

CDM – Executive Board

**B.7 Application of a monitoring methodology and description of the monitoring plan:****B.7.1 Data and parameters monitored:**

<b>Data / Parameter:</b>	$S_y$
Data unit:	tonnes
Description:	Amount of sludge generated by the wastewater treatment in the year y
Source of data to be used:	Direct measurement (estimation can be found at the wastewater treatment station project)
Value of data	7 000 000
Description of measurement methods and procedures to be applied:	The sludge will be monitored as dry matter, in the moment of the discharge to the truck. The truck that carries the sludge to the boiler will be weighted.
QA/QC procedures to be applied:	The weight bridge will be regularly calibrated following national standards.
Any comment:	This sludge will be burned in the boiler. Therefore, the amount of sludge produced is not accounted in project emission calculations because it will not produce any methane.

<b>Data / Parameter:</b>	Temperature
Data unit:	°C
Description:	Average monthly temperature
Source of data to be used:	Direct measurements from Project Developer
Value of data	Higher than 15°C during 9 months in a year (please refer to graph in page 14)
Description of measurement methods and procedures to be applied:	The project developer has a weather monitoring station at the site, and daily readings will be kept.
QA/QC procedures to be applied:	The monitoring station follows quality standards established by the company and national regulation and is operated by qualified personnel.
Any comment:	According to historical measurements, on average temperatures are above 15°C for nine months of the year.

<b>Data / Parameter:</b>	COD <sub>y</sub>
Data unit:	tonnes
Description:	Amount of Organic matter treated in year y
Source of data to be used:	Direct measurements from Project Developer
Value of data	26 280
Description of measurement methods and procedures to be applied:	The COD of the wastewater entering the boundary of the project activity will be measured monthly using a calibrated spectrophotometer. The calibration certificate will be available for verifications. The measurements will take place at Celulose Irani's own laboratory.
QA/QC procedures to be applied:	The measuring procedures will follow the procedures recommended by the equipment supplier.
Any comment:	

CDM – Executive Board

<b>Data / Parameter:</b>	$Q_{ww}$
Data unit:	$m^3$
Description:	Volume of Wastewater treated
Source of data to be used:	Direct measurements from Project Developer
Value of data	8 760 000
Description of measurement methods and procedures to be applied:	The volume of the wastewater entering the boundary of the project activity will be regularly measured online, with monthly averages available. Will be measured using a Parshall flume as flow meter equipped with ultra sonic sensor to measure the flow level. The measurements will be on line all time by PLC.
QA/QC procedures to be applied:	As online measurements will take place, any changes can be easily noticed. The equipments are regularly calibrated and a rough crosscheck can be performed using data from the wastewater inflow to the treatment system and data from the wastewater outflow from de treatment system.
Any comment:	To monitoring, only the months with temperature equal or higher than 15°C will be accounted to calculate emission reductions.

<b>Data / Parameter:</b>	$EC_v$
Data unit:	MWh
Description:	Electricity consumed by the project activity devices, in the year “y”
Source of data to be used:	Direct measurements from Project Developer
Value of data	5 522
Description of measurement methods and procedures to be applied:	Electricity that will be consumed by all devices installed in result of Project Activity implementation.
QA/QC procedures to be applied:	When measurements could not be performed, the installed capacity of the devices will be entirely accounted when calculating this parameter.
Any comment:	

### **B.7.2 Description of the monitoring plan:**

All measurements will be performed by the “Área de Efluentes” (Effluent Area) which will be controlled by the “Divisão de Qualidade” (Quality Assurance Management Sector). There is a central control room at the Wastewater Treatment Station that will centralize all information regarding the monitoring. In this room, the supervisory system and computers will control the process.

The flow of the wastewater will be measured on-line, with daily and monthly averages available. It will be measured by Celulose Irani S.A. itself, with calibrated equipment. The data from the Parshall flume will be assessed online by an ultrasonic device, and visual monitoring of the Parshall Flume will work as quality assurance whenever needed.

The COD will be measured monthly, by Celulose Irani S.A. itself using a calibrated spectrophotometer in laboratory.

---

**CDM – Executive Board**

The amount of sludge to be discarded will be measured by a calibrated scale after the dewatering of the sludge. The trucks that carry the sludge to the boiler will be weighted by this scale. All sludge measurements are automatic.

As Celulose Irani S.A. already has one CDM project ongoing, the company is aware of monitoring crucial part in project development. Therefore, the staff is committed to monitor the data correctly for the entire crediting period.

All data to be monitored will be collected and cross checked by the Quality Assurance management sector. EcoSecurities will assure the quality of monitoring by adequately training the personnel involved and controlling monthly the data acquired.

A detailed QA/QC procedure for cross-checking the wastewater inlet and outlet flow, used to check gross error in readings and recording processes, can be found below:

The procedure involves the crosscheck between the wastewater system entrance and exit. There are Parshall flumes and ultrasonic sensors in the entrance of wastewater system and in the exit. The Entrance equipments are the Parshall flumes n° 3 and 4, while the exit one is the n°9. The sum of data from Flumes n° 3 and 4 are taken as reference, and flume n°9 is used for crosscheck. Important to notice that the exit measurement is lower than entrance given numerous facts such as: evaporation of water and generation of sludge (with high water content). The variation between the entrance and the exit is not always the same (most outflow data varies between 93 top 97% of inflow), so the crosscheck of these data can show if measurements are in a reasonable range.

Therefore, the crosscheck can be explained by the formula below:

$$flow3 + flow4 > flow9$$

Where:

Flow3	Flow of wastewater measured by parshall flume #3 (inflow of wastewater system), in m3/h
Flow4	Flow of wastewater measured by parshall flume #4 (inflow of wastewater system), in m3/h
Flow9	Flow of wastewater measured by parshall flume #9 (outflow of wastewater system), in m3/h. Flow9 is always smaller than the sum of flow3 and flow4.

---

CDM – Executive Board

**Annex 4**

**MONITORING INFORMATION**

Please refer to section B.7.2 to all necessary monitoring information.

-----