



Monitoring report form
(Version 04.0)

Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form" at the end of this form.

MONITORING REPORT

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|--|---|
| Title of the project activity | Sudokwon Landfill Gas Electricity Generation Project (50MW) |
| Reference number of the project activity | 0941 |
| Version number of the monitoring report | 1.0 |
| Completion date of the monitoring report | 02/09/2014 |
| Registration date of the project activity | 30/04/2007 |
| Monitoring period number and duration of this monitoring period | 9 th monitoring period (01/07/2013 – 30/06/2014) |
| Project participant(s) | - Sudokwon Landfill Site Management Corporation (SLC) - Rhodia Energy GHG - DASCO Partners LLP |
| Host Party(ies) | Republic of Korea |
| Sectoral scope and selected methodology(ies), and where applicable, applied standardized baseline(s) | - Sectoral Scopes: 1, 13 - Applied Methodologies: •ACM0001 "Consolidated baseline methodology for landfill gas project activities" (Version 04) and, •ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", (Version 06) |
| Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD | 1,201,315 tCO ₂ e |
| Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period | 952,584 tCO ₂ e |
| Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period up to 31 December 2012(if applicable) | - |
| Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved during the period from 1 January 2013 onwards (if applicable). | 952,584 tCO ₂ e |

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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Sudokwon landfill is one of the largest landfill in the world, which area is 19.79 million m² with total capacity of 228 million m³, and consists of 4 landfills. The 1st landfill was reclaimed from 1992 to 2000 and 2nd landfill has been in use for waste reclamation since 2000. The 3rd and 4th landfill will be used one after another.

About 50% of landfill gas (LFG) is composed of methane (CH₄), which is one of major greenhouse gases and has 25 times higher global warming potential (GWP) compare to carbon dioxide (CO₂). Thus, Sudokwon Landfill Gas Electricity Generation Project (50MW) was designed to minimize greenhouse gas emission by enhancing capture efficiency of LFG and utilizing it as a fuel of 50MW power plant.

For enhancing capture efficiency, lots of capturing pipelines and several LFG suction blowers were installed. The blower installation works had been finalized in 11/2007. Pipeline extension works will be continued until 2015 or more, the expected reclamation lifetime of 2nd landfill.

In order to treat LFG and generate renewable energy, renewable energy generation facility (50MW power plant) was constructed. This power plant is mainly composed of 2 boilers which generate steam and 1 steam turbine. The construction of power plant was finished in 15/12/2006.

Ecoenergy, operator of 50MW power plant, planned to install the desulfurization system in 2010, due to government policy¹ which regulate the amount of total emission of SO_x. And The desulfurization construction has begun in 2011.

According to the registered PDD, the desulfurization system is expected to operate from 2013. But it is expected to operate in the latter half of 2014 because its construction is delayed.

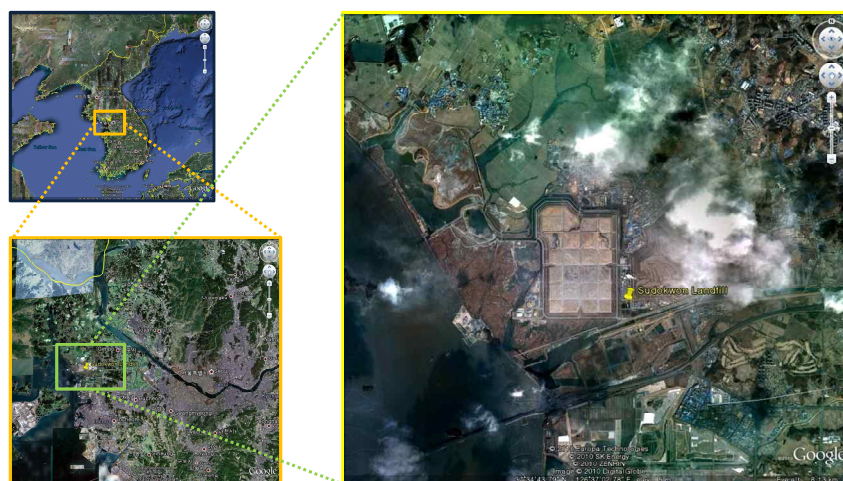
This is the 9th monitoring period covering 12 months from 01/07/2013 to 30/06/2014 (365 days) and monitored emission reductions are 952,584 tCO₂e.

A.2. Location of project activity

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#58 Baekseok Dong, Seo Gu, Incheon, Republic of Korea

GPS Coordinate: Latitude 37.55000° ~ 61667°, Longitude 126.55000° ~ 666667°



¹ Enforcement ordinance of Special Act on Seoul Metropolitan Air Quality Improvement (No. 236, enforced as of 01/07/2007)

Figure 1 Location of the project activity (SLC)

A.3. Parties and project participant(s)

| Party involved ((host) indicates a host Party) | Private and/or public entity(ies) project participants (as applicable) | Indicate if the Party involved wishes to be considered as project participant (Yes/No) |
|---|--|---|
| Republic of Korea (host) | Public entity Sudokwon Landfill Site Management Corporation (SLC) | No |
| France | Private entity Rhodia Energy GHG | No |
| United Kingdom of Great Britain and Northern Ireland | Private entity DASCO Partners LLP ² | No |

A.4. Reference of applied methodology and standardized baseline

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ACM0001 "Consolidated baseline methodology for landfill gas project activities" (Version 04)

http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_TX29WGSXE4781NKGQGCDP_THM2F3V3D

ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 06)

http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_BW759ID58ST5YEEV6WUCN5744MN763
A.5. Crediting period of project activity

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The start date of this project is 30/04/2007 and crediting period chosen is 10 years (fixed).

A.6. Contact information of responsible persons/ entities

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Lae Bong Han (Mr)

Director

Climate Change Business Division
Sudokwon Landfill site management Corp.

Tel: +82-32-560-9600

Fax: +82-32-560-9615

Email: hlb2305@slc.or.kr

WonGu Hwang (Mr)

Staff

Climate Change Business Division
Sudokwon Landfill site management Corp.

Tel: +82-32-560-9605

Fax: +82-32-560-9615

Email: tercker@slc.or.kr**SECTION B. Implementation of project activity****B.1. Description of implemented registered project activity**

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The 50MW power plant has been under commercial run since 15/03/2007. Other facilities such as LFG blower and central flaring facility has been also under operational before the start date of crediting period (30/04/2007).

² DASCO Partners LLP has joined as a project participant since 29/08/2013.



Figure 2 2nd landfill site and 50MW LFG power plant

As part of the enhancement (or expansion) of the LFG collection system, thorough inspection of LFG transferring pipes which installed in the midst of 2nd landfill were made. After the inspection, most of transferring pipes were re-installed at the top of 2nd landfill, intensively. Detailed enhancement works are as follows;

Table 1 Detailed enhancement of LFG collection system

| Item | Number (ea) | Reasons for enhancement | Note |
|--|-------------|--|------|
| LFG transferring pipes re-installation | 151 | Reinstallation of LFG transferring pipe for malfunctioning ones in accordance with the inspection. (from 01/07/2013 to 30/06/2014) | |
| Check point inspection in LFG transferring pipes | 699 | Check the operational status of LFG transferring pipes. (from 01/07/2013 to 30/06/2014) | |
| Flexible pipes replacement | 22 | Occurrence of pin-hole, which may cause possible influx of oxygen. (from 01/07/2013 to 30/06/2014) | |



Figure 3 Installation of check point and additional LFG transferring pipes (exposure type)

The information regarding the actual operation of the project activity in this monitoring period is as follows;

Table 2 Operational events of 50MW power plant

| Date | Duration | Operation events | Note |
|------------|----------|---|------|
| 01/07/2013 | | In order to reduce the total emission of SOx, 50MW power plant operated its output of 48MW. | |
| 07/07/2013 | 138hours | Due to periodic maintenance of 50MW power plant, it was stopped. | |
| 11/08/2013 | 7hours | Due to technical problem of booster blower, 50MW power plant was temporally stopped. | |
| 13/09/2013 | 350hours | Due to periodic maintenance of 50MW power plant, it was stopped. | |
| 01/10/2013 | 977hours | In order to reduce the total emission of SOx, 50MW power plant was stopped. | |
| 12/12/2013 | 12hours | Due to the lightening damage, 50MW power plant was stopped. | |
| 13/03/2014 | 8hours | Due to failure of OIS(Output Input System) card, 50MW power plant was stopped. | |
| 22/03/2014 | 13hours | Due to periodic safety check by KESCO (Korea Electricity Safety Corporation), 50MW power plant was stopped and temporally operated. | |
| 10/04/2014 | 30hours | Due to technical problem, #2 boiler of 50MW power plant was stopped and 50MW power plant was decreased its output. | |
| 28/04/2014 | 414hours | Due to periodic maintenance of 50MW power plant, it was stopped and temporally operated. | |
| 24/06/2014 | 43hours | In order to reduce the total emission of SOx, 50MW power plant was decreased its output | |

Table 3 Operational events of central flaring facility

| Date | Duration | Operation events | Note |
|------------|----------|--|------|
| 01/07/2013 | | #6 flare operated for treating LFG which is not treated by 50MW power plant. | |
| 07/07/2013 | 155hours | Due to maintenance of 50MW power plant, all flares were operated | |
| 11/08/2013 | 6hours | Due to technical problem of 50MW power plant, #3 and #4 flares were operated. | |
| 11/08/2013 | 25hours | Due to technical problem of 50MW power plant, #5 flare was operated. | |
| 27/08/2013 | 1hour | Due to increase of captured LFG from 1 st & 2 nd landfill, #2 flare was ignited. | |
| 30/08/2013 | 1hour | Operational flare changed from #2 to #5 flare. | |
| 30/08/2013 | 120hours | Due to increase of captured LFG from 1 st & 2 nd landfill, #2 flare was operated. | |
| 04/09/2013 | 1hour | Due to decrease of captured LFG from 1 st & 2 nd landfill, #5 flare was stopped. | |
| 13/09/2013 | 364hours | Due to maintenance of 50MW power plant, #1, #2 & #4 flares were operated | |
| 13/09/2013 | 360hours | Due to maintenance of 50MW power plant, #3 flare was operated | |
| 13/09/2013 | 412hours | Due to maintenance of 50MW power plant, #5 flare was operated | |
| 01/10/2013 | 984hours | In order to reduce the total emission of SOx, 50MW power plant was stopped and all flares were operated. | |
| 02/10/2013 | 2hours | Due to cleaning of backfire arrester, #3 flare was stopped. | |
| 10/10/2013 | 2hours | Due to cleaning of backfire arrester, #2 flare was stopped. | |
| 11/10/2013 | 2hours | Due to cleaning of backfire arrester, #1 flare was stopped. | |
| 11/10/2013 | 1hour | Due to cleaning of backfire arrester, #4 flare was stopped. | |
| 29/10/2013 | 2hours | Due to cleaning of backfire arrester, #1 flare was stopped. | |
| 12/12/2013 | 13hours | Due to the lightening damage of 50MW power, #1 flare was operated. | |

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| 12/12/2013 | 15hours | Due to the lightening damage of 50MW power, #2 flare was operated. | |
| 12/12/2013 | 16hours | Due to the lightening damage of 50MW power, #3 flare was operated. | |
| 12/12/2013 | 18hours | Due to the lightening damage of 50MW power, #4 flare was operated. | |
| 28/12/2013 | 5hours | Due to freeze of air compressor pipeline, power-operated valve of #5 & #6 flares did not operated. | |
| 28/12/2013 | 4hours | Due to malfunction of #5 & #6 flares, #3 flare was operated. | |
| 28/12/2013 | 1hour | Due to malfunction of #5 & #6 flares, #2 flare was operated. | |
| 05/03/2014 | 2hours | Due to change of valve, #6 flare was temporally stopped. | |
| 13/03/2014 | 3hours | Due to shutdown of 50MW power plant, #1 & #2 flares were operated. | |
| 13/03/2014 | 8hours | Due to shutdown of 50MW power plant, #3 & #4 flares were operated. | |
| 22/03/2014 | 3hours | After safety check by KESCO, #1 & #3 flares were temporally operated. | |
| 22/03/2014 | 4hours | After safety check by KESCO, #2 & #4 flares were temporally operated. | |
| 28/03/2014 | 1hour | Due to operation of desulfurization system pilot plant, operational flare changed from #5 to #2 flare. | |
| 10/04/2014 | 31hours | Due to maintenance of 50MW power plant, #5 flare was operated. | |
| 10/04/2014 | 30hours | Due to maintenance of 50MW power plant, #3 flare was operated. | |
| 10/04/2014 | 29hours | Due to maintenance of 50MW power plant, #1 flare was operated. | |
| 16/04/2014 | 1hour | Due to cleaning of backfire arrester, operational flare changed from #2 to #1 flare. | |
| 24/04/2014 | 1hour | Due to cleaning of backfire arrester, operational flare changed from #6 to #5 flare. | |
| 28/04/2014 | 410hours | Due to periodic maintenance of 50MW power plant, #2, #4 & #6 flare were operated. | |
| 28/04/2014 | 409hours | Due to periodic maintenance of 50MW power plant, #3 flare was operated. | |
| 15/05/2014 | 1hour | Due to output cutback of 50MW power plant, #2 flare was ignited. | |
| 06/06/2014 | 1hour | Due to output increase of 50MW power plant, #2 flare was stopped. | |
| 24/06/2014 | 43hours | In order to reduce the total emission of SO _x , 50MW power plant was decreased its output and #2 flare was operated. | |

