowspan="2">Dec'19</td><td>Training program on ' Vehicle safety, Crane safety,Forklift safety, Off site Emergency plan for staff employees/Officers</td><td>15</td></tr> <tr> <td>Safety Induction Training to Contract Workers.</td><td>12</td></tr> </tbody> </table>	Month	Training Topic	Nos. of members present	Oct'19	Training on "Transport Safety"	04	...DO....	18	Nov'19	Training program on ' work permit system with detail in confined space Entry permit' for staff employees/Officers	09	Contract Sup. Training.	04	Shutdown Safety Site Talk	32DO.....	13	Dec'19	Training program on ' Vehicle safety, Crane safety,Forklift safety, Off site Emergency plan for staff employees/Officers	15	Safety Induction Training to Contract Workers.	12
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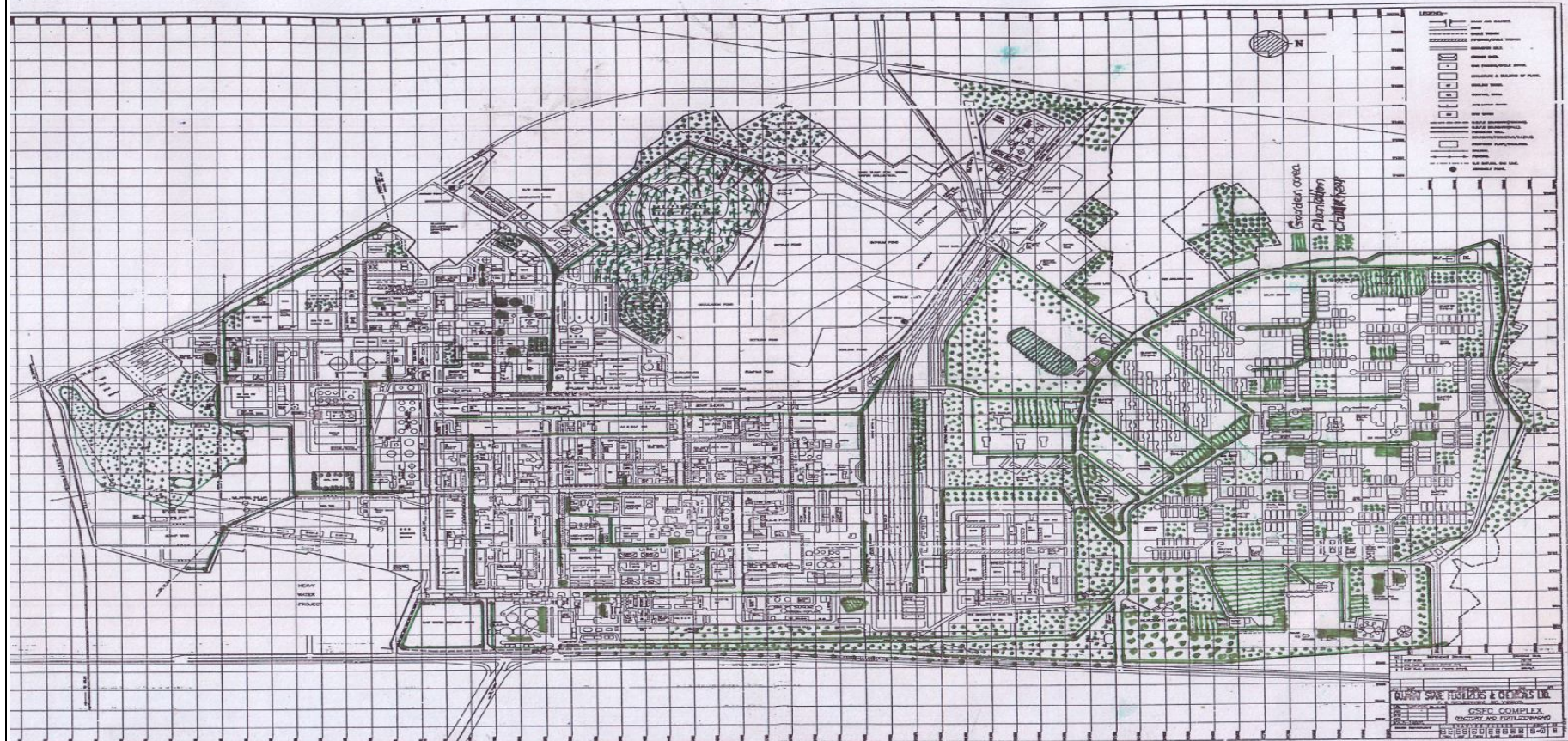
			...Do...	12
		Do...	02
		Jan'20	Training program on EST Members for staff employees	22
		DO.....	17
			Contract Sup. Training.	07
		Feb'20	Training program on Emergency Preparedness	10.
			Contract Sup. Training.	01
		March'20	Due to corona virus all the training postponed.	

