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TABLE FOR COMMENTS

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1	Definitions	55-57	Ed	The word “and” is missing.	We propose to replace the lines 55-57 by the following text: “the soluble organic substrate. Anaerobic lagoons are not aerated, heated, or mixed, and anaerobic conditions prevail except for a shallow surface layer in which excess undigested grease and scum are concentrated.”	
2	Baseline emissions	243-263	Te	The equation for the calculation of the $MCF_{BL,y}$ is erroneous for lagoons and sludge pits which have an effluent as in those cases the fraction of the COD which would be degraded in the baseline lagoon/sludge pit is factored in twice: 1) via $(1-(COD_{out,x}/COD_{in,x}))$ in equation 4 (line 249), and 2) via $f_{T,y}$ in equation 6 (line 262). It is explicitly mentioned in lines 270-272 that the factor $\mathbf{f_{T,y}}$ is calculated with the help of a monthly stock-change model which aims at assessing **how much COD degrades** in each month. Actually, the factor $f_{T,y}$ only says how much of the COD entering the baseline lagoon or sludge pit is degraded but it does not say whether the COD is degraded aerobically or anaerobically. Thus, the factor $f_{T,y}$ in ACM0014 is only used in order to estimate how much COD is degraded. This way of estimating the COD degradation can be applied to lagoons and sludge pits which have no effluent as in such cases it is not possible to estimate COD degradation by calculating the difference between COD inflow and COD outflow as for continuous models. In contrast, in case of lagoons and sludge pits which have an	1) We propose to adapt the determination of $COD_{BL,y}$ a) by replacing the lines 244-248 by the following text: “The baseline chemical oxygen demand ($COD_{BL,y}$) corresponds to the chemical oxygen demand that would be degraded in the baseline lagoon/sludge pit. For lagoons/sludge pits with an effluent, $COD_{BL,y}$ is determined as follows:”; b) by replacing the description of $COD_{BL,y}$ in line 250 by the following text: “Quantity of chemical oxygen demand that would be degraded in open lagoons (Scenario 1) or in sludge pits (Scenario 2) in the absence of the project activity in year y (t COD/yr)”; and c) by adding the following text between the lines 250 and 251: “For lagoons/sludge pits without effluent, $COD_{BL,y}$ is	

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				effluent, working as continuous systems, the COD outflow can be measured. The difference between COD inflow and COD outflow says how much COD "disappears" and is supposedly degraded in the lagoon/sludge pit. Thus, COD degradation in lagoons/sludge pits which have an effluent can be estimated from the difference between COD inflow and COD outflow and does therefore not need to be estimated through the factor $f_{T,y}$. It is therefore important to distinguish between lagoons/sludge pits without effluent and lagoons/sludge pits with effluent for the calculation of the amount of COD that would be degraded in the baseline lagoon/sludge pit. - For lagoons/sludge pits without effluent, $f_{T,y}$ provides an estimate for the fraction of the COD which would be degraded in the baseline lagoon/sludge pit. - For lagoons/sludge pits with effluent, the factor $(1-(COD_{out,x}/COD_{in,x}))$ in equation 4 (line 249) represents the fraction of COD that would be degraded in the baseline lagoon/sludge pit on average. Since the factor $(1-(COD_{out,x}/COD_{in,x}))$ is already included in $COD_{BL,y}$ for lagoons/sludge pits with effluent, $COD_{BL,y}$ in the current draft revision of ACM0014 has not the same meaning for the two types of lagoons/sludge pits: - For lagoons/sludge pits without effluent, $COD_{BL,y}$ is equal to $COD_{PJ,y}$ which is the total COD that would enter the baseline lagoon/sludge pit but not the amount of COD that would be degraded in the baseline lagoon/sludge pit. How much COD would be degraded in the baseline lagoon/sludge pit is estimated via the factor $f_{T,y}$ included in the $MCF_{BL,y}$. - For lagoons/sludge pits with effluent, $COD_{BL,y}$ corresponds to the amount of COD that would degrade in the baseline lagoon/sludge pit. These differences need to be addressed by separate equations for lagoons/sludge pits with effluents and lagoons/sludge pits without effluents. The current draft revision of ACM0014 applies the factor $f_{T,y}$ also to lagoons/sludge pits with effluent which is erroneous.	determined as follows: $COD_{BL,y} = COD_{PJ,y} * f_{T,y}$ Where: $COD_{BL,y}$ = Quantity of chemical oxygen demand that would be degraded in open lagoons (Scenario 1) or in sludge pits (Scenario 2) in the absence of the project activity in year y (t COD/yr) $COD_{PJ,y}$ = Quantity of chemical oxygen demand that is treated in the anaerobic digester or under clearly aerobic conditions in the project activity in year y (t COD/yr) $f_{T,y}$ = Factor expressing the proportion of COD that would be degraded in the lagoon or sludge pit in the absence of the project in year y. " 2) In addition we propose to adapt the determination of $MCF_{BL,y}$ a) by replacing the lines 255-261 by the following text: "The methane conversion factor is calculated based on a factor f_d, expressing the influence of the depth of the lagoon or sludge pit on the methane generation. In addition, a conservativeness factor of 0.89 is applied to account for the uncertainty associated with this approach. $MCF_{BL,y}$ is calculated as follows:" and b) by deleting the parameter $f_{T,y}$ and its description in the lines 262 and 263.	