Table 4 Operational events of monitoring system and corrective actions

| Date | Duration | Deviations and its reason | Corrective actions on data and its conservativeness |
|------------|----------|---|--|
| 05/07/2013 | 1hour | Due to calibration of GA-02, methane fraction of LFG from 2 nd landfill did not recorded. | Most conservative value in entire 9 th monitoring period (39.6%) applied. |
| 06/07/2013 | 672hours | Due to non-compliance with the zero/span test of GA-02, methane fraction of LFG from 2 nd landfill recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (39.6%) applied. |
| 07/07/2013 | 138hours | Due to periodic maintenance of 50MW power plant, it was stopped. | Where the plant was in overhaul, 0 Nm ³ applied for LFG flow of 50MW power plant. |
| 12/07/2013 | 79hours | Due to technical problem of electricity system, WH-05 did not recorded | Most conservative value in entire 9 th monitoring period (528.3 kWh) applied. |
| 30/07/2013 | 15hours | Due to technical problem of GA-01, methane fraction of LFG from 1 st landfill did not recorded. | Most conservative value in entire 9 th monitoring period (36.3%) applied. |
| 01/08/2013 | 1hour | Due to calibration of GA-02, methane fraction of LFG from 2 nd landfill did not recorded. | Most conservative value in entire 9 th monitoring period (39.6%) applied. |
| 15/08/2013 | 1hour | Due to technical problem of | ○ Most conservative value in entire 9 th |

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| | | monitoring system, GA-02, PT-02, TT-02 and FT-02 did not recorded. | monitoring period applied. - GA-02 : 39.6 % - PT-02 : -1931mmAq - TT-02 : 51.0°C ○ Where the most conservative value of CH ₄ fraction of 2 nd landfill LFG was lower than monitored CH ₄ fraction of 1 st landfill LFG during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach; - LFG _{1st} = 0 Nm ³ - LFG _{2nd} = LFG 50MW + LFG Flare |
| 04/09/2013 | 4hours | Due to technical problem of GA-01, methane fraction of LFG from 1 st landfill did not recorded. | Most conservative value in entire 9 th monitoring period (36.3%) applied. |
| 04/09/2013 | 1hour | Due to technical problem of monitoring system, GA-02, PT-02 and TT-02 recorded extraordinary value. | Most conservative value in entire 9 th monitoring period applied. - GA-02 : 39.6 % - PT-02 : -1931mmAq - TT-02 : 51.0°C |
| 08/09/2013 | 1hour | Due to technical problem of monitoring system, PT-02 recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (-1931mmAq) applied. |
| 09/09/2013 | 1hour | Due to technical problem of GA-01, methane fraction of LFG from 1 st landfill recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (36.3%) applied. |
| 13/09/2013 | 350hours | Due to periodic maintenance of 50MW power plant, it was stopped. | Where the plant was in overhaul, 0 Nm ³ applied for LFG flow of 50MW power plant. |
| 18/09/2013 | 1hour | Due to technical problem on monitoring system, GA-02, PT-02 and TT-02 did not recorded. | Most conservative value in entire 9 th monitoring period applied. - GA-02 : 39.6 % - PT-02 : -1931mmAq - TT-02 : 51.0°C |
| 24/09/2013 | 1hour | | |
| 25/09/2013 | 289hours | Due to conduct the 3 rd party calibration of PT-02, pressure of LFG from 2 nd landfill recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (-1931mmAq) applied. |
| 26/09/2013 | 2hours | Due to conduct the 3 rd party calibration of GA-01 & GA-02, methane fraction of LFG from 1 st & 2 nd landfill recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (36.3%, 39.6%) applied. |
| 01/10/2013 | 977hours | In order to the total emission of SO _x , 50MW power plant was stopped. | Where the plant was in overhaul, 0 Nm ³ applied for LFG flow of 50MW power plant. |
| 03/10/2013 | 5hours | Due to technical problem on monitoring system, FT-06 recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (0 Nm ³) applied. |
| 04/10/2013 | 2hours | | |
| 05/10/2013 | 7hours | | |
| 06/10/2013 | 3hours | | |
| 07/10/2013 | 6hours | | |
| 09/10/2013 | 6hours | | |
| 10/10/2013 | 2hours | | |
| 11/10/2013 | 2hours | Due to technical problem on monitoring system, FT-05 recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (0 Nm ³) applied. |
| 16/10/2013 | 1hour | Due to calibration of GA-01, methane fraction of LFG from 1 st landfill did not recorded. | Most conservative value in entire 9 th monitoring period (36.3%) applied. |
| 16/10/2013 | 1hour | Due to rebooting of monitoring system, GA-01, GA-02, FT-01, FT- | ○ Most conservative value in entire 9 th monitoring period applied. |

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| | | 02, FT-04~09, PT-02, PT-05, TT-02, TT-03 and TC-01~06 recorded extraordinary value. | - GA-01 : 36.3%, GA-02 : 39.6% - PT-02 : -1931mmAq - PT-05 : 0mmAq - TT-02 : 51.0°C, TT-03 : 62.2 °C - FT-04~09 : 0 Nm ³ , TC-01~06 : 0°C ○ Where the most conservative value of CH ₄ fraction of 1 st landfill LFG was lower than that of CH ₄ fraction of 2 nd landfill during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach; - LFG_1 st = LFG_50MW + LFG_Flare - LFG_2 nd = 0 Nm ³ |
| 18/10/2013 | 1hour | Due to rebooting of monitoring system, FT-01 and FT-02 recorded extraordinary value. | Where CH ₄ fraction of 1 st landfill LFG was lower than that of 2 nd landfill during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach; - LFG_1 st = LFG_50MW + LFG_Flare - LFG_2 nd = 0 Nm ³ Most conservative value in entire 9 th monitoring period (0 Nm ³) applied. |
| 22/10/2013 | 4hours | Due to technical problem of FT-01, LFG flow of 1st landfill did not recorded. | |
| 23/10/2013 | 1hour | | |
| 24/10/2013 | 2hours | | |
| 25/10/2013 | 6hours | Due to technical problem on monitoring system, FT-09 recorded extraordinary value. | |
| 26/10/2013 | 10hours | | |
| 29/10/2013 | 2hours | Due to technical problem on monitoring system, FT-07 recorded extraordinary value. | |
| 29/10/2013 | 1hour | Due to technical problem on monitoring system, FT-05 recorded extraordinary value. | |
| 30/10/2013 | 3hours | Due to technical problem on monitoring system, FT-09 recorded extraordinary value. | |
| 30/10/2013 | 1hour | Due to technical problem on monitoring system, GA-01, GA-02, FT-01, FT-02, FT-04~09, PT-02, PT-05, TT-02, TT-03 and TC-01~06 did not recorded. | ○ Most conservative value in entire 9 th monitoring period applied. - GA-01 : 36.3 %, GA-02 : 39.6 % - PT-02 : -1931mmAq, - PT-05 : 0mmAq - TT-02 : 51.0°C, TT-03 : 62.2°C - FT-04~09 : 0 Nm ³ , TC-01~06 : 0°C ○ Where the most conservative value of CH ₄ fraction of 1 st landfill LFG was lower than that of 2 nd landfill during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach;; - LFG_1 st = LFG_50MW + LFG_Flare - LFG_2 nd = 0 Nm ³ |
| 30/10/2013 | 2hours | Due to technical problem on monitoring system, FT-06 and FT-07 recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (0 Nm ³) applied. |
| 31/10/2013 | 8hours | Due to technical problem on monitoring system, FT-09 recorded extraordinary value. | |
| 02/11/2013 | 2hours | Due to technical problem on monitoring system, FT-07 recorded extraordinary value. | |
| 07/11/2013 | 1hour | Due to technical problem on monitoring system, GA-02 and TT-02 recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (39.6%, 51.0°C) applied. |

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| 19/11/2013 | 1hour | Due to technical problem on monitoring system, GA-02, TT-02 and PT-02 recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (39.6%, 51.0°C, -1931 mmAq) applied. |
| 22/11/2013 | 1hour | | |
| 27/11/2013 | 1hour | Due to technical problem on monitoring system, FT-02, GA-02, TT-02 and PT-02 recorded extraordinary value. | <p>○ Most conservative value in entire 9th monitoring period applied.</p> <p>- GA-02 : 39.6 %</p> <p>- PT-02 : -1931mmAq</p> <p>- TT-02 : 51.0 °C</p> <p>○ Where the most conservative value of CH₄ fraction of 2nd landfill LFG was lower than monitored CH₄ fraction of 1st landfill LFG during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach;</p> <p>- LFG_1st = 0 Nm³</p> <p>- LFG_2nd = LFG_50MW + LFG_Flare</p> |
| 28/11/2013 | 1hour | | |
| 04/12/2013 | 1hour | Due to technical problem on monitoring system, GA-02, PT-02 and TT-02 recorded extraordinary value. | Most conservative value in entire 9 th monitoring period applied. |
| 12/12/2013 | 14hours | Due to the network instability of electricity system, WH-05 and WH-06 did not recorded. | <p>- GA-02 : 39.6 %</p> <p>- PT-02 : -1931mmAq</p> <p>- TT-02 : 51.0 °C</p> |
| 12/12/2013 | 2hours | Due to the lightening damage, FT-10 recorded extraordinary value. | Most conservative value in entire 9 th monitoring period applied. |
| 13/12/2013 | 755hours | | <p>The minimum ratio (methane input per electricity generation in 50MW) in normal operation condition is calculated as 0.107 tCH₄/MWh.</p> <p>$LFG_{50MW} = EL_{exp} * 0.107 \text{ tCH}_4/\text{MWh} / CH_4 \text{ density} / wCH_4$</p> |
| 16/12/2013 | 1hour | Due to test of PT-02, Pressure of LFG from 2 nd landfill did not recorded. | Most conservative value in entire 9 th monitoring period (-1931mmAq) applied. |
| 17/12/2013 | 21hours | Due to technical problem on monitoring system (PLC remote I/O sensor failure), PT-02 and TT-02 recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (51.0°C, -1931 mmAq) applied. |
| 18/12/2013 | 1hour | Due to system check and replacement of PLC, GA-02 and FT-02 did not recorded. | <p>○ Most conservative value in entire 9th monitoring period (39.6%) applied.</p> <p>○ Where the most conservative value of CH₄ fraction of 2nd landfill LFG was lower than monitored CH₄ fraction of 1st landfill LFG during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach;</p> <p>- LFG_1st = 0 Nm³</p> <p>- LFG_2nd = LFG_50MW + LFG_Flare</p> |
| 21/12/2013 | 38hours | Due to technical problem on monitoring system (PLC remote I/O sensor failure), GA-02, FT-02, PT-02 and TT-02 recorded extraordinary value. | <p>○ Most conservative value in entire 9th monitoring period applied.</p> <p>- GA-02 : 39.6 %</p> <p>- PT-02 : -1931mmAq</p> <p>- TT-02 : 51.0°C</p> <p>○ Where monitored CH₄ fraction of 1st landfill LFG was lower than most conservative value of CH₄ fraction of 2nd landfill LFG during the monitoring period, following equation used to</p> |

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| | | | <p>calculate LFG flow in order to keep conservative approach</p> <p>- $LFG_1^{st} = LFG_50MW + LFG_Flare$</p> <p>- $LFG_2^{nd} = 0 \text{ Nm}^3$</p> <p>○ Where the most conservative value of CH_4 fraction of 2nd landfill LFG was lower than monitored CH_4 fraction of 1st landfill LFG during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach</p> <p>- $LFG_1^{st} = 0 \text{ Nm}^3$</p> <p>- $LFG_2^{nd} = LFG_50MW + LFG_Flare$</p> |
| 24/12/2013 | 6hour | Due to technical problem on monitoring system (PLC remote I/O sensor failure), FT-02 recorded extraordinary value. | <p>Where CH_4 fraction of 1st landfill LFG was lower than that of 2nd landfill during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach;</p> <p>- $LFG_1^{st} = LFG_50MW + LFG_Flare$</p> <p>- $LFG_2^{nd} = 0 \text{ Nm}^3$</p> |
| 24/12/2013 | 1hour | Due to technical problem on monitoring system (PLC remote I/O sensor failure), GA-02, PT-02 and TT-02 recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (39.6%, 51.0°C, -1931mmAq) applied. |
| 27/12/2013 | 7hours | Due to technical problem on monitoring system (PLC remote I/O sensor failure), FT-02 recorded extraordinary value. | Where CH_4 fraction of 1 st landfill LFG was lower than that of 2 nd landfill during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach; |
| 28/12/2013 | 1hour | Due to condensate water, FT-01 recorded extraordinary value. | - $LFG_1^{st} = LFG_50MW + LFG_Flare$ |
| 29/12/2013 | 1hour | | - $LFG_2^{nd} = 0 \text{ Nm}^3$ |
| 15/01/2014 | 1hour | Due to technical problem on monitoring system, FT-02, GA-02, TT-02 and PT-02 recorded extraordinary value. | <p>○ Most conservative value in entire 9th monitoring period applied.</p> <p>- GA-02 : 39.6 %</p> <p>- PT-02 : -1931mmAq</p> <p>- TT-02 : 51.0°C</p> <p>○ Where the most conservative value of CH_4 fraction of 2nd landfill LFG was lower than monitored CH_4 fraction of 1st landfill LFG during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach;</p> <p>- $LFG_1^{st} = 0 \text{ Nm}^3$</p> <p>- $LFG_2^{nd} = LFG_50MW + LFG_Flare$</p> |
| 17/01/2014 | 1hour | Due to calibration of GA-01, methane fraction of LFG from 1 st landfill recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (36.3%) applied. |
| 20/01/2014 | 1hour | Due to technical problem on monitoring system, GA-01, GA-02, FT-01, FT-02, PT-02 and TT-02 recorded extraordinary value. | <p>○ Most conservative value in entire 9th monitoring period applied.</p> <p>- GA-01 : 36.3 %, GA-02 : 39.6 %</p> <p>- PT-02 : -1931mmAq</p> <p>- PT-05 : 0mmAq</p> <p>- TT-02 : 51°C</p> <p>○ Where the most conservative value of CH_4 fraction of 1st landfill LFG was lower than that of 2nd landfill during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach;;</p> <p>- $LFG_1^{st} = LFG_50MW + LFG_Flare$</p> <p>- $LFG_2^{nd} = 0 \text{ Nm}^3$</p> |