33.	Occupational health surveillance of the workers shall be carried out on a regular basis and records shall be maintained as per the Factories Act and Rules.	Complied, Medical examination (six monthly) of employees is carried out on regular basis by Occupational Health Centre located within premises. Records are maintained at OHC. Month wise summery of employees who underwent periodical and pre medical examination are mentioned below: <u>Periodical Medical Examination details for compliance period October-2019 to March 2020:</u> <table><tr><td>Month</td><td>Periodical medical Examination numbers</td></tr><tr><td>Oct-19</td><td>268</td></tr><tr><td>Nov-19</td><td>256</td></tr><tr><td>Dec-19</td><td>301</td></tr><tr><td>Jan-20</td><td>317</td></tr><tr><td>Feb-20</td><td>307</td></tr><tr><td>March- 20</td><td>255</td></tr><tr><td>Total</td><td>1704</td></tr></table>	Month	Periodical medical Examination numbers	Oct-19	268	Nov-19	256	Dec-19	301	Jan-20	317	Feb-20	307	March- 20	255	Total	1704
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Total	1704																	

		Pre-Medical Examination details: October.2019 to March.2020	
		Month	Pre-medical Examination numbers
		Oct-19	1
		Nov-19	4
		Dec-19	3
		Jan-20	1
		Feb-20	7
		March- 20	0
		Total	16
		<u>Examination done for Periodical medical examination:</u>	
		S. No	Examinations
		1	Physical examination
		2	History of past and present illnesses of personal and family
		3	History of any medication and drug and allergic reaction.
		4	ECG (if needed)
		5	PFT
		6	Counseling for habits(tobacco, alcohol, smoking)
		7	Counseling (Nutrition , stress, ergonomics, hazard specification)
		8	Health screening of life style diseases
		9	Screening of HYPERSENSITIVITY of any chemical or any drug
		10	X-ray/USG (if needed)
		11	Blood investigation 1. CBC 2. LFT 3. RFT 4 Lipid profile (prone to cases) 5. RBS/FBS (PP2BS for prone to cases).
		12	Urine examination 1. GLUCOSE 2. PROTEIN
34.	Transportation of Hazardous Chemicals shall be as per the provisions of the Motor Vehicle Act & Rules.	Complied. Transportation of Hazardous Chemicals is as per the provisions of the Motor Vehicle Act & Rules.	

35.	All transporting routes within the factory premise shall have paved roads to minimize splashes and spillages.	Complied. Paved roads already exist in the premises to minimize splashes and spillages.																																									
A.5	NOISE																																										
36.	<p>The overall noise level in and around the plant area shall be kept well within the standards by providing noise control measures including engineering control like acoustic insulations, hoods, silencers, enclosures etc. on ail source of noise generation.</p> <p>The ambient noise level shall confirm to the standards prescribed under The Environment (Protection) Act, 1986 Rules, 1989 viz. 75 dB(A) (day time) and 70 dB(A) (nighttime).</p>	<p>Complied. Criteria for keeping noise level within allowed range have been strictly defined while designing the machineries.</p> <p>Presently, Noise monitoring is carried out at 80 different locations within premises and at ambient air monitoring stations. Details (Max., Min along with comparison with standards) are given below.</p> <p>Noise Level for compliance period Oct.19 to March'20:</p> <table><tr><th rowspan="2">Location</th><th colspan="3">Noise Level, Limit-75 dB(A) Daytime</th><th colspan="3">Noise Level, Limit-70 dB(A) Night time</th></tr><tr><th>Avg</th><th>Min</th><th>Max</th><th>Avg</th><th>Min</th><th>Max</th></tr><tr><td>Nr Marketing Yard</td><td>49.1</td><td>35.3</td><td>63.5</td><td>44.6</td><td>30.2</td><td>59.4</td></tr><tr><td>Nr Adm. Building</td><td>56</td><td>45.7</td><td>66.8</td><td>55.7</td><td>47.3</td><td>63.2</td></tr><tr><td>B/H SA-IV</td><td>48.5</td><td>35.5</td><td>62.7</td><td>49.4</td><td>38.5</td><td>59.7</td></tr><tr><td>Vadnagar Tank Farm</td><td>44.4</td><td>30.6</td><td>58.4</td><td>41.95</td><td>27.4</td><td>56.8</td></tr></table>	Location	Noise Level, Limit-75 dB(A) Daytime			Noise Level, Limit-70 dB(A) Night time			Avg	Min	Max	Avg	Min	Max	Nr Marketing Yard	49.1	35.3	63.5	44.6	30.2	59.4	Nr Adm. Building	56	45.7	66.8	55.7	47.3	63.2	B/H SA-IV	48.5	35.5	62.7	49.4	38.5	59.7	Vadnagar Tank Farm	44.4	30.6	58.4	41.95	27.4	56.8
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A.6	CLEANER PRODUCTION & WASTE MINIMIZATION																																										
37.	The unit shall undertake the Cleaner Production Assessment study through a reputed institute / organization and shall form a CP team in the company.The recommendations thereof along with the compliance shall be furnished to the GPCB.	<p>Complied. As a new project, cleaner production aspects have been considered at initial phase of the project. Details of the same is summarized below:</p> <p>Nylon 6-II Plant is having latest Lactam Recovery System for conservation of material and reduction of effluent.</p> <ul style="list-style-type: none">Recovered lactam is fed directly to Pre-polymerizer.Evaporated water is used for heating in extraction section.Continuous/discontinuous waste water streams of the plant is collected in effluent pit and sent to ETP for further treatment before discharge. <p>Apart from above, Scrubbing system (washing Tower) also considered and installed for Off-gases streams from various emission points and scrubbed gases emitted in to atmosphere.</p>																																									
38.	The unit shall also undertake following waste minimization	Complied, following waste minimization measures taken:																																									