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				We therefore propose to include separate equations for the calculation of $COD_{BL,y}$ for lagoons/sludge pits with effluent and lagoons/sludge pits without effluent, and to adapt the calculation of $MCF_{BL,y}$ accordingly. In this way, $COD_{BL,y}$ will have the same meaning for lagoons/sludge pits with or without effluent, namely the amount of COD that would be degraded in the baseline lagoon/sludge pit. The following **example** shall illustrate why it is not appropriate to apply $f_{T,y}$ to lagoons/sludge pits with effluent: Assuming a lagoon with the following characteristics: having an effluent, an average residence time of 30 days, a factor ($COD_{out,x}/COD_{in,x}$) of 0.3 and with an ambient temperature of 25°C. With a COD concentration in the inflow of 100,000 ppm, the concentration in the outflow would be 30,000 ppm. The difference (70% of the COD inflow) is supposed to be degraded in the lagoon/sludge pit under aerobic and anaerobic conditions. If to this difference the factor $f_{T,y}$ (0.66 for given temperature and residence time) was applied which according to current draft revision of ACM0014 says how much COD degrades, the outcome would be that from the 70% of the COD inflow that is supposed to degrade in the lagoon only 66% is actually degraded. What happens then to the rest of the COD that disappears in the lagoon, i.e. the remaining 34% of those 70% of the COD inflow? If the answer was sedimentation, then the sedimentation rate could be directly calculated via $f_{T,y}$, but the sedimentation rate depends on other parameters than ambient temperature. If the answer was accumulation in the lagoon/sludge pit, then the concentration in the outflow could not be constant which is however assumed to be so with equation 4. A system can be looked at either as a continuous model or as a stock-change model; but by applying $f_{T,y}$ in addition to ($1-(COD_{out,x}/COD_{in,x})$) the continuous model is mixed with a stock-change model which is not correct. Thus, the COD degradation is factored in twice when applying $f_{T,y}$ to lagoons/sludge pits with		

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				an effluent.		
3	Applicability	72-73	Te	As a consequence of comment N° 2, we propose to distinguish between lagoons with effluent and lagoons without effluent with regard to the applicability condition concerning the minimum residence time. The minimum residence time of 30 days is an applicability condition for lagoons without effluent in order to apply the monthly stock-change model which is used to calculate $f_{T,y}$. According to comment N° 2 above, $f_{T,y}$ is not required for lagoons with effluent as the amount of COD which degrades in each month is already considered in equation 4 (line 249) through the factor $(1-(COD_{out,x}/COD_{in,x}))$.	We propose to distinguish between lagoons with effluent and lagoons without effluent with regard to this applicability condition (minimum residence time) by replacing lines 72-73 by the following text: "For open lagoon systems without effluent, the residence time of the organic matter in the open lagoon system should be at least 30 days;"	
4	Baseline emissions	273-278	Te	As a consequence of comment N° 2, we propose to adapt this paragraph by deleting references to any effluent as with the changes proposed under comment N° 2 $f_{T,y}$ is only used for lagoons/sludge pits without effluents.	We propose to replace lines 273-278 by the following text: "For each month m, the quantity of wastewater directed to the lagoon or sludge directed to a pit and the quantity of organic compounds that decay are balanced, giving the quantity of COD that is available for degradation in the next month: The amount of organic matter available for degradation ($COD_{available,m}$) is assumed to be equal to the amount of organic matter directed to the open lagoon or sludge pit plus the COD that may have remained in the lagoon or sludge pit from previous months, as follows:"	
5	Baseline emissions	279	Te	As a consequence of comment N° 2, we propose to adapt equation 8.	We propose to replace $COD_{BL,m}$ by $COD_{PJ,m}$ in equation 8.	
6	Baseline emissions	279	Ed	In order to be consistent with its description in line 282, we propose to name $f_{T,m}$ as $f_{T,m-1}$ in equation 8.	We propose to replace $f_{T,m}$ by $f_{T,m-1}$ in equation 8.	
7	Baseline emissions	280	Te	As a consequence of comment N° 2, we propose to delete equation 9 as it is not required anymore with the changes proposed under comment N° 2.	We propose to delete equation 9.	