| | | | |
|------------|---------|--|--|
| 27/01/2014 | 1hour | Due to technical problem on monitoring system, FT-02, GA-02 and TT-02 recorded extraordinary value. | <p>○ Most conservative value in entire 9th monitoring period applied.</p> <p>- GA-02 : 39.6 %, TT-02 : 51°C</p> <p>○ Where the most conservative value of CH₄ fraction of 2nd landfill LFG was lower than monitored CH₄ fraction of 1st landfill LFG during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach;</p> <p>- LFG_1st = 0 Nm³</p> <p>- LFG_2nd = LFG_50MW + LFG_Flare</p> |
| 03/02/2014 | 1hour | Due to calibration of GA-01, methane fraction of LFG from 1 st landfill recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (36.3%) applied. |
| 13/02/2014 | 1hour | Due to technical problem on monitoring system, GA-02, TT-02 and PT-02 recorded extraordinary value. | <p>Most conservative value in entire 9th monitoring period applied.</p> <p>- GA-02 : 39.6 %</p> <p>- PT-02 : -1931mmAq</p> <p>- TT-02 : 51.0°C</p> |
| 15/02/2014 | 1hour | Due to technical problem on monitoring system, FT-02, GA-02, TT-02 and PT-02 recorded extraordinary value. | <p>○ Most conservative value in entire 9th monitoring period applied.</p> <p>- GA-02 : 39.6 %</p> <p>- PT-02 : -1931mmAq</p> <p>- TT-02 : 51.0°C</p> <p>○ Where the most conservative value of CH₄ fraction of 2nd landfill LFG was lower than monitored CH₄ fraction of 1st landfill LFG during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach;</p> <p>- LFG_1st = 0 Nm³</p> <p>- LFG_2nd = LFG_50MW + LFG_Flare</p> |
| 20/02/2014 | 1hour | Due to technical problem on monitoring system, GA-02 and TT-02 recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (39.6%, 51.0°C) applied. |
| 22/02/2014 | 1hour | Due to technical problem on monitoring system, GA-02, TT-02 and PT-02 recorded extraordinary value. | <p>Most conservative value in entire 9th monitoring period applied.</p> <p>- GA-02 : 39.6 %</p> <p>- PT-02 : -1931mmAq</p> <p>- TT-02 : 51.0°C</p> |
| 13/03/2014 | 1hour | Due to technical error of TC-05, temperature of #5 flare did not recorded. | Most conservative value in entire 9 th monitoring period (0°C) applied. |
| 22/03/2014 | 8hours | Due to technical problem on monitoring system, FT-01, FT-02, FT-08 and FT-09 recorded extraordinary value. | <p>○ Most conservative value in entire 9th monitoring period applied.</p> <p>- FT-08 & FT-09 : 0 Nm³</p> <p>○ Where CH₄ fraction of 1st landfill LFG was lower than that of 2nd landfill during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach;</p> <p>- LFG_1st = LFG_50MW + LFG_Flare</p> <p>- LFG_2nd = 0 Nm³</p> |
| 22/03/2014 | 15hours | Due to technical problem on monitoring system, TC-05 and TC-06 did not recorded. | Most conservative value in entire 9 th monitoring period (0°C) applied. |
| 22/03/2014 | 17hours | Due to technical problem on monitoring system, GA-01, GA-02, PT-02 and TT-02 did not recorded. | <p>Most conservative value in entire 9th monitoring period applied.</p> <p>- GA-01 : 36.3 %, GA-02 : 39.6 %</p> <p>- PT-02 : -1931mmAq</p> |

| | | | |
|------------|--------|--|--|
| | | | - TT-02 : 51.0°C |
| 22/03/2014 | 3hours | Due to technical problem on monitoring system, TC-01 did not recorded. | Most conservative value in entire 9 th monitoring period (0°C) applied. |
| | 5hours | Due to technical problem on monitoring system, TC-02 did not recorded. | |
| | 2hours | Due to technical problem on monitoring system, TC-03 did not recorded. | |
| | 6hours | Due to technical problem on monitoring system, TC-04 did not recorded. | |
| 26/03/2014 | 6hours | Due to power outage of PLC, FT-02, PT-02 and TT-02 recorded extraordinary value. | <p>○ Most conservative value in entire 9th monitoring period (51.0°C, -1931 mmAq) applied.</p> <p>○ Where CH₄ fraction of 1st landfill LFG was lower than that of 2nd landfill during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach;</p> <p>- LFG_1st = LFG_50MW + LFG_Flare</p> <p>- LFG_2nd = 0 Nm³</p> <p>○ Where CH₄ fraction of 2nd landfill LFG was lower than that of 1st landfill during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach;</p> <p>- LFG_1st = 0 Nm³</p> <p>- LFG_2nd = LFG_50MW + LFG_Flare</p> |
| 01/04/2014 | 1hours | Due to power outage of flow computer, PT-02 and TT-02 recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (51.0°C, -1931 mmAq) applied. |
| 21/04/2014 | 4hours | Due to power outage of PLC, GA-02 recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (39.6%) applied. |
| 21/04/2014 | 5hours | Due to technical problem of PLC, PT-02, TT-02 and FT-02 did not recorded. | <p>○ Most conservative value in entire 9th monitoring period applied.</p> <p>- PT-02 : -1931mmAq</p> <p>- TT-02 : 51.0 °C</p> <p>○ Where CH₄ fraction of 1st landfill LFG was lower than that of 2nd landfill during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach;</p> <p>- LFG_1st = LFG_50MW + LFG_Flare</p> <p>- LFG_2nd = 0 Nm³</p> <p>○ Where CH₄ fraction of 2nd landfill LFG was lower than that of 1st landfill during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach;</p> <p>- LFG_1st = 0 Nm³</p> <p>- LFG_2nd = LFG_50MW + LFG_Flare</p> |
| 25/04/2014 | 1hour | Due to rebooting of monitoring system(MMI Citect), FT-01, FT-02, FT-04 and FT-08 did not recorded. | <p>○ Most conservative value in entire 9th monitoring period applied.</p> <p>- FT-04 & FT-08 = 0 Nm³</p> <p>○ Where CH₄ fraction of 1st landfill LFG was lower than that of 2nd landfill during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach;</p> |

| | | | |
|------------|----------|--|---|
| | | | - $LFG_1^{st} = LFG_50MW + LFG_Flare$ - $LFG_2^{nd} = 0 \text{ Nm}^3$ |
| 28/04/2014 | 402hours | Due to periodic maintenance of 50MW power plant, it was stopped. | Where the plant was in overhaul, 0 Nm^3 applied for LFG flow of 50MW power plant. |
| 26/05/2014 | 33hours | Due to maintenance of PLC, GA-02 recorded extraordinary value. | Most conservative value in entire 9 th monitoring period (39.6%) applied. |
| 26/05/2014 | 10hours | Due to maintenance of PLC, PT-02 and TT-02 recorded extraordinary value. | Most conservative value in entire 9 th monitoring period applied. - PT-02 : -1931mmAq - TT-02 : 51.0 °C |
| 26/05/2014 | 9hours | Due to maintenance of PLC, FT-02 recorded extraordinary value. | Where CH_4 fraction of 2 nd landfill LFG was lower than that of 1 st landfill during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach; |
| 27/05/2014 | 2hours | Due to maintenance of PLC, FT-01 recorded extraordinary value. | - $LFG_1^{st} = 0 \text{ Nm}^3$ - $LFG_2^{nd} = LFG_50MW + LFG_Flare$ |
| 27/05/2014 | 3hours | Due to maintenance of PLC, PT-02, TT-02 and FT-02 recorded extraordinary value. | ○ Most conservative value in entire 9 th monitoring period applied. - PT-02 : -1931mmAq, TT-02 : 51.0°C ○ Where CH_4 fraction of 2 nd landfill LFG was lower than that of 1 st landfill during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach; - $LFG_1^{st} = 0 \text{ Nm}^3$ - $LFG_2^{nd} = LFG_50MW + LFG_Flare$ |
| 04/06/2014 | 161hours | Due to technical problem of PLC, GA-02, PT-02, TT-02 and FT-02 recorded extraordinary value. | ○ Most conservative value in entire 9 th monitoring period applied. - GA-02 : 39.6 % - PT-02 : -1931mmAq - TT-02 : 51.0°C ○ Where monitored CH_4 fraction of 1 st landfill LFG was lower than most conservative value of CH_4 fraction of 2 nd landfill LFG during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach - $LFG_1^{st} = LFG_50MW + LFG_Flare$ - $LFG_2^{nd} = 0 \text{ Nm}^3$ ○ Where the most conservative value of CH_4 fraction of 2 nd landfill LFG was lower than monitored CH_4 fraction of 1 st landfill LFG during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach - $LFG_1^{st} = 0 \text{ Nm}^3$ - $LFG_2^{nd} = LFG_50MW + LFG_Flare$ |
| 11/06/2014 | 2hours | Due to calibration of GA-02, methane fraction of LFG from 2nd landfill did not recorded. | Most conservative value in entire 9 th monitoring period (39.6%) applied. |
| 20/06/2014 | 1hour | Due to rebooting of monitoring system(MMI Citect), FT-01 and FT-02 recorded extraordinary value. | Where CH_4 fraction of 1 st landfill LFG was lower than that of 2 nd landfill during the monitoring period, following equation used to calculate LFG flow in order to keep conservative approach; - $LFG_1^{st} = LFG_50MW + LFG_Flare$ - $LFG_2^{nd} = 0 \text{ Nm}^3$ |

| | | | |
|------------|--------|---|--|
| 26/06/2014 | 2hours | Due to maintenance of gas analyzer, GA-02 recorded extraordinary value. | Most conservative value in entire 9th monitoring period (39.6%) applied. |
|------------|--------|---|--|

B.2. Post registration changes

B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

>>

Not applicable

B.2.2. Corrections

>>

There was a request for review made by CDM EB³ during 1st request for issuance with regard to the 9.88MW power plant. In accordance with the request for review, emissions from the electricity generated by the existing 9.88MW power plant are regarded as baseline emissions⁴. It has been applied for the calculation of emissions reduction since 1st verification. Additionally, ex-ante calculation of emission reductions, parameters and project participant were added. And start date of crediting period was applied as registration date.

It is approved by UNFCCC on 25 Sept. 2013, via approval of Post Registration Change (PRC-0941-002).

B.2.3. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

>>

Korea government has been regulating total emission of SOx⁵ and Sudokwon Landfill Site is subject to government supervision. Ecoenergy, the operator of 50MW power plant, made a contract for installation of the desulfurization system on 30/04/2011 and it is expected to be in operation on 31/08/2014. It is installed in between the landfill site and the 50MW power plant. Accordingly the monitoring plan has changed due to adoption of desulfurization system.

The request for approval of Post Registration Change (PRC-0941-0026) was approved by UNFCCC on 25/09/2013.

B.2.4. Changes to project design of registered project activity

>>

Desulfurization system is newly adopted due to Korea government's regulation of restriction on total emission of SOx. Accordingly, technology for desulfurization system is additionally adopted and project boundary has been changed.

It is approved by UNFCCC on 25/09/2013, via approval of Post Registration Change (PRC-0941-002)

³ Request for review made by CDM EB

<http://cdm.unfccc.int/Projects/DB/DNV-CUK1171534717.86/iProcess/TUEVSUED1208270995.94/>

[Review/PTFL27IU6U3QJIMC9WF8MZSN4F0HM7/display](http://cdm.unfccc.int/Projects/DB/DNV-CUK1171534717.86/iProcess/TUEVSUED1208270995.94/Review/PTFL27IU6U3QJIMC9WF8MZSN4F0HM7/display)

⁴ Response to the request for review by TÜV SÜD

<http://cdm.unfccc.int/UserManagement/FileStorage/CSVDHT7LAQW60Z8B5MKI4YN9RFPO2G>

⁵ Enforcement ordinance of Special Act on Seoul Metropolitan Air Quality Improvement (No. 236, enforced as of 01/07/2007)

<http://www.law.go.kr/LSW/lsInfoP.do?lsiSeq=79525&ancYd=20070628&ancNo=00236&efYd=20070701&nwJoYnInfo=N&efGubun=Y&chrClsCd=010202#0000>

⁶ PRC-0941-002: Sudokwon Landfill Gas Electricity Generation Project (50MW) - Request for post-registration changes
<http://cdm.unfccc.int/PRCContainer/DB/prcp831009840/view>

B.2.5. Changes to start date of crediting period

>>

The start date of the crediting period in the registered PDD (01 April 2007) was prior to the date of registration (30 April 2007), thus the date changed to the registration date.

It is approved by UNFCCC on 25 Sept. 2013, via approval of Post Registration Change (PRC-0941-002).

B.2.6. Types of changes specific to afforestation or reforestation project activity

>>Not applicable

SECTION C. Description of monitoring system

>>

Data Collection Procedures

Monitoring and emission reductions calculation are made in accordance with monitoring plan in PDD, internal data handling procedure as well as approved methodologies.

All continuously measured parameters (flow and CH₄ fraction of LFG, flaring temperature, amount of exported & imported electricity, etc.) were recorded electronically via a data logger such as Citect MMI and Honeywell Hyperion DCS, which have the capacity to aggregate and print collected data at fixed frequencies.