	<p>measures:</p> <p>a. Metering and control of quantities of active ingredients to minimize waste.</p> <p>b. Use of automated and enclosed filling to minimize spillage.</p> <p>c. Reuse of by-products / materials recovered from the process as raw materials or raw materials substitutes in other process.</p> <p>d. Venting equipment through vapor recovery system.</p> <p>e. Use of high pressure hoses for equipment cleaning to reduce wastewater generation.</p> <p>f. Dry cleaning / mopping of floor instead of floor washing,</p> <p>g. Regular preventive maintenance to avoid leakage, spillage etc.</p>	<p>a. Metering is provided on effluent pump discharge line.</p> <p>b. Fully automatic Underwater Granulation unit is provided to ensure no/bare minimum spillage in open area, which can be collected and re-used.</p> <p>c. In Extract Water evaporation section, lactam from extract water is recovered and fed back to Pre- polymerizer.</p> <p>d. All the vapors generated is vented after treatment in off gas treatment section.</p> <p>e. Are used accordingly.</p> <p>f. Dry cleaning / mopping of floor is carried out.</p> <p>g. Regular preventive maintenance is done to avoid leakage, spillage etc.</p>																		
A.7	GREEN BELT & OTHER PLANTATION																			
39.	<p>The company shall develop and maintain green belt within premises as per the CPCB guidelines.</p> <p>In addition to this, the company shall also take up adequate plantation on road sides and other open areas in consultation with the GPCB and submit an action plan of plantation for next three years to the GPCB.</p>	<p>Complied. The total area of premises is 328 ha. The green belt area is 123.2 Ha which is 37.56% of total plot area. Hence meeting CPCB guidelines.</p> <table border="1"> <thead> <tr> <th>Sr. No.</th><th>Particulate</th><th>Total Area (Ha)</th></tr> </thead> <tbody> <tr> <td>1</td><td>Plant Area(Processing)</td><td>174.7</td></tr> <tr> <td>2</td><td>GSFC Township</td><td>34.6</td></tr> <tr> <td>3</td><td>Green Belt (In Plant)</td><td>32.8</td></tr> <tr> <td>4</td><td>Green Belt (Township)</td><td>85.9</td></tr> <tr> <td></td><td>Total area</td><td>328</td></tr> </tbody> </table> <p>GSFC has also made adequate plantation on road sides and other open areas</p>	Sr. No.	Particulate	Total Area (Ha)	1	Plant Area(Processing)	174.7	2	GSFC Township	34.6	3	Green Belt (In Plant)	32.8	4	Green Belt (Township)	85.9		Total area	328
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GSFC layout for Green belt

*Dots on layout represent green belt area.