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8	Baseline emissions	282	Te	As a consequence of comment N° 7, we propose to delete the parameters $COD_{BL,m,}$ $COD_{out,x}$, $COD_{in,x}$ and x and their description as they are not required anymore with the changes proposed under comment N° 7. In addition, as a consequence of comment N° 2 we propose to adapt $f_{T,m}$	1) We propose to delete the parameters $COD_{BL,m,}$ $COD_{out,x}$, $COD_{in,x}$ and x and their description in line 282. and 2) We propose to replace $f_{T,m}$ and its description by the following text: "$f_{T,m-1}$ = Factor expressing the proportion of COD that would be degraded in the lagoon or sludge pit in the absence of the project in month m-1."	
9	Baseline emissions	288	Te	As a consequence of comment N°2, we propose to adapt the description of $f_{T,m}$ in line 288.	We propose to replace the description of $f_{T,m}$ in line 288 by the following text: "Factor expressing the proportion of COD that would be degraded in the lagoon or sludge pit in the absence of the project in month m.	
10	Baseline emissions	290	Te	As a consequence of comment N° 2, we propose to adapt equation 12.	We propose to replace $COD_{BL,m}$ by $COD_{PJ,m}$ in equation 12.	
11	Baseline emissions	291	Te	As a consequence of comment N° 2, we propose to adapt line 291.	1) We propose to replace $COD_{BL,m}$ and its description in line 291 by the following text: "$COD_{PJ,m}$ = Quantity of chemical oxygen demand that is treated in the anaerobic digester or under clearly aerobic conditions in the project activity in month m (t COD/month)" and 2) We propose to delete $f_{T,y}$ and $f_{T,m}$ with their description in line 291 and to replace them by the following text: "$f_{T,m}$ = Factor expressing the proportion of COD that would be degraded in the lagoon or sludge pit in the absence of the project in month m. $f_{T,y}$ = Factor expressing the proportion of COD that would be degraded in the lagoon or sludge pit in the absence of the project in year y. "	

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12	Baseline emissions	235-240	Te	As a consequence of comment N° 2, we propose to adapt this paragraph.	We propose to replace the lines 235-240 by the following text: "The baseline methane emissions from anaerobic treatment of the wastewater in open lagoons (Scenario 1) or the anaerobic treatment of sludge in sludge pits (Scenario 2) are estimated based on the chemical oxygen demand (COD) of the wastewater or sludge that would be degraded in the lagoon or sludge pit in the absence of the project activity ($COD_{BL,y}$), the maximum methane producing capacity (B_o) and a methane conversion factor ($MCF_{BL,y}$) which expresses the proportion of ($COD_{BL,y}$ x B_o) that would be degraded to methane (CH_4) in the absence of the project activity, as follows:"	
13	Baseline emissions	242	Te	As a consequence of comment N° 2, we propose to adapt the description of $COD_{BL,y}$ in line 242.	We propose to replace the description of $COD_{BL,y}$ in line 242 by the following text: "Quantity of chemical oxygen demand that would be degraded in open lagoons (Scenario 1) or in sludge pits (Scenario 2) in the absence of the project activity in year y (t COD/yr)"	
14	Data and parameters not monitored	507	Te	As a consequence of comment N° 2, we propose to adapt the table describing the parameters $COD_{out,x}$ and $COD_{in,x}$ as these parameters are only applicable to lagoons/sludge pits with an effluent with the proposed changes under comment N° 2.	We propose to delete the following text (lines 8 and 9 within the table): "(a) If there is no effluent: $COD_{out,x}$ = 0; (b) If there is effluent:"	
15	Data and parameters monitored	543	Ge	The parameters $F_{PJ,effl,dig,m}$ and $F_{PJ,effl,lag,m}$ are not used in the calculations contained in the current draft revision of ACM0014.	We propose to delete line 543.	