The data are measured and collected at each control system of the 50MW power plant, central flaring facility and internal electricity monitoring system. Data aggregation and emission reductions calculation has been made on a daily basis. The result of calculation is reported monthly and raw data are archived every two months. In order to inspect the status of capturing facility, composition, flow, pressure and temperature of each capturing facility checked on daily basis. Gas flow and other related parameters are recorded electronically on hourly basis. Every recorded electronic data are also recorded in handwritten form.



Figure 4 The control room of 50MW power plant

LFG flow

Total of 9 continuous flow meters were installed for monitoring LFG flow. Captured LFG is monitored by FT-01 & FT-02, which installed at the end of the 1st and 2nd landfill gas recovery line respectively. Combusted LFG is checked by FT-04 ~ 10, where FT-04 ~ 09 is for each flare (total of 6) and FT-10 is for 50MW power plant. Several temperature and pressure meters were also installed in order to check the system stability and (or) to convert unit from ACM (Actual Cubic Meter) to NCM (Normal Cubic Meter).

Related meters

| ID | Serial Number | Manufacturer | Description | Remarks |
|-----------------|---------------|----------------|---|--|
| FT-01 | 27051601 | EPI | 1 st landfill | Thermal mass type |
| FT-02 | 9C03490109D | Endress Hauser | 2 nd landfill | V-cone type |
| FT-04 | 28031701 | EPI | #1 flare | Thermal mass type |
| FT-05 | 28012903 | EPI | #2 flare | |
| FT-06 | 28042402 | EPI | #3 flare | |
| FT-07 | 28042401 | EPI | #4 flare | |
| FT-08 | 28012904 | EPI | #5 flare | |
| FT-09 | 28031702 | EPI | #6 flare | |
| FT-10 | 465 | GE Panametrics | 50MW power plant | Ultrasonic type |
| 700A | 28031703 | EPI | Reserve meter for all EPI meters | Thermal mass type |
| 900A | 26050201 | EPI | Reserve meter for all EPI meters | |
| FT-03 | 28012905 | EPI | Reserve meter for #4 flare | |
| FT-08 (reserve) | A1F3913T | Fuji Electrics | Reserve meter for #5 flare | Pitot-tube type |
| TT-02 | WS1025016 | Wise | Temperature of LFG captured from 2 nd landfill | For system stability check and (or) unit conversion from ACM(Actual Cubic Meter) to NCM(Normal Cubic Meter), if needed |
| TT-03 | A6B3331T | Fuji Electrics | Temperature of LFG which fed to overall flaring facility. | |
| TT-10 | WS1025017 | WISE | Temperature of LFG which fed to 50MW power plant | |
| PT-02 | 3940244 | AUTROL | Pressure of LFG captured from 2 nd landfill | |
| PT-05 | A4J4159T | Fuji Electrics | Pressure of LFG which fed to overall flaring facility | |
| PT-10 | WS1025015 | WISE | Pressure of LFG which fed to 50MW power plant | |

CH₄ fraction

The fraction of CH₄ in LFG was measured by using continuous NDIR type infrared gas analyzers (total of 2). Data were recorded every hour in electronic method. Only CH₄ is considered as GHG emission in the CDM monitoring procedure.

Related meters

| ID | Serial Number | Manufacturer | Description | Remarks |
|-----------------|---------------|----------------|--|---|
| GA-01 | A2B4359T | Fuji Electrics | 1 st landfill | |
| GA-02 | A4J0063T | Fuji Electrics | 2 nd landfill | |
| GA-03 (Reserve) | N6E2427T | Fuji Electrics | Reserve meter for 1 st landfill | After detachment of GA-01 for technical problem, GA-03(Reserve) was installed at GA-01's location from 31/07/2013 to 05/08/2013 |

Electricity exported & imported

The amount of imported electricity which used for LFG capturing and flaring was recorded electronically by internal electricity surveillance system of SLC. Imported electricity for 50MW

power plant was monitored by watt-hour meter which managed and monthly invoiced by Korea Electric Power Corporation (KEPCO).

EL_{EX.LPG}, mentioned in PDD B.7.1 as total amount of electricity exported out of the project boundary, is a typing error of EL_{EX.LFG}. The amount of exported electricity was recorded electronically by watt-hour meter which is connected to Korea Power Exchange (KPX) and cross-checked by relative documents from KPX.

Related meters

| ID | Serial Number | Manufacturer | Description | Remarks |
|-------|----------------|---------------------------------|---|---------------------------------|
| WH-01 | PR-0411A055-02 | Seochang Electric Communication | Exported electricity (50MW power plant) | Cross-checked with KPX document |
| WH-05 | 1104001 | NEOPIS | Imported electricity (2 nd landfill blower facility) | |
| WH-06 | 10JAJ073(24) | DIK | Imported electricity (LFG mgt. centre) | |

Flare efficiency

Applied methodology ACM0001 (Version 04) stipulates that efficiency of flare (FE) shall be measured in a yearly basis if enclosed flare is used and in case the yearly measurement of FE is not performed, default value of 90% should be used.

Considering the operational condition, the content analysis of each flare's exhaust gas was conducted by 3rd party (Institute of Industrial Pollution Co. Ltd) in 07/08/2013, 01/10/2013, 12/12/2013, 08/04/2014 and 26/05/2014.

| | Date of analysis | Result of analysis(ppm CH ₄) | FE application over 600°C |
|----------|-----------------------|--|---------------------------|
| #1 Flare | 07/08/2013 (at 600°C) | 7.92 | 99.9% |
| | 01/10/2013 (at 600°C) | 59.20 | |
| | 26/05/2014 (at 601°C) | 4.41 | |
| #2 Flare | 07/08/2013 (at 600°C) | 51.77 | 99.9% |
| | 01/10/2013 (at 600°C) | 9.03 | |
| | 08/04/2014 (at 616°C) | 15.97 | |
| | 26/05/2014 (at 600°C) | 6.24 | |
| #3 Flare | 07/08/2013 (at 598°C) | 43.75 | 99.9% |
| | 01/10/2013 (at 600°C) | 5.98 | |
| | 26/05/2014 (at 602°C) | 5.94 | |
| #4 Flare | 07/08/2013 (at 600°C) | 53.83 | 99.9% |
| | 01/10/2013 (at 598°C) | 12.66 | |
| | 26/05/2014 (at 600°C) | 30.55 | |
| #5 Flare | 07/08/2013 (at 600°C) | 61.84 | 99.9% |
| | 01/10/2013 (at 600°C) | 3.19 | |
| | 12/12/2013 (at 600°C) | 11.12 | |
| | 26/05/2014 (at 601°C) | 7.17 | |
| #6 Flare | 07/08/2013 (at 600°C) | 57.88 | 99.9% |
| | 01/10/2013 (at 600°C) | 18.74 | |
| | 12/12/2013 (at 600°C) | 9.16 | |
| | 08/04/2014 (at 606°C) | 10.34 | |
| | 26/05/2014 (at 601°C) | 14.89 | |

Table 5 Summary of flare exhaust gas analysis results

In ACM0001 (Version 04), FE should be calculated by analyzing methane contents of the flare emissions at least on a yearly basis for enclosed flares. Considering the frequency stipulated in methodology, above FEs are appropriately applied. Furthermore, as explained earlier, FE of 0%

applied when the temperature is below 600°C even the above results provide that there were no methane at 600°C of flaring temperature and this is conservative approach.

Related meters

| ID | Serial Number | Manufacturer | Description | Remarks |
|-------|---------------|--------------|---------------------------------|---------|
| TC-01 | 012902 | WOO JIN | Flaring temperature of #1 flare | |
| TC-02 | 012905 | WOO JIN | Flaring temperature of #2 flare | |
| TC-03 | 012908 | WOO JIN | Flaring temperature of #3 flare | |
| TC-04 | 012910 | WOO JIN | Flaring temperature of #4 flare | |
| TC-05 | 012912 | WOO JIN | Flaring temperature of #5 flare | |
| TC-06 | 012915 | WOO JIN | Flaring temperature of #6 flare | |

Calibration of meters

All meters were calibrated by authorized 3rd party or manufacturer. In case the calibration was made after the required calibration frequency, paragraph 283 of “Clean Development Mechanism Validation and Verification Standard (Version 07.0)” was applied during the corresponding period. Detailed information is as follows;

| ID | Date of Last Calibration | Calibration Due Date | Date of Calibration | Remarks |
|-----------------|--------------------------|----------------------|---------------------|---|
| FT-01 | 13/05/2013 | 12/05/2014 | 03/07/2014 | P 283 (a) applied from “calibration due date” to “date of calibration”. |
| FT-02 | 06/11/2012 | 05/11/2013 | 01/10/2013 | |
| FT-04 | 07/11/2012 | 06/11/2013 | 16/08/2013 | |
| FT-05 | 07/11/2012 | 06/11/2013 | 16/08/2013 | |
| FT-06 | 13/05/2013 | 12/05/2014 | 03/07/2014 | P 283 (a) applied from “calibration due date” to “date of calibration”. |
| FT-07 | 09/10/2012 | 08/10/2013 | 15/10/2013 | P 283 (a) applied from “calibration due date” to “date of calibration”. |
| FT-08 | 07/11/2012 | 06/11/2013 | 16/08/2013 | |
| FT-09 | 09/10/2012 | 08/10/2013 | 15/10/2013 | P 283 (a) applied from “calibration due date” to “date of calibration”. |
| FT-10 | 15/06/2012 | 14/06/2013 | 09/07/2013 | P 283 (a) applied from “calibration due date” to “date of calibration”. |
| 700A | 07/11/2012 | 06/11/2013 | 15/10/2013 | |
| 900A | 09/10/2012 | 08/10/2013 | 16/08/2013 | |
| FT-08 (reserve) | 22/10/2012 | 21/10/2013 | 02/12/2013 | P 283 (a) applied from “calibration due date” to “date of calibration”. |
| FT-03 | 07/11/2012 | 06/11/2013 | 15/10/2013 | |
| GA-01 | 17/10/2012 | 16/10/2013 | 30/09/2013 | |
| GA-02 | 17/10/2012 | 16/10/2013 | 30/09/2013 | |
| GA-03 (Reserve) | 10/10/2012 | 09/10/2013 | 30/09/2013 | |
| TT-02 | 30/10/2012 | 29/10/2013 | 26/09/2013 | |
| TT-03 | 12/10/2012 | 11/10/2013 | 26/09/2013 | |
| TT-10 | 30/10/2012 | 29/10/2013 | 26/09/2013 | |
| PT-02 | 06/11/2012 | 05/11/2013 | 26/09/2013 | |
| PT-05 | 22/10/2012 | 21/10/2013 | 11/10/2013 | |
| PT-10 | 12/11/2012 | 11/11/2013 | 26/09/2013 | |
| WH-01 | 28/06/2010 | 27/06/2014 | 09/04/2014 | |
| WH-05 | 14/02/2011 | 12/02/2018 | | |
| WH-06 | 05/04/2011 | 03/04/2018 | | |
| TC-01 | 28/01/2013 | 27/01/2014 | 27/11/2013 | |

| | | | | |
|-------|------------|------------|------------|--|
| TC-02 | 28/01/2013 | 27/01/2014 | 27/11/2013 | |
| TC-03 | 28/01/2013 | 27/01/2014 | 27/11/2013 | |
| TC-04 | 28/01/2013 | 27/01/2014 | 27/11/2013 | |
| TC-05 | 28/01/2013 | 27/01/2014 | 27/11/2013 | |
| TC-06 | 28/01/2013 | 27/01/2014 | 27/11/2013 | |

Fossil fuel usage

The purchased amount of LPG, which evidenced by invoices from 2011 to 2014, was regarded as LPG usage.

Data Management

The accumulated data from control station was analyzed for the verification of this project. All required guides were stated in SLC's internal procedure. These include data handling protocol and monitoring procedure, etc.

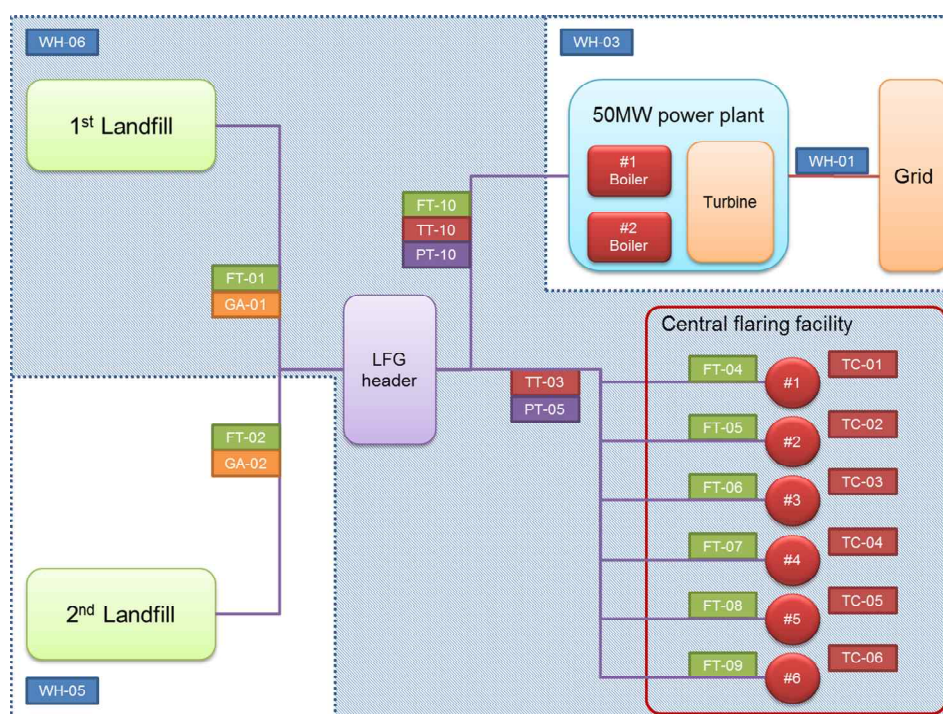


Figure 5 Line Diagram of Monitoring Points

Organizational Structure

SLC is responsible for all CDM monitoring related works. It supervises the private operator of 50MW power plant, Ecoenergy, which also commissioned to operate central flaring facility and LFG capturing system of 1st and 2nd landfill from SLC.