	OTHER CONDITIONS	
40.	In the event of failure of any pollution control system adopted by the unit, the unit shall be safely closed down and shall not be restarted until the desired efficiency of the control equipment has been achieved.	In the event of failure of any pollution control system adopted by the unit, the unit is safely closed down and is not be restarted until the desired efficiency of the control equipment has been achieved.
41.	The company shall ensure that unit complies with all the environment protection measures, risk mitigation measures and safeguards recommended in the EIA Report of the project.	<p>Complied with the recommendation mention in the EIA report. Compliance against the EMP mentioned in EIA report also attached at the end of condition. HAZOP study was carried out during basic engineering phase and operation division.</p> <p>Other risk mitigation measures and safeguards are as under:</p> <ul style="list-style-type: none"> ✚ Safe Design as per international standards. ✚ DCS for close control and monitoring of process parameters. (Trips/interlock /alarms, emergency shutdown system). ✚ Close safety supervision by plant team. ✚ PSV for pressure vessels. ✚ Trained and experienced manpower. ✚ Work permit system for all the jobs. ✚ Good housekeeping is maintained in the area. ✚ Safety committee (DEHSCM) and suggestion skim in place for employee involvement. ✚ Usage of PPEs as per the need and policy. ✚ Internal and external safety audits. ✚ Safety signage. ✚ Fire water network. ✚ Two Fire stations with all fire fighting facilities with competent team and manned for 24hours. ✚ ECC for any emergency. ✚ Mock drills are carried out for different scenarios.
42.	A separate Environment Management Cell equipped with full fledged Laboratory facilities and qualified personnel shall be set up to carry out the Environment Management and Monitoring functions and a separate budget shall be allocated for this purpose.	<p>Complied. GSFC has separate environment cell and having fully fledged laboratory facilities & qualified personnel for environment management and monitoring function.</p> <p>EMC details like name of persons, designation, technical qualification along with parameter wise equipment available for in-house monitoring is given below.</p>

Separate budget is also allocated for environmental dept. activities every year. Actual expenses for Environment Management Cell are given in condition no. 43.

EC Dept. Staff list:

Sr. No.	Name of employees	Designation	Tech. Qualification
1	S J Parikh	SVP (U & EC)	B.E (Chemical)
2	K S Badlani	VP (I&MB, U&EC & FU)	B.E (Chemical)
3	P D Kachchhi	Chief (EC) & Dy.Mr,	B.E. (Env.), PDIS
4	Mrs.S Y Singh	SR.MGR(EC)	B.E. (Civil)
5	Prashant U Kadu	SR. MGR (EC)	B.E. (TEXTILE)
6	Jaxesh P Trivedi	MGR(EC)	B.E (Chemical), M.Tech(EPD), PDIS
7	Ashok H Shah	Addl.MGR(EC)	B. Sc (Chemistry)
8	Jayesh M Dave	Addl..MGR(EC)	B. Sc (Chemistry)
	Prateek Jain	Dy.Mgr (EC)	B. Tech. (Chem. Engg.)
9	Pankaj Kumar Sharma	Plant Engineer.	B. Tech. (Chem. Engg.)
10	Mosmi M Patel	Env. Engg.	B.Tech. (RE & EE)
11	Rajesh K Desai	Foreman	B.SC Chemistry, DIPC, MS in Env't. Sci. under DLP
12	Ambalal K Rana	Sr.Operator	B. Sc (Chemistry)
13	Anil L Arora	Sr.Operator	B. Sc (Chemistry)
14	M R Chandekar	Sr.Operator	ITI
15	Vipul R Upadhyay	Sr.Operator	B. Sc (Chemistry)
16	Himanshu G Patel	Sr.Operator	B. Sc (Chemistry)
17	PC Maisuriya	Sr.Operator	SSC
18	H V Shah	Sr.Operator	B. Sc (Chemistry)

	19	Hitendra R Desai	Sr.Operator	B. Sc (Chemistry)
	20	JayeshSolanki	Sr. Operator	Old SSC
	21	Rajesh H Patel	Sr. Operator	B. Sc (Chemistry)
	22	Kanubhai B Padhiyar	Operator	B. Sc (Chemistry)
	23	Hitesh D Patel	Operator	MSC (Env. Sci.)
	24	Bhaves C Patel	Operator	MSC (Industrial Chemistry)
	25	Ranjitsinh C Shinora	Jr. Operator	SSC Pass
	26	Pankaj C Patel	Jr. Operator	HSC Pass
	27	Biren R Patel	Jr. Operator	M.Sc. Env. Sci. Cert. Disaster Management PDIS
	28	V R Rabari	Jr. Operator	HSC
	29	Purvish S Shah	Jr. Operator	Msc. Env. Sci. Cert. Disaster Management
	30	Jayesh S Patel	Attendant	Bsc. (Chemistry
	31	Bhavdip S Vamja	Assistant Operator	B.Sc Chemistry
	32	Gami Ravikumar	Assistant Operator	B.Sc Chemistry

* Total 15 nos. workmen available, which include 5 regular employees and 10 contract workman.