Ecoenergy is responsible for operation of 50MW power plant, central flaring facility and LFG capturing system of 1st and 2nd landfill.

Roles and Responsibilities of Personnel

| Organization | Department | Position | Name | Roles |
|--------------|--|----------|---------------|--|
| SLC | President | | Jae Yong Song | Approval of monthly calculation result & monitoring report |
| | Executive Director (Project Development) | | NakBin Kim | Approval calculation result & monitoring report |

| | | | | |
|-----------|----------------------------------|-----------------|----------------|---|
| | Climate Change Business Division | General Manager | JongWan Kim | Approval calculation result & monitoring report (01/07/2013~12/01/2014) |
| | | | HyeonJu Kim | Approval calculation result & monitoring report (13/01/2014~) |
| | | Director | LaeBong Han | Approval of daily calculation result & supervision of facility management |
| | | Staff | WonGu Hwang | Data analysis, calculation & arrangement of monitoring report |
| | | Staff | HyunSeong Shin | Data aggregation & facility management (01/07/2013~12/01/2014) |
| | | | ByungChul Shin | Data aggregation & facility management(13/01/2014~) |
| Ecoenergy | CEO | | DongIl Cho | Management & operation of 50MW power plant & central flaring facility |
| | Power Generation Div. | Team manager | KyungYong Song | Management & operation of 50MW power plant |
| | Facility Management Centre | Part manager | YongMin Kim | Management & operation of central flaring facility |

Table 6 Major responsible personnel and its rules

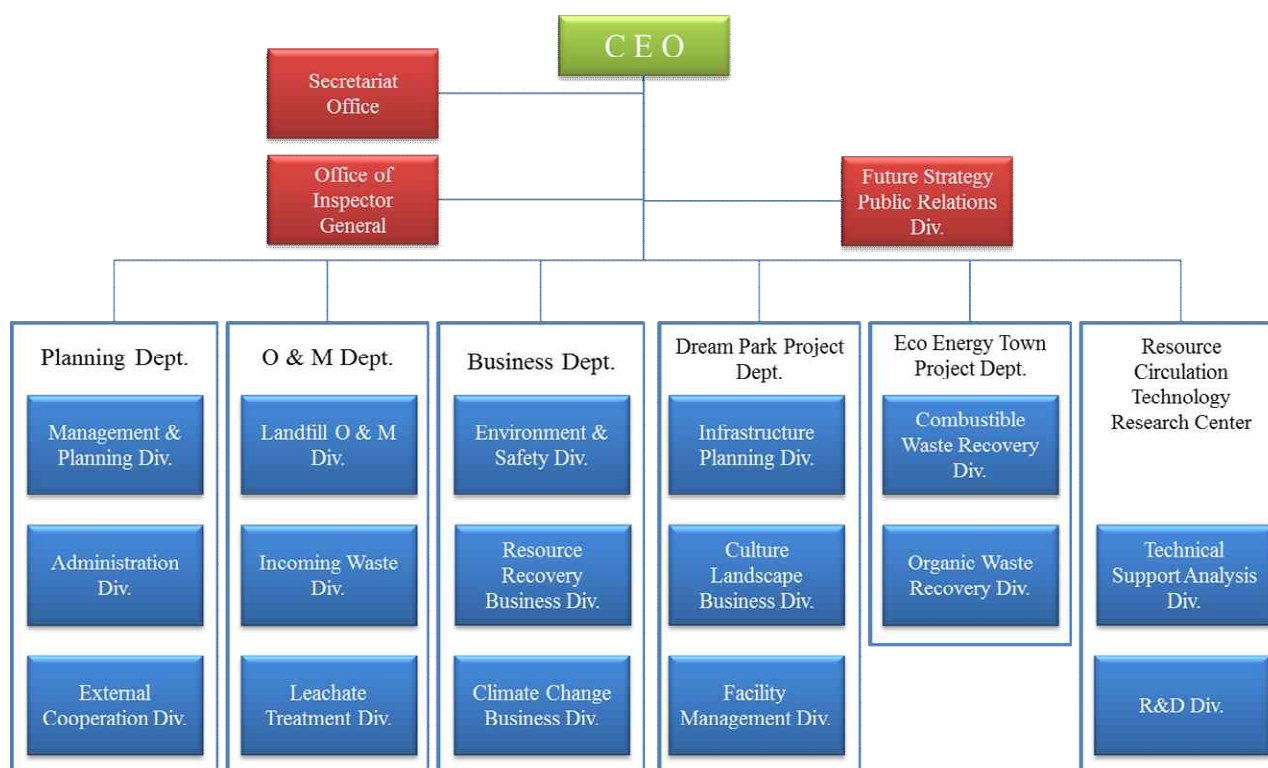


Figure 6 Organization Chart of SLC

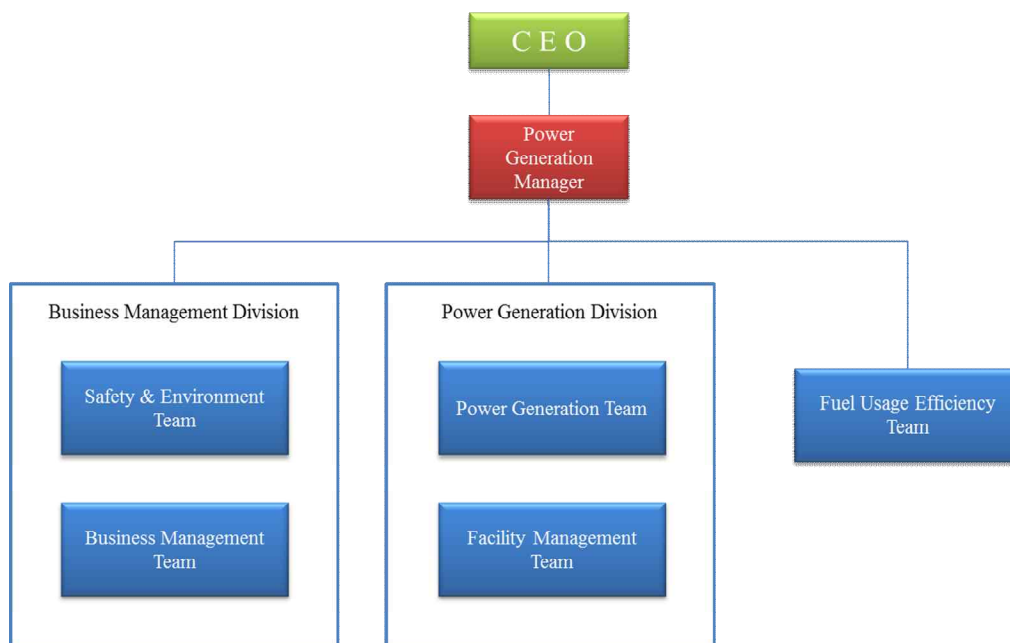


Figure 7 Organization Chart of Ecoenergy

Emergency Procedures

In order to handle emergency situations, SLC prepares internal 'Emergency Procedures', which updated every year to compensate changes of site conditions.

For emergency in 50MW power plant, Ecoenergy includes emergency plan in its 'Maintenance & Operational Plan' which also updated and reported to SLC on a yearly basis

| | Fire | LFG leakage |
|-----------------|---|---|
| Duty | Prevent fire expansion and extinguishing | Prevent fire and (or) explosion |
| Report system | Discoverer -> Managing partner -> General manager -> President | Discoverer -> General manager -> Executive Director -> President |
| Countermeasures | <ul style="list-style-type: none"> - Use fire extinguisher located nearby road - Stop LFG capture - Use watering cart - Use soil to prevent O₂ supply - Contact neighbouring fire station (Geom am 032-568-7119, Seo bu 032-565-8119) | <ul style="list-style-type: none"> - Stop LFG capture - Isolate leaking part from other capturing pipeline - Isolate leaking part from flammable things - Contact neighbouring fire station (Geom am 032-568-7119, Seo bu 032-565-8119) if needed |
| Check frequency | Per day | Per month |

Table 7 Typical emergency cases and its countermeasures

SECTION D. Data and parameters**D.1. Data and parameters fixed ex ante or at renewal of crediting period**

| | |
|--------------------------|---|
| Data / Parameter: | GWP_{CH₄} |
| Unit: | tCO₂/tCH₄ |
| Description: | Global warming potential for methane (CH ₄) |
| Source of data: | Default value in IPCC & ACM0001 (Version 04) |
| Value(s) applied: | 25 |
| Purpose of data: | Calculation of baseline emissions |
| Additional comment: | |

| | |
|--------------------------|--|
| Data / Parameter: | AF |
| Unit: | % |
| Description: | Adjustment factor for calculating baseline emission. |
| Source of data: | PDD |
| Value(s) applied: | 61.15 |
| Purpose of data: | Calculation of baseline emissions |
| Additional comment: | Ex-ante calculation in accordance with ACM0001 (Version 04) for entire crediting period. |

| | |
|--------------------------|--|
| Data / Parameter: | EF |
| Unit: | tCO₂/MWh |
| Description: | Grid CO ₂ emission factor |
| Source of data: | KEPCO Electric Statistics |
| Value(s) applied: | 0.5666 |
| Purpose of data: | Calculation of baseline emissions |
| Additional comment: | Ex-ante calculation in accordance with ACM0002 (Version 06) for entire crediting period. |

| | |
|--------------------------|--|
| Data / Parameter: | EF_{OM} |
| Unit: | tCO₂/MWh |
| Description: | CO ₂ operating margin emission factor of the grid |

| | |
|---------------------|--|
| Source of data: | KEPCO Electric Statistics |
| Value(s) applied: | 0.7652 |
| Purpose of data: | Calculation of baseline emissions |
| Additional comment: | Ex-ante calculation in accordance with ACM0002 (Version 06) for entire crediting period. |

| | |
|--------------------------|--|
| Data / Parameter: | EF_{BM} |
| Unit: | tCO₂/MWh |
| Description: | CO ₂ build margin emission factor of the grid |
| Source of data: | KEPCO Electric Statistics |
| Value(s) applied: | 0.3679 |
| Purpose of data: | Calculation of baseline emissions |
| Additional comment: | Ex-ante calculation in accordance with ACM0002 (Version 06) for entire crediting period. |

| | |
|--------------------------|---------------------------------------|
| Data / Parameter: | D_{CH₄} |
| Unit: | tCH₄/Nm³ |
| Description: | Density of methane |
| Source of data: | Default value in ACM0001 (Version 04) |
| Value(s) applied: | 0.0007168 |
| Purpose of data: | Calculation of baseline emissions |
| Additional comment: | N/A |

| | |
|--------------------------|---|
| Data / Parameter: | BE_{9.88MW} |
| Unit: | tCO₂/day |
| Description: | Baseline emissions from 9.88MW power plant |
| Source of data: | Calculated |
| Value(s) applied: | 122.27 |
| Purpose of data: | Calculation of baseline emissions |
| Additional comment: | The maximum theoretical value from 9.88MW power plant is calculated as 122.27 tCO ₂ /day(9.88MW x 91% x 8760hours/yr x 1yr/365days x 0.5666tCO ₂ /MW) according to the technical specification of the facilities. |

D.2. Data and parameters monitored

| Data / Parameter: | LFG_{total,y} | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---------------|----------------|---------------|---|----------|------------------------------|----------------|--------------------------------|---------------|--------------|-----------------------|--------|--------------------------|------------------------|--------------|--|-----|--------------|--------------|--|-----|--------------|--------------|--|-----|--------------|--------------|--|----------|--------------|--------------|--|-----|--------------|--------------|--|-----|--------------|--------------|--|-----|--------------|--------------|--|-----|--------------|--------------|--|-----|--------------|--------------|--|-------|---------------|---------------|--|
| Unit: | Nm³ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Description: | Total amount of landfill gas captured in year y | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Measured/ Calculated /Default: | Measured by flow meters (total of 2) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Source of data: | MMI data; The two flow meters, FT-01 and FT-02 are continuously measure the captured LFG from 1 st and 2 nd landfill. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Value(s) of monitored parameter: | <table border="1"> <thead> <tr> <th></th><th>Measured Value</th><th>Applied Value</th><th>Remarks</th></tr> </thead> <tbody> <tr><td>Jul 2013</td><td>29,472,249.0</td><td>25,981,974.7</td><td></td></tr> <tr><td>Aug</td><td>29,519,948.0</td><td>26,260,304.5</td><td></td></tr> <tr><td>Sep</td><td>23,623,961.0</td><td>21,980,932.6</td><td></td></tr> <tr><td>Oct</td><td>22,130,596.0</td><td>21,293,573.7</td><td></td></tr> <tr><td>Nov</td><td>26,779,063.0</td><td>25,502,630.1</td><td></td></tr> <tr><td>Dec</td><td>25,877,841.0</td><td>19,105,620.4</td><td></td></tr> <tr><td>Jan 2014</td><td>27,342,066.0</td><td>20,897,714.4</td><td></td></tr> <tr><td>Feb</td><td>23,630,198.0</td><td>21,551,880.6</td><td></td></tr> <tr><td>Mar</td><td>22,843,680.0</td><td>21,768,829.3</td><td></td></tr> <tr><td>Apr</td><td>23,941,463.0</td><td>21,404,141.5</td><td></td></tr> <tr><td>May</td><td>24,936,685.0</td><td>23,929,193.4</td><td></td></tr> <tr><td>Jun</td><td>19,511,368.0</td><td>23,581,677.6</td><td></td></tr> <tr><td>Total</td><td>299,609,118.0</td><td>273,258,472.8</td><td></td></tr> </tbody> </table> <p>For applied value, please refer to the worksheet of '04_LFG' of 'SLC CDM Data Workbook Phase 9'.</p> <p>For measured value, please refer to the worksheet of '04_0_LFG(Raw data)' of 'SLC CDM Data Workbook Phase 9'</p> | | Measured Value | Applied Value | Remarks | Jul 2013 | 29,472,249.0 | 25,981,974.7 | | Aug | 29,519,948.0 | 26,260,304.5 | | Sep | 23,623,961.0 | 21,980,932.6 | | Oct | 22,130,596.0 | 21,293,573.7 | | Nov | 26,779,063.0 | 25,502,630.1 | | Dec | 25,877,841.0 | 19,105,620.4 | | Jan 2014 | 27,342,066.0 | 20,897,714.4 | | Feb | 23,630,198.0 | 21,551,880.6 | | Mar | 22,843,680.0 | 21,768,829.3 | | Apr | 23,941,463.0 | 21,404,141.5 | | May | 24,936,685.0 | 23,929,193.4 | | Jun | 19,511,368.0 | 23,581,677.6 | | Total | 299,609,118.0 | 273,258,472.8 | |
| | Measured Value | Applied Value | Remarks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jul 2013 | 29,472,249.0 | 25,981,974.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aug | 29,519,948.0 | 26,260,304.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sep | 23,623,961.0 | 21,980,932.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Oct | 22,130,596.0 | 21,293,573.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nov | 26,779,063.0 | 25,502,630.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec | 25,877,841.0 | 19,105,620.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jan 2014 | 27,342,066.0 | 20,897,714.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Feb | 23,630,198.0 | 21,551,880.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mar | 22,843,680.0 | 21,768,829.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Apr | 23,941,463.0 | 21,404,141.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| May | 24,936,685.0 | 23,929,193.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jun | 19,511,368.0 | 23,581,677.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 299,609,118.0 | 273,258,472.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Monitoring equipment: | <table border="1"> <tr><td>Item name</td><td>FT-01</td></tr> <tr><td>Coverage</td><td>LFG flow of 1st landfill from 01/07/2013 to 27/05/2014</td></tr> <tr><td>Type</td><td>Thermal mass type flow meter</td></tr> <tr><td>Accuracy class</td><td>±[1% RDG +(0.5%FS + 0.02%/°C)]</td></tr> <tr><td>Serial number</td><td>27051601</td></tr> <tr><td>Calibration frequency</td><td>1 year</td></tr> <tr><td>Date of last calibration</td><td>13/05/2013, 03/07/2014</td></tr> <tr><td>Validity</td><td>Valid from 13/05/2013 to 12/05/2014 In order to deal with the uncertainty caused by delayed calibration, -2.324% of maximum permissible error applied in accordance with "Validation and Verification Standard (version 07.0)" from 13/05/2014 to 27/05/2014.</td></tr> </table> | Item name | FT-01 | Coverage | LFG flow of 1 st landfill from 01/07/2013 to 27/05/2014 | Type | Thermal mass type flow meter | Accuracy class | ±[1% RDG +(0.5%FS + 0.02%/°C)] | Serial number | 27051601 | Calibration frequency | 1 year | Date of last calibration | 13/05/2013, 03/07/2014 | Validity | Valid from 13/05/2013 to 12/05/2014 In order to deal with the uncertainty caused by delayed calibration, -2.324% of maximum permissible error applied in accordance with "Validation and Verification Standard (version 07.0)" from 13/05/2014 to 27/05/2014. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Item name | FT-01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | LFG flow of 1 st landfill from 01/07/2013 to 27/05/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type | Thermal mass type flow meter | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Accuracy class | ±[1% RDG +(0.5%FS + 0.02%/°C)] | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serial number | 27051601 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration frequency | 1 year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of last calibration | 13/05/2013, 03/07/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Validity | Valid from 13/05/2013 to 12/05/2014 In order to deal with the uncertainty caused by delayed calibration, -2.324% of maximum permissible error applied in accordance with "Validation and Verification Standard (version 07.0)" from 13/05/2014 to 27/05/2014. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | |
|--|--|--|
| Monitoring equipment: | Item name | 700A |
| | Coverage | LFG flow of 1 st landfill from 27/05/2014 to 30/06/2014 (temporally installed in order to prevent measuring gap caused by technical problem) |
| | Type | Thermal mass type flow meter |
| | Accuracy class | ±[1% RDG +(0.5%FS + 0.02%/°C)] |
| | Serial number | 28031703 |
| | Calibration frequency | 1 year |
| | Date of last calibration | 07/11/2012, 15/10/2013 |
| | Validity | Valid from 07/11/2012 to 14/10/2014. |
| | Item name | FT-02 |
| | Coverage | LFG flow of 2 nd landfill from 01/07/2013 to 25/09/2013 and from 07/10/2013 to 30/06/2014 |
| | Type | V-cone type flow meter |
| | Accuracy class | ±0.075% |
| | Serial number | 9C03490109D |
| | Calibration frequency | 1 year |
| | Date of last calibration | 06/11/2012, 01/10/2013 |
| | Validity | Valid from 06/11/2012 to 30/09/2014 |
| Measuring/Reading/ Recording frequency: | Continuous measuring & reading, hourly recording | |
| Calculation method (if applicable): | (FT-01) or (700A) + (FT-02) | |
| QA/QC procedures: | State-check is made by responsible staff of SLC on a daily basis Regular maintenance is made by staff of Ecoenergy Periodically calibrated by approved 3 rd party authority or manufacturer | |
| Purpose of data: | Calculation of baseline emissions | |
| Additional comment: | | |

| | |
|---------------------------------------|--|
| Data / Parameter: | LFG_{flare,y} |
| Unit: | Nm³ |
| Description: | Amount of landfill gas which flared in year y |
| Measured/ Calculated / Default: | Measured by flow meters (total of 6) |
| Source of data: | MMI data; The six flow meters, FT-04 to FT-09 are continuously measure the LFG flow of each flare |

| Value(s) of monitored parameter: | Measured Value | Applied Value | Remarks | |
|----------------------------------|----------------|---------------|---------------|--|
| | Jul 2013 | 8,756,949.0 | 8,756,949.0 | |
| | Aug | 6,812,292.0 | 6,772,645.2 | |
| | Sep | 16,690,933.0 | 16,369,915.8 | |
| | Oct | 26,305,591.0 | 25,722,753.0 | |
| | Nov | 15,940,836.0 | 15,935,620.0 | |
| | Dec | 9,840,185.0 | 9,840,185.0 | |
| | Jan 2014 | 8,110,479.0 | 8,110,479.0 | |
| | Feb | 6,913,354.0 | 6,913,354.0 | |
| | Mar | 6,608,975.0 | 6,608,975.0 | |
| | Apr | 7,819,336.0 | 7,819,336.0 | |
| | May | 15,001,022.0 | 14,967,649.0 | |
| | Jun | 4,700,560.0 | 4,700,560.0 | |
| | Total | 133,500,512.0 | 132,518,421.0 | |

For applied value, please refer to the worksheet of '07_LFG_flare' of 'SLC CDM Data Workbook Phase 9'

For measured value, please refer to the worksheet of '07_0_LFG_flare(Raw data)' of 'SLC CDM Data Workbook Phase 9'

| Monitoring equipment: | |
|--------------------------|--|
| Item name | FT-04 |
| Coverage | LFG flow of #1 flare from 01/07/2013 to 11/08/2013 and from 27/08/2013 to 30/06/2014 |
| Type | Thermal mass type flow meter |
| Accuracy class | $\pm[1\% \text{ RDG} + (0.5\% \text{ FS} + 0.02\% / ^\circ\text{C})]$ |
| Serial number | 28031701 |
| Calibration frequency | 1 year |
| Date of last calibration | 07/11/2012, 16/08/2013, 03/07/2014 |
| Validity | Valid from 07/11/2012 to 02/07/2015 |
| Item name | FT-05 |
| Coverage | LFG flow of #2 flare |
| Type | Thermal mass type flow meter |
| Accuracy class | $\pm[1\% \text{ RDG} + (0.5\% \text{ FS} + 0.02\% / ^\circ\text{C})]$ |
| Serial number | 28012903 |
| Calibration frequency | 1 year |
| Date of last calibration | 07/11/2012, 16/08/2013 |
| Validity | Valid from 07/11/2012 to 15/08/2014 |
| Item name | FT-06 |
| Coverage | LFG flow of #3 flare |
| Type | Thermal mass type flow meter |
| Accuracy class | $\pm[1\% \text{ RDG} + (0.5\% \text{ FS} + 0.02\% / ^\circ\text{C})]$ |
| Serial number | 28042402 |
| Calibration frequency | 1 year |
| Date of last calibration | 13/05/2013, 03/07/2014 |
| Validity | Valid from 13/05/2013 to 12/05/2014 |
| | In order to deal with the uncertainty caused by delayed calibration, -7.941~17.756% of maximum permissible error applied in accordance with "Validation and Verification Standard (version 07.0)" from 13/05/2014 to 15/05/2014. |

Monitoring equipment:

| | |
|--------------------------|--|
| Item name | FT-07 |
| Coverage | LFG flow of #4 flare from 01/07/2013 to 26/07/2013 and from 18/10/2013 to 30/06/2014 |
| Type | Thermal mass type flow meter |
| Accuracy class | $\pm[1\% \text{ RDG} + (0.5\% \text{ FS} + 0.02\% / ^\circ\text{C})]$ |
| Serial number | 28042401 |
| Calibration frequency | 1 year |
| Date of last calibration | 09/10/2012, 15/10/2013 |
| Validity | Valid from 09/10/2012 to 08/10/2013 and from 15/10/2013 to 14/10/2014 |

| | |
|--------------------------|---|
| Item name | FT-03 |
| Coverage | LFG flow of #4 flare(reserve) from 26/07/2013 to 27/08/2013 |
| Type | Thermal mass type flow meter |
| Accuracy class | $\pm[1\% \text{ RDG} + (0.5\% \text{ FS} + 0.02\% / ^\circ\text{C})]$ |
| Serial number | 28012905 |
| Calibration frequency | 1 year |
| Date of last calibration | 07/11/2012, 15/10/2013 |
| Validity | Valid from 07/11/2012 to 14/10/2014 |

| | |
|--------------------------|---|
| Item name | 900A |
| Coverage | LFG flow of #4 flare(reserve) from 27/08/2013 to 18/10/2013 |
| Type | Thermal mass type flow meter |
| Accuracy class | $\pm[1\% \text{ RDG} + (0.5\% \text{ FS} + 0.02\% / ^\circ\text{C})]$ |
| Serial number | 26050201 |
| Calibration frequency | 1 year |
| Date of last calibration | 09/10/2012, 16/08/2013 |
| Validity | Valid from 09/10/2012 to 15/08/2014 |

| | |
|--------------------------|--|
| Item name | FT-08 |
| Coverage | LFG flow of #5 flare from 01/07/2013 to 16/07/2013 and from 18/10/2013 to 30/06/2014 |
| Type | Thermal mass type flow meter |
| Accuracy class | $\pm[1\% \text{ RDG} + (0.5\% \text{ FS} + 0.02\% / ^\circ\text{C})]$ |
| Serial number | 28012904 |
| Calibration frequency | 1 year |
| Date of last calibration | 07/11/2012, 16/08/2013 |
| Validity | Valid from 07/11/2012 to 15/08/2014 |

| | |
|--------------------------|--|
| Item name | FT-08(reserve) |
| Coverage | LFG flow of #5 flare(reserve) from 27/08/2013 to 18/10/2013 |
| Type | Pitot-tube type flow meter |
| Accuracy class | $\pm 0.07\%$ |
| Serial number | A1F3913T |
| Calibration frequency | 1 year |
| Date of last calibration | 22/10/2012, 02/12/2013 |
| Validity | Valid from 22/10/2012 to 21/10/2013 and from 02/12/2013 to 01/12/2014 |

| | | |
|---|--|--|
| Monitoring equipment: | Item name | FT-09 |
| | Coverage | LFG flow of #6 flare from 01/07/2013 to 27/08/2013 and from 18/10/2013 to 30/06/2014 |
| | Type | Thermal mass type flow meter |
| | Accuracy class | $\pm[1\% \text{ RDG} + (0.5\% \text{ FS} + 0.02\% / ^\circ\text{C})]$ |
| | Serial number | 28031702 |
| | Calibration frequency | 1 year |
| | Date of last calibration | 09/10/2012, 15/10/2013 |
| | Validity | Valid from 09/10/2012 to 08/10/2013 and 15/10/2013 to 14/10/2014 |
| | Item name | FT-08 |
| | Coverage | LFG flow of #6 flare(reserve) from 27/08/2013 to 18/10/2013 |
| | Type | Thermal mass type flow meter |
| | Accuracy class | $\pm[1\% \text{ RDG} + (0.5\% \text{ FS} + 0.02\% / ^\circ\text{C})]$ |
| | Serial number | 28012904 |
| | Calibration frequency | 1 year |
| | Date of last calibration | 07/11/2012, 16/08/2013 |
| | Validity | Valid from 07/11/2012 to 15/08/2014 |
| Measuring/ Reading/Recording frequency: | Continuous measuring & reading, hourly recording | |
| Calculation method (if applicable): | (FT-04) + (FT-05) + (FT-06) + (FT-07 or FT-03 or 900A) + (FT-08 or FT-08(reserve)) + (FT-09 or FT-08) | |
| QA/QC procedures: | State-check is made by responsible staff of SLC on a daily basis Regular maintenance is made by staff of Ecoenergy Periodically calibrated by approved 3 rd party authority or manufacturer | |
| Purpose of data: | Calculation of baseline emissions | |
| Additional comment: | | |