Details of parameter-wise equipments available for in-house environment monitoring:

a) Effluent Monitoring:

Sr. No	Parameter analyzed	Equipment / Instrument used
1	p H	p H meter
2	Total Dissolved Solids	Analytical balance, Water bath, Oven, Desiccators.
3	Suspended Solids	Analytical balance, Filter Assembly, Oven, Desiccators.
4	Ammoniacal Nitrogen	Volumetric Analysis
5	Total Nitrogen	Kjeldal's distillation, Auto Distillation Apparatus & Digester
6	Phosphates	Spectrophotometer
7	Chemical Oxygen Demand	COD digester, Stirrer, Volumetric analysis by titration
8	APHA	Visually by comparing with Standard APHA solution
9	Fluoride	Fluoride Ion selective electrode / Spectrophotometer
10	Oil and Grease	Separation by separating funnel, Water bath, Oven, Desiccator, Analytical Balance

b) Gaseous Emission Monitoring:

Sr. No	Parameter analyzed	Equipment / Instrument used
1	SO ₂ & SO ₃	Glass Scrubbing bottle
2	CO	Gas Chromatograph
3	CO ₂	Gas Chromatograph/ orsat gas analyzer
4	NH ₃	Glass Scrubbing bottle, Dragger Tube
5	F	Spectrophotometer& Glass Scrubbing

				bottle, Dragger Tube																
		6	NOX	Spectrophotometer& Glass Scrubbing bottle																
		For spot analysis of gaseous pollutant (Equipment: Dragger tube (available) and pump)																		
43	The funds earmarked for environment protection measures shall be maintained in a separate account and there shall not be any diversion of these funds for any other purpose.	Complied. Every year budget is prepared and fund earmarked to implement the environment protection measures is utilized for intended purpose only. @ Rs. 753 lacs have been spent towards EMP for Nylon 6-II plant.																		
		Budgetary provision for EMP is as under:																		
		<table><tr><th>Particulars</th><th>Capital Cost (Rs. in Lacs)</th></tr><tr><td>Off gas treatment System</td><td>210</td></tr><tr><td>Fugitive emissions Control</td><td>30</td></tr><tr><td>Wastewater Treatment</td><td>513</td></tr><tr><td>Total</td><td>753</td></tr></table>			Particulars	Capital Cost (Rs. in Lacs)	Off gas treatment System	210	Fugitive emissions Control	30	Wastewater Treatment	513	Total	753						
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	A year-wise expenditure on environmental safeguards shall be reported.	A year-wise expenditure on environmental safeguards is reported to MoEF & GPCB as a part of half yearly compliance report.																		
		Capital Expenditure incurred over last 3 years are given below.																		
		Past three year investment in pollution control:																		
		<table><tr><th>Description</th><th colspan="3">Expenses in Lakhs</th></tr><tr><td></td><th>2016-17</th><th>2017-18</th><th>2018-19</th></tr><tr><td>Investment in Pollution control</td><td>3617.01</td><td>4139.33</td><td>4129.21</td></tr><tr><td>Total Investment</td><td>413064.44</td><td>422581.47</td><td>505740.60</td></tr></table>			Description	Expenses in Lakhs				2016-17	2017-18	2018-19	Investment in Pollution control	3617.01	4139.33	4129.21	Total Investment	413064.44	422581.47	505740.60
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		Operation Expenses for Environment Control division for the year 2019-20 : Rs 16.97 Crores																		
		Budget is prepared every year for the expenses to be carried out by Environment Control dept.																		

44	The company shall carry out socio- economic developmental / community welfare activities in consultation with the District Development Officer / District Collector.	<p>Complied, Details are as under:</p> <p>CSR Expenditure incurred from October'19 – March'20:</p> <table border="1"> <thead> <tr> <th>Sr.</th><th>Details</th><th>Amount Rs.</th></tr> </thead> <tbody> <tr> <td>1</td><td>Education at BU, SU & FU</td><td>2,70,00,000</td></tr> <tr> <td>2</td><td>Contribution and Donation</td><td>38,91,188</td></tr> <tr> <td>3</td><td>Drinking water facility</td><td>12,00,000</td></tr> <tr> <td>4</td><td>Sikka Unit</td><td>25,00,000</td></tr> <tr> <td>5</td><td>GSFC University</td><td>4,00,00,000</td></tr> <tr> <td colspan="2">Total</td><td>7,45,91,788</td></tr> </tbody> </table> <p>GSFC gives top priority to Corporate Social Responsibility. Since long, GSFC has started practice and established Corporate Village Cell Committee which is taking care of surrounding villages by extending cooperation in the area of education, health and infrastructure development. In 2012-13, GSFC formed an independent CSR Cell in place of corporate village cell. This cell is formed to promote the overall development, progress and betterment of the people belonging to weaker sections of society with a view to improve 'Human Development Index' (HDI). Some of the work continued in this area since long are as under:</p> <ul style="list-style-type: none"> • Providing drinking water facility free of cost to nearby villages • Providing employment to residents of nearby villages • Providing education to nearby villages by running a higher secondary school • Development of other infrastructure like roads, drainage system etc for the nearby villages • Educating the young farmers about the developments in the agriculture field • Extending soil and water testing facility for both potable and irrigation water at reasonable rate. • Publishing literature like Krishi Jivan, Sardar Krushi Mahiti Patrak for increasing the awareness in field of agriculture 	Sr.	Details	Amount Rs.	1	Education at BU, SU & FU	2,70,00,000	2	Contribution and Donation	38,91,188	3	Drinking water facility	12,00,000	4	Sikka Unit	25,00,000	5	GSFC University	4,00,00,000	Total		7,45,91,788
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		<ul style="list-style-type: none"> • Arranging medical camps • Providing financial supports in case of any calamity to the nearby villagers. <p>.Off and on, GSFC contributes to Chief Ministers' Relief Fund as well as to the Gujarat Government Developmental efforts like Vibrant Gujarat Global Investors' Meet.</p>
45	Pucca flooring / impervious layer shall be provided in the work areas, chemical storage areas and chemical handling areas to minimize soil contamination.	Complied. Plant is set up inside a building and no soil contamination is envisaged.
46	Leakages from the pipes, pumps etc. shall be minimal and if occurs, shall be arrested promptly.	Complied. Any leakage is being attended immediately.
47	During material transfer, spillages shall be avoided and garland drain be constructed to avoid mixing of accidental spillages with domestic wastewater or storm water.	Complied. During material transfer, spillages is avoided Drain from entire plant area is connected to Effluent Pit. Hence there are no chances of mixing of accidental spillage with domestic wastewater or storm water.
48	No further expansion or modifications in the plant likely to cause environmental impacts shall be carried out without obtaining prior Environment Clearance from the concerned authority.	GSFC will carry any further expansion or modification in the plants after taking necessary permission and approval from concerned authority i.e. GPCB/SEIAA/MOEF.
49	The project proponent shall also comply with any additional condition that may be imposed by the SEAC or the SEIAA or any other competent authority for the purpose of the environmental protection and management.	GSFC will comply such condition.