| | |
|---------------------------------------|---|
| Data / Parameter: | LFG_{electricity,y} |
| Unit: | Nm³ |
| Description: | Amount of landfill gas which fed to 50MW power plant in year y |
| Measured/ Calculated / Default: | Measured by flow meter |
| Source of data: | DCS data: The flow meter, FT-10 is continuously measure the LFG flow of the 50MW power plant |

| Value(s) of monitored parameter: | <table border="1"> <thead> <tr> <th></th> <th>Measured Value</th> <th>Applied Value</th> <th>Remarks</th> </tr> </thead> <tbody> <tr><td>Jul 2013</td><td>17,503,136.0</td><td>17,453,956.8</td><td></td></tr> <tr><td>Aug</td><td>19,494,432.0</td><td>19,494,432.0</td><td></td></tr> <tr><td>Sep</td><td>9,806,048.0</td><td>9,799,808.0</td><td></td></tr> <tr><td>Oct</td><td>301,472.0</td><td>294,144.0</td><td></td></tr> <tr><td>Nov</td><td>9,605,024.0</td><td>9,589,088.0</td><td></td></tr> <tr><td>Dec</td><td>5,455,680.0</td><td>9,275,275.6</td><td></td></tr> <tr><td>Jan 2014</td><td>10,044,768.0</td><td>12,795,345.8</td><td></td></tr> <tr><td>Feb</td><td>14,645,440.0</td><td>14,645,440.0</td><td></td></tr> <tr><td>Mar</td><td>15,754,144.0</td><td>15,754,144.0</td><td></td></tr> <tr><td>Apr</td><td>13,625,760.0</td><td>13,619,840.0</td><td></td></tr> <tr><td>May</td><td>9,015,200.0</td><td>8,976,512.0</td><td></td></tr> <tr><td>Jun</td><td>18,885,664.0</td><td>18,885,664.0</td><td></td></tr> <tr><td>Total</td><td>144,136,768.0</td><td>150,583,650.2</td><td></td></tr> </tbody> </table> <p>For applied value, please refer to the worksheet of '04_LFG' of 'SLC CDM Data Workbook Phase 9'.</p> <p>For measured value, please refer to the worksheet of '04_0_LFG(Raw data)' of 'SLC CDM Data Workbook Phase 9'</p> | | | | | Measured Value | Applied Value | Remarks | Jul 2013 | 17,503,136.0 | 17,453,956.8 | | Aug | 19,494,432.0 | 19,494,432.0 | | Sep | 9,806,048.0 | 9,799,808.0 | | Oct | 301,472.0 | 294,144.0 | | Nov | 9,605,024.0 | 9,589,088.0 | | Dec | 5,455,680.0 | 9,275,275.6 | | Jan 2014 | 10,044,768.0 | 12,795,345.8 | | Feb | 14,645,440.0 | 14,645,440.0 | | Mar | 15,754,144.0 | 15,754,144.0 | | Apr | 13,625,760.0 | 13,619,840.0 | | May | 9,015,200.0 | 8,976,512.0 | | Jun | 18,885,664.0 | 18,885,664.0 | | Total | 144,136,768.0 | 150,583,650.2 | |
|---|---|---|------------------------------|---------|-----------|----------------|---------------|------------------------------|----------|----------------------------|----------------|-----|---------------|--------------|-----------------------|--------|--------------------------|------------------------|-------------|---|-----|-----------|-----------|--|-----|-------------|-------------|--|-----|-------------|-------------|--|----------|--------------|--------------|--|-----|--------------|--------------|--|-----|--------------|--------------|--|-----|--------------|--------------|--|-----|-------------|-------------|--|-----|--------------|--------------|--|-------|---------------|---------------|--|
| | | Measured Value | Applied Value | Remarks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Jul 2013 | 17,503,136.0 | 17,453,956.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Aug | 19,494,432.0 | 19,494,432.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Sep | 9,806,048.0 | 9,799,808.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Oct | 301,472.0 | 294,144.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Nov | 9,605,024.0 | 9,589,088.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Dec | 5,455,680.0 | 9,275,275.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Jan 2014 | 10,044,768.0 | 12,795,345.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Feb | 14,645,440.0 | 14,645,440.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Mar | 15,754,144.0 | 15,754,144.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Apr | 13,625,760.0 | 13,619,840.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | May | 9,015,200.0 | 8,976,512.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Jun | 18,885,664.0 | 18,885,664.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | 144,136,768.0 | 150,583,650.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Monitoring equipment: | <table border="1"> <tr><td>Item name</td><td>FT-10</td></tr> <tr><td>Coverage</td><td>LFG flow of 50MW power plant</td></tr> <tr><td>Type</td><td>Ultrasonic type flow meter</td></tr> <tr><td>Accuracy class</td><td>±1%</td></tr> <tr><td>Serial number</td><td>465</td></tr> <tr><td>Calibration frequency</td><td>1 year</td></tr> <tr><td>Date of last calibration</td><td>15/06/2012, 09/07/2013</td></tr> <tr><td>Validity</td><td>Valid from 15/06/2012 to 14/06/2013 and from 09/07/2013 to 08/07/2014</td></tr> </table> <p>In order to deal with the uncertainty caused by delayed calibration, -1.000% of maximum permissible error applied in accordance with "Validation and Verification Standard (version 07.0)" from 01/07/2013 to 09/07/2013.</p> | | | Item name | FT-10 | Coverage | LFG flow of 50MW power plant | Type | Ultrasonic type flow meter | Accuracy class | ±1% | Serial number | 465 | Calibration frequency | 1 year | Date of last calibration | 15/06/2012, 09/07/2013 | Validity | Valid from 15/06/2012 to 14/06/2013 and from 09/07/2013 to 08/07/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Item name | FT-10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Coverage | LFG flow of 50MW power plant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Type | Ultrasonic type flow meter | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Accuracy class | ±1% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serial number | | 465 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration frequency | | 1 year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of last calibration | | 15/06/2012, 09/07/2013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Validity | Valid from 15/06/2012 to 14/06/2013 and from 09/07/2013 to 08/07/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Measuring/ Reading/Recording frequency: | Continuous measuring & reading, hourly recording | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calculation method (if applicable): | Not applicable | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| QA/QC procedures: | State-check is made by responsible staff of SLC on a daily basis Regular maintenance is made by staff of Ecoenergy Periodically calibrated by approved 3 rd party authority | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Purpose of data: | Calculation of baseline emissions | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Additional comment: | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | |
|-----------------------------------|---|
| Data / Parameter: | W_{CH₄,y} |
| Unit: | % (Nm ³ CH ₄ / Nm ³ LFG) |
| Description: | Average methane fraction of LFG in year y |
| Measured/ Calculated /Default: | Measured by methane gas analyzers (total of 2) |
| Source of data: | MMI data: The methane gas analyzers, GA-01 and GA-02 are continuously measure the methane concentration of LFG from 1 st and 2 nd landfill |

| Value(s) of monitored parameter: | <table border="1"> <thead> <tr> <th></th><th>Measured Value</th><th>Applied Value</th><th>Remarks</th></tr> </thead> <tbody> <tr><td>Jul 2013</td><td>48.5</td><td>41.5</td><td></td></tr> <tr><td>Aug</td><td>48.1</td><td>47.6</td><td></td></tr> <tr><td>Sep</td><td>46.1</td><td>46.2</td><td></td></tr> <tr><td>Oct</td><td>45.7</td><td>45.6</td><td></td></tr> <tr><td>Nov</td><td>46.0</td><td>46.1</td><td></td></tr> <tr><td>Dec</td><td>46.0</td><td>45.7</td><td></td></tr> <tr><td>Jan 2014</td><td>47.4</td><td>47.1</td><td></td></tr> <tr><td>Feb</td><td>48.8</td><td>48.9</td><td></td></tr> <tr><td>Mar</td><td>45.6</td><td>46.5</td><td></td></tr> <tr><td>Apr</td><td>46.3</td><td>46.2</td><td></td></tr> <tr><td>May</td><td>45.8</td><td>47.1</td><td></td></tr> <tr><td>Jun</td><td>46.7</td><td>45.7</td><td></td></tr> <tr><td>Average</td><td>46.8</td><td>46.1</td><td></td></tr> </tbody> </table> <p>For applied value, please refer to the worksheet of '05_wCH4' of 'SLC CDM Data Workbook Phase 9'.</p> <p>For measured value, please refer to the worksheet of '05_0_wCH4(Raw data)' of 'SLC CDM Data Workbook Phase 9'.</p> | | Measured Value | Applied Value | Remarks | Jul 2013 | 48.5 | 41.5 | | Aug | 48.1 | 47.6 | | Sep | 46.1 | 46.2 | | Oct | 45.7 | 45.6 | | Nov | 46.0 | 46.1 | | Dec | 46.0 | 45.7 | | Jan 2014 | 47.4 | 47.1 | | Feb | 48.8 | 48.9 | | Mar | 45.6 | 46.5 | | Apr | 46.3 | 46.2 | | May | 45.8 | 47.1 | | Jun | 46.7 | 45.7 | | Average | 46.8 | 46.1 | |
|---|--|---------------|----------------|---------------|---|----------|-----------------------|----------------|--|---------------|----------|-----------------------|--------|--------------------------|------------------------|----------|--------------------------------------|-----------|----------------|----------|--|------|-----------------------|----------------|--|---------------|----------|-----------------------|--------|--------------------------|------------------------|----------|--------------------------------------|-----------|-------|----------|---|------|-----------------------|----------------|--|---------------|----------|-----------------------|--------|--------------------------|------------------------|----------|--------------------------------------|-----|------|------|--|---------|------|------|--|
| | Measured Value | Applied Value | Remarks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jul 2013 | 48.5 | 41.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aug | 48.1 | 47.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sep | 46.1 | 46.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Oct | 45.7 | 45.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nov | 46.0 | 46.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec | 46.0 | 45.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jan 2014 | 47.4 | 47.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Feb | 48.8 | 48.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mar | 45.6 | 46.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Apr | 46.3 | 46.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| May | 45.8 | 47.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jun | 46.7 | 45.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Average | 46.8 | 46.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Monitoring equipment: | <table border="1"> <tr><td>Item name</td><td>GA-01</td></tr> <tr><td>Coverage</td><td>CH₄ fraction of LFG at 1st landfill from 01/07/2013 to 31/07/2013 and from 05/08/2013 to 30/06/2014</td></tr> <tr><td>Type</td><td>Infrared gas analyzer</td></tr> <tr><td>Accuracy class</td><td>Linearity: $\pm 1\%$ of FS Repeatability: $\pm 0.5\%$ of FS</td></tr> <tr><td>Serial number</td><td>A2B4359T</td></tr> <tr><td>Calibration frequency</td><td>1 year</td></tr> <tr><td>Date of last calibration</td><td>17/10/2012, 30/09/2013</td></tr> <tr><td>Validity</td><td>Valid from 17/10/2012 to 29/09/2014.</td></tr> </table> <table border="1"> <tr><td>Item name</td><td>GA-03(reserve)</td></tr> <tr><td>Coverage</td><td>CH₄ fraction of LFG at 1st landfill from 31/07/2013 to 05/08/2013(reserve)</td></tr> <tr><td>Type</td><td>Infrared gas analyzer</td></tr> <tr><td>Accuracy class</td><td>Linearity: $\pm 1\%$ of FS Repeatability: $\pm 0.5\%$ of FS</td></tr> <tr><td>Serial number</td><td>N6E2427T</td></tr> <tr><td>Calibration frequency</td><td>1 year</td></tr> <tr><td>Date of last calibration</td><td>10/10/2012, 30/09/2013</td></tr> <tr><td>Validity</td><td>Valid from 10/10/2012 to 29/09/2014.</td></tr> </table> <table border="1"> <tr><td>Item name</td><td>GA-02</td></tr> <tr><td>Coverage</td><td>CH₄ fraction of LFG at 2nd landfill from 01/07/2013 to 30/06/2014</td></tr> <tr><td>Type</td><td>Infrared gas analyzer</td></tr> <tr><td>Accuracy class</td><td>Linearity: $\pm 1\%$ of FS Repeatability: $\pm 0.5\%$ of FS</td></tr> <tr><td>Serial number</td><td>A4J0063T</td></tr> <tr><td>Calibration frequency</td><td>1 year</td></tr> <tr><td>Date of last calibration</td><td>17/10/2012, 30/09/2013</td></tr> <tr><td>Validity</td><td>Valid from 17/10/2012 to 29/09/2014.</td></tr> </table> | Item name | GA-01 | Coverage | CH ₄ fraction of LFG at 1 st landfill from 01/07/2013 to 31/07/2013 and from 05/08/2013 to 30/06/2014 | Type | Infrared gas analyzer | Accuracy class | Linearity: $\pm 1\%$ of FS Repeatability: $\pm 0.5\%$ of FS | Serial number | A2B4359T | Calibration frequency | 1 year | Date of last calibration | 17/10/2012, 30/09/2013 | Validity | Valid from 17/10/2012 to 29/09/2014. | Item name | GA-03(reserve) | Coverage | CH ₄ fraction of LFG at 1 st landfill from 31/07/2013 to 05/08/2013(reserve) | Type | Infrared gas analyzer | Accuracy class | Linearity: $\pm 1\%$ of FS Repeatability: $\pm 0.5\%$ of FS | Serial number | N6E2427T | Calibration frequency | 1 year | Date of last calibration | 10/10/2012, 30/09/2013 | Validity | Valid from 10/10/2012 to 29/09/2014. | Item name | GA-02 | Coverage | CH ₄ fraction of LFG at 2 nd landfill from 01/07/2013 to 30/06/2014 | Type | Infrared gas analyzer | Accuracy class | Linearity: $\pm 1\%$ of FS Repeatability: $\pm 0.5\%$ of FS | Serial number | A4J0063T | Calibration frequency | 1 year | Date of last calibration | 17/10/2012, 30/09/2013 | Validity | Valid from 17/10/2012 to 29/09/2014. | | | | | | | | |
| Item name | GA-01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | CH ₄ fraction of LFG at 1 st landfill from 01/07/2013 to 31/07/2013 and from 05/08/2013 to 30/06/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type | Infrared gas analyzer | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Accuracy class | Linearity: $\pm 1\%$ of FS Repeatability: $\pm 0.5\%$ of FS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serial number | A2B4359T | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration frequency | 1 year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of last calibration | 17/10/2012, 30/09/2013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Validity | Valid from 17/10/2012 to 29/09/2014. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Item name | GA-03(reserve) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | CH ₄ fraction of LFG at 1 st landfill from 31/07/2013 to 05/08/2013(reserve) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type | Infrared gas analyzer | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Accuracy class | Linearity: $\pm 1\%$ of FS Repeatability: $\pm 0.5\%$ of FS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serial number | N6E2427T | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration frequency | 1 year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of last calibration | 10/10/2012, 30/09/2013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Validity | Valid from 10/10/2012 to 29/09/2014. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Item name | GA-02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | CH ₄ fraction of LFG at 2 nd landfill from 01/07/2013 to 30/06/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type | Infrared gas analyzer | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Accuracy class | Linearity: $\pm 1\%$ of FS Repeatability: $\pm 0.5\%$ of FS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serial number | A4J0063T | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration frequency | 1 year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of last calibration | 17/10/2012, 30/09/2013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Validity | Valid from 17/10/2012 to 29/09/2014. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Measuring/ Reading/Recording frequency: | Continuous measuring & reading, hourly recording | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Calculation method (if applicable): | $\frac{(FT - 01) \times (GA - 01) + (FT - 02) \times (GA - 02)}{LFG_{total}}$ |
| QA/QC procedures: | State-check is made by responsible staff of SLC on a daily basis Regular maintenance is made by staff of Ecoenergy Periodically calibrated by approved 3 rd party authority |
| Purpose of data: | Calculation of baseline emissions |
| Additional comment: | |