50 .	<p>The project authorities shall earmark adequate funds to implement the conditions stipulated by SEIAA as well as GPCB along with the implementation schedule for all the conditions stipulated herein.</p> <p>The funds so provided shall not be diverted for any other purpose.</p>	<p>Complied. GSFC has provided adequate funds to implement the conditions stipulated by the MoEF. Details pertaining to Env. Expenses are given in condition no 43.</p> <p>The fund earmarked to implement the conditions has been utilized for intended purpose only.</p>
51 .	<p>The applicant shall inform the public that the project has been accorded environmental clearance by the SEIAA and that the copies of the clearance letter are available with the GPCB and may also be seen at the Website of SEIAA/ SEAC/ GPCB. This shall be advertised within seven days from the date of the clearance letter, in at least two local newspapers that are widely circulated in the region, one of which shall be in the Gujarati language and the other in English.</p> <p>A copy each of the same shall be Copy of forwarded to the concerned Regional Office of the Ministry.</p>	<p>Complied, GSFC has published advertisement of Env. Clearance in local news papers i.e. Indian Express & Divya Bhaskar newspaper on 25/07/2013.</p> <p>We did not get the copy of environmental clearance due in time, hence we had to go to SEIAA to collect copy of environmental clearance personally and after getting the copy, and we have published within 7 days.</p> <p>Copy of the advertisement was forwarded to MoEF vide letter ref no. EC/N-6/Adv. Dated 26.07.13.</p> <p><u>Published advertisements are as:</u></p>

		<p style="text-align: center;">INDIAN EXPRESS</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>G GUJARAT STATE FERTILIZERS & CHEMICALS LIMITED Fertilizernagar - 391 750, Vadodara, Gujarat, India.</p> <p style="text-align: center;">NOTICE</p> <p>M/s. GSFC Ltd. is hereby informing the public that the environment clearance for setting up 45MTPD Nylon-6 plant at Vadodara is received. The copy of which is available at G.P.C.B., Gandhinagar office.</p> </div> <p style="text-align: center; margin-top: 20px;">DIYVA BHASKAR</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>G ગુજરાત સ્ટેટ ફર્ટિલાઇઝર્સ એન્ડ કેમિકલ્સ લિમિટેડ ફર્ટિલાઇઝરનાગર - ૩૯૧૭૫૦, વડોદરા, ગુજરાત</p> <p style="text-align: center;">નોટિસ</p> <p>આથી જાહેર જનતાને જણાવવામાં આવે છે કે અમારી કંપનીને વાઇડરનામાં પ્રાપ્તિદિન ૪૫ ટન કમલતોનો માયલોન-૬ પ્લાન્ટ સ્થાપવા માટે એન્વાયરમેન્ટ ક્લીયરન્સ મળેલ છે જેની નકલ અમારી પાસે છે. ગાંધીનગર ખાતેની કમ્પ્લીન્સ કમલેટ છે.</p> </div>
52	It shall be mandatory for the project management to submit half-yearly compliance report in respect of the stipulated prior environmental clearance terms and conditions in hard and soft copies to the regulatory authority concerned, on 1st June and 1st December of each calendar year.	Complied. Subject report is submitted as per Prescribed schedule.

53.	The project authorities shall also adhere to the stipulations made by the Gujarat Pollution Control Board.	<p>Complied, we are ensuring compliance of all the applicable statutory requirements. Compliance of CCA condition & Production are enclosed as Annexure – III.</p> <p>Management of hazardous wastes (mentioned in condition no.21) is carried out as per Rules. The return in Form-4 is also submitted regularly to GPCB. Avg. results of gaseous emission and final effluent discharge are given in point vi) of specific condition.</p> <p>Moreover, Real-time-Online Monitoring System is in operation from July 2014 for the effluent parameters i.e. pH, COD, BOD, TSS, NH4-N and it is connected to GPCB as well as CPCB server.</p>
54 .	<p>The project authorities shall inform the GPCB, Regional Office of MoEF and SEIAA about the date of financial closure and</p> <p>Final approval of the project by the concerned authorities</p> <p>And the date of start of the project.</p>	<p>Complied. Final approval of project from the Board of Directors was received on 20-10-2010.</p> <p>Commissioning date: 20/07/19. The Complete project was financed from internal accruals only and hence there is no need of financial closure certificate.</p> <p>Final Approval - CTO obtained from GPCB vide letter no. GPCB/CCA-VRD-83(6)/ID:21968/320219 dated 07/07/15 is enclosed as Annexure – V</p> <p>Date of starting Plant: 20th July 2016.</p>
55 .	The SEIAA may revoke or suspend the clearance, if implementation of any of the above conditions is not found satisfactory.	NOTED

56 .	<p>The company in a time bound manner shall implement these conditions.</p> <p>The SEIAA reserves the right to stipulate additional conditions, if the same is found necessary. The above conditions will be enforced, inter-alia under the provisions of the Water Act, 1974, Air Act, '1981, the Environment (Protection) Act, 1986, Hazardous Wastes (MHTM) Rules, 2008 and the Public Liability Insurance Act, 1991 along with their amendments and rules.</p>	Compliance status is given against stipulated condition.
57 .	This environmental clearance is valid for five years from the date of issue.	NOTED
58 .	Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	NOTED

PART – 1 DATASHEET

N o.	Conditions	Compliance
1.	Project type: River-valley / Mining/ Industry/Thermal/Nuclear/Others(specify)	Industry, Installed new 45 MTPD Nylon-6 Plant within existing GSFC complex at P.O. Fertilizernagar, Vadodara.
2.	Name of the Project	45 MTPD Nylon-6 Project
3.	Clearance letter(s) OM No. and date	Letter No. SEIAA/GUJ/EC/5(e)/131 /2013 dated 05/07/2013 of SEIAA (GUJARAT)
4.	Location a) District(s) b) State(s) c) Location Latitude /Longitude	Vadodara Gujarat N - 22° 22' 30.5" E - 73° 09' 28.8"
5.	Address for Correspondence Address of the Concerned Project Chief Engineer (with Pin Code & Telephone/ Telex/ Fax Numbers)	R.S. Erande, VP (P-F&I) and MR Gujarat State Fertilizers and Chemicals Ltd, (GSFC), P.O.: Fertilizernagar, Vadodara, 391 750. Tel: 0265-3093165. M: 9909965795 Email : rserande@gsfcltd.com
6.	Salient Features a) of the Project b) of the Environmental Management Plans	Project: Production of Engineering plastic grade and film grade Nylon-6 chips from Caprolactam as raw material. EMP: Plant is having 100 % efficient Lactam Recovery System in order to minimize the resources/energy consumption and to reduce the waste generation. Effluent generated is treated in existing treatment plant.

		Existing ETPs are upgraded with addition of Panic Pond, DAF unit, Ammonia Stripper; Fine Bubble Air Diffusers in addition to Aerators in one compartment Existing Aeration Tank. Off gas coming from various emission points from continuous Nylon 6 process is in to washing tower (Off Gas Treatment unit) and then discharged in to atmosphere. Nylon 6 solid waste is recovered or sold to Vendor.
7.	Breakup of the Project Area a) Submergence area : Forest & Non-Forest b) Others	Not Applicable Expansion of 45 MTPD Nylon 6 plant within existing GSFC complex. Area of old & unused Inert Gas-III plant is made available for Nylon 6 - II plant.
8.	Breakup of the project affected population with enumeration of those Losing Houses / Dwelling Units only, Agricultural Land only, Both Dwelling Units & Agricultural Land & Landless Laborers/ Artisans : a) SC, ST /Adivasi b) Others (Please indicate whether these figures are based on any scientific and systematic survey carried out or only provisional figures, if a survey is carried out and give details & year of survey)	Not Applicable