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|---------------------------------------|--|-----------|----|----------|-----------------------------------|------|---|----------------|---|---------------|---|-----------------------|---|--------------------------|---|----------|--|-----------|-------|----------|--|------|----------------------|----------------|---------|---------------|--------|-----------------------|--------|--------------------------|------------------------|----------|--------------------------------------|
| Data / Parameter: | FE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Unit: | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Description: | Efficiency of flare | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Measured/ Calculated / Default: | Calculated based on laboratory analysis result | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Source of data: | Test report made by 3 rd party authority which mentioning the result of exhaust gas analysis for each flares. Thermocouples installed in order to measure flaring temperature in each flares (total of 6) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Value(s) of monitored parameter: | 0% or 99.9% - 0% , in case flaring temperature is below 600°C - 99.9% , in case flaring temperature is above 600°C and the result of exhaust gas analysis is appropriate (below 250 ppm CH ₄). | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Monitoring equipment: | <table border="1"> <tr><td>Item name</td><td>FE</td></tr> <tr><td>Coverage</td><td>Flaring efficiency of each flares</td></tr> <tr><td>Type</td><td>Accredited 3rd party laboratory analysis result</td></tr> <tr><td>Accuracy class</td><td>-</td></tr> <tr><td>Serial number</td><td>Certification No. AI1307022, AI1309012, AI1312002, AI1403001, AI1405003 * For detailed results, please refer to Table 5 in page 19</td></tr> <tr><td>Calibration frequency</td><td>-</td></tr> <tr><td>Date of last calibration</td><td>-</td></tr> <tr><td>Validity</td><td></td></tr> </table> <table border="1"> <tr><td>Item name</td><td>TC-01</td></tr> <tr><td>Coverage</td><td>Flaring temperature of each flares from 01/07/2013 to 13/11/2013 and from 02/12/2013 to 30/06/2014</td></tr> <tr><td>Type</td><td>Thermocouple, k-type</td></tr> <tr><td>Accuracy class</td><td>± 0.4 %</td></tr> <tr><td>Serial number</td><td>012902</td></tr> <tr><td>Calibration frequency</td><td>1 year</td></tr> <tr><td>Date of last calibration</td><td>28/01/2013, 27/11/2013</td></tr> <tr><td>Validity</td><td>Valid from 28/01/2013 to 26/10/2014.</td></tr> </table> | Item name | FE | Coverage | Flaring efficiency of each flares | Type | Accredited 3 rd party laboratory analysis result | Accuracy class | - | Serial number | Certification No. AI1307022, AI1309012, AI1312002, AI1403001, AI1405003 * For detailed results, please refer to Table 5 in page 19 | Calibration frequency | - | Date of last calibration | - | Validity | | Item name | TC-01 | Coverage | Flaring temperature of each flares from 01/07/2013 to 13/11/2013 and from 02/12/2013 to 30/06/2014 | Type | Thermocouple, k-type | Accuracy class | ± 0.4 % | Serial number | 012902 | Calibration frequency | 1 year | Date of last calibration | 28/01/2013, 27/11/2013 | Validity | Valid from 28/01/2013 to 26/10/2014. |
| Item name | FE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | Flaring efficiency of each flares | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type | Accredited 3 rd party laboratory analysis result | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Accuracy class | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serial number | Certification No. AI1307022, AI1309012, AI1312002, AI1403001, AI1405003 * For detailed results, please refer to Table 5 in page 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration frequency | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of last calibration | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Validity | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Item name | TC-01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | Flaring temperature of each flares from 01/07/2013 to 13/11/2013 and from 02/12/2013 to 30/06/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type | Thermocouple, k-type | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Accuracy class | ± 0.4 % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serial number | 012902 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration frequency | 1 year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of last calibration | 28/01/2013, 27/11/2013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Validity | Valid from 28/01/2013 to 26/10/2014. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Monitoring equipment: | Item name | TC-02 |
| | Coverage | Flaring temperature of each flares from 01/07/2013 to 13/11/2013 and from 02/12/2013 to 30/06/2014 |
| | Type | Thermocouple, k-type |
| | Accuracy class | ± 0.4 % |
| | Serial number | 012905 |
| | Calibration frequency | 1 year |
| | Date of last calibration | 28/01/2013, 27/11/2013 |
| | Validity | Valid from 28/01/2013 to 26/10/2014. |
| | Item name | TC-03 |
| | Coverage | Flaring temperature of each flares from 01/07/2013 to 13/11/2013 and from 02/12/2013 to 30/06/2014 |
| | Type | Thermocouple, k-type |
| | Accuracy class | ± 0.4 % |
| | Serial number | 012908 |
| | Calibration frequency | 1 year |
| | Date of last calibration | 28/01/2013, 27/11/2013 |
| | Validity | Valid from 28/01/2013 to 26/10/2014. |
| | Item name | TC-04 |
| | Coverage | Flaring temperature of each flares from 01/07/2013 to 13/11/2013 and from 02/12/2013 to 30/06/2014 |
| | Type | Thermocouple, k-type |
| | Accuracy class | ± 0.4 % |
| | Serial number | 012910 |
| | Calibration frequency | 1 year |
| | Date of last calibration | 28/01/2013, 27/11/2013 |
| | Validity | Valid from 28/01/2013 to 26/10/2014. |
| | Item name | TC-05 |
| | Coverage | Flaring temperature of each flares from 01/07/2013 to 13/11/2013 and from 02/12/2013 to 30/06/2014 |
| | Type | Thermocouple, k-type |
| | Accuracy class | ± 0.4 % |
| Serial number | 012912 | |
| Calibration frequency | 1 year | |
| Date of last calibration | 28/01/2013, 27/11/2013 | |
| Validity | Valid from 28/01/2013 to 26/10/2014. | |
| Item name | TC-06 | |
| Coverage | Flaring temperature of each flares from 01/07/2013 to 13/11/2013 and from 02/12/2013 to 30/06/2014 | |
| Type | Thermocouple, k-type | |
| Accuracy class | ± 0.4 % | |
| Serial number | 012915 | |
| Calibration frequency | 1 year | |
| Date of last calibration | 28/01/2013, 27/11/2013 | |
| Validity | Valid from 28/01/2013 to 26/10/2014. | |
| Measuring/ Reading/Recording frequency: | Periodic analysis was made for flare exhaust gas Continuous measuring & reading, hourly recording for TC-01 to TC-06 | |

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| Calculation method (if applicable): | Not applicable |
| QA/QC procedures: | State-check is made by responsible staff of SLC on a daily basis Regular maintenance is made by staff of Ecoenergy Periodically calibrated by approved 3 rd party authority |
| Purpose of data: | Calculation of baseline emissions |
| Additional comment: | |

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|-----------------------------------|---|-----------|-------|----------|--|------|---------|----------------|-------|---------------|-----------|-----------------------|--------|--------------------------|------------------------|----------|-------------------------------------|-----------|-------|----------|--|------|---------|----------------|-------|---------------|----------|-----------------------|--------|--------------------------|------------------------|----------|-------------------------------------|-----------|-------|----------|---|------|---------|----------------|-------|---------------|-----------|-----------------------|--------|--------------------------|------------------------|----------|-------------------------------------|
| Data / Parameter: | T | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Unit: | °C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Description: | Temperature of LFG | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Measured/ Calculated /Default: | Measured | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Source of data: | MMI / DCS data The temperature transmitters, TT-02, TT-03 and TT-10 are continuously measure the temperature of LFG for the flow normalization. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Value(s) of monitored parameter: | 0.0 ~ 62.2 For applied value, please refer to the worksheet of '08-1_T_2nd_LF' and "08-2_T_Flares" of 'SLC CDM Data Workbook Phase 8' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Monitoring equipment: | <table border="1"> <tr> <td>Item name</td><td>TT-02</td></tr> <tr> <td>Coverage</td><td>Temperature of LFG captured from 2nd landfill from 01/07/2013 to 25/09/2013 and from 07/10/2013 to 30/06/2014</td></tr> <tr> <td>Type</td><td>PT 100Ω</td></tr> <tr> <td>Accuracy class</td><td>±0.2%</td></tr> <tr> <td>Serial number</td><td>WS1025016</td></tr> <tr> <td>Calibration frequency</td><td>1 year</td></tr> <tr> <td>Date of last calibration</td><td>30/10/2012, 26/09/2013</td></tr> <tr> <td>Validity</td><td>Valid from 30/10/2012 to 25/09/2014</td></tr> </table> <table border="1"> <tr> <td>Item name</td><td>TT-03</td></tr> <tr> <td>Coverage</td><td>Temperature of LFG which fed to overall flaring facility(reserve) from 27/08/2013 to 18/10/2013</td></tr> <tr> <td>Type</td><td>PT 100Ω</td></tr> <tr> <td>Accuracy class</td><td>±0.1%</td></tr> <tr> <td>Serial number</td><td>A6B3331T</td></tr> <tr> <td>Calibration frequency</td><td>1 year</td></tr> <tr> <td>Date of last calibration</td><td>30/10/2012, 26/09/2013</td></tr> <tr> <td>Validity</td><td>Valid from 30/10/2012 to 25/09/2014</td></tr> </table> <table border="1"> <tr> <td>Item name</td><td>TT-10</td></tr> <tr> <td>Coverage</td><td>Temperature of LFG which fed to 50MW power plant from 01/07/2013 to 25/09/2012 and from 27/09/2013 to 30/06/2014</td></tr> <tr> <td>Type</td><td>PT 100Ω</td></tr> <tr> <td>Accuracy class</td><td>±0.2%</td></tr> <tr> <td>Serial number</td><td>WS1025017</td></tr> <tr> <td>Calibration frequency</td><td>1 year</td></tr> <tr> <td>Date of last calibration</td><td>30/10/2012, 26/09/2013</td></tr> <tr> <td>Validity</td><td>Valid from 30/10/2012 to 25/09/2014</td></tr> </table> | Item name | TT-02 | Coverage | Temperature of LFG captured from 2 nd landfill from 01/07/2013 to 25/09/2013 and from 07/10/2013 to 30/06/2014 | Type | PT 100Ω | Accuracy class | ±0.2% | Serial number | WS1025016 | Calibration frequency | 1 year | Date of last calibration | 30/10/2012, 26/09/2013 | Validity | Valid from 30/10/2012 to 25/09/2014 | Item name | TT-03 | Coverage | Temperature of LFG which fed to overall flaring facility(reserve) from 27/08/2013 to 18/10/2013 | Type | PT 100Ω | Accuracy class | ±0.1% | Serial number | A6B3331T | Calibration frequency | 1 year | Date of last calibration | 30/10/2012, 26/09/2013 | Validity | Valid from 30/10/2012 to 25/09/2014 | Item name | TT-10 | Coverage | Temperature of LFG which fed to 50MW power plant from 01/07/2013 to 25/09/2012 and from 27/09/2013 to 30/06/2014 | Type | PT 100Ω | Accuracy class | ±0.2% | Serial number | WS1025017 | Calibration frequency | 1 year | Date of last calibration | 30/10/2012, 26/09/2013 | Validity | Valid from 30/10/2012 to 25/09/2014 |
| Item name | TT-02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | Temperature of LFG captured from 2 nd landfill from 01/07/2013 to 25/09/2013 and from 07/10/2013 to 30/06/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type | PT 100Ω | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Accuracy class | ±0.2% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serial number | WS1025016 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration frequency | 1 year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of last calibration | 30