9.	<p>Financial Details :</p> <p>a) Project Cost as originally planned and subsequent revised estimates and the year of price Reference.</p> <p>b) Allocation made for environmental management plans with item wise and year wise break-up.</p> <p>c) Benefit cost ratio/Internal rate of Return and the year of assessment</p> <p>d) Whether (c) includes the cost of environmental management as shown in the above</p> <p>e) Actual expenditure incurred on the Project so far.</p> <p>f) Actual expenditure incurred on the environmental management plans so far.</p>	<p>Rs. 134.44Crores.</p> <p>Budgetary provision for EMP is as under:</p> <table><tr><th>Particulars</th><th>Capital Cost (Rs. in Lacs)</th></tr><tr><td>Off gas treatment System</td><td>210</td></tr><tr><td>Fugitive emissions Control</td><td>30</td></tr><tr><td>Wastewater Treatment</td><td>513</td></tr><tr><td>Total</td><td>753</td></tr></table> <p>Pre Tax IRR for 18 years 18.4 %. Year of assessment 2010.</p> <p>No</p> <p>Actual Payment so far: Rs133.08Crores.</p> <p>Integral part of project</p>	Particulars	Capital Cost (Rs. in Lacs)	Off gas treatment System	210	Fugitive emissions Control	30	Wastewater Treatment	513	Total	753
Particulars	Capital Cost (Rs. in Lacs)											
Off gas treatment System	210											
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Total	753											

10	Forest Land Requirement a) The status of approval for diversion of forest land for non-forestry use b) The status of clearing felling. c) The status of compensatory a forestation, if any. Comments on the viability & sustainability Of compensatory a forestation program In the light of actual field experience so far	Not Applicable
11	The Status of Clear Felling in non-forest Areas (such as submergence area or Reservoir, approach roads), if any with Quantitative information required.	Not Applicable
12	Status of Construction (actual and/ or planned) a) Date of commencement (Actual and/or planned) b) Date of completion (Actual and/or planned)	17 th June 2013 20 th July, 2016
13	Reason for the delay if the project is yet to start	--
14	Dates of Site Visits a) The dates on which the project was monitored by the Regional Office on previous occasions, if any b) Date of site visits for this monitoring report.	09/09/2013 & 08.07.2017. Scientist (D) of MoEF visited on 08/07/17, 17/07/18 & 26/07/19 and GPCB last visited on 15.02.2020.

EMP as per EIA Report of 45 TPD Nylon – 6 Project

Environmental Monitoring during Operational phase

S. No	Potential Impact	Action to be Followed	Parameters for Monitoring	Frequency of Monitoring	Compliance Status
1.	Air Emission	AAQ within the project premises and nearby habitations (3 places at 120°) to be monitored. All vehicles to be PUC certificate.	SPM,RSPM, SO ₂ & NO _x , NH ₃ Vehicle logs to be maintained.	As per CPCB/GPCB requirement	Quality of gaseous emission and AAQ is as mentioned in condition no. 18 for AAQ and condition no. 14 for gaseous emission.
		Meteorological data	Wind speed, direction, temp., relative humidity and rainfall.	Continuous monitoring using automatic weather station	Done through third party and Online at centre of premise. (Third party analysis are mentioned in condition no. 18)
2.	Noise	Noise generated from operation of boiler, cooling towers to be monitored	Spot Noise Level recording.	Periodic during Operation phase	Carried out at the periphery of GSFC premise as mentioned in condition no 36.
3.	Wastewater Discharge	Compliance to wastewater discharge standards	pH, TSS, TDS, BOD, COD and Oil & Grease.	Periodic or As per CPCB/GPCB requirement	Discharged effluent is analyzed on daily basis. Quality of discharged effluent is as mentioned in condition no. 6.
4.	Solid Waste/Hazardous Waste	Check compliance to HWM rules	Quality & quantity monitoring	Periodically	No hazardous waste is generated from N6-II plant. Nylon 6 waste lump and dust generated from plant is sold to vendor. Other Haz. Waste details are given in condition no 21.

5.	Non-routine events and accidental releases	Plan will be drawn, considering likely emergencies and steps required to Prevent /limit consequences.	Mock drills and records of the same	Periodic during process activities	Every year 8 nos. mock drills carried out in the premise on rotational basis covering all plants. In addition to it 2 nos. evacuation drill is carried out in a year.
6.	Greenbelt	Vegetation, greenbelt /green cover development	Number of plants, species	Once a year	Green belt area in about 37.56% land area. Total Area : 328 Ha (Factory premise & Township); Green Belt Area : 123.2 Ha
7.	Health	Employees and migrant labor health checkups	All relevant parameters	Regular checkups as per factories act.	Regular check up is carried out at Factory Medical Unit. Details mentioned in condition no. 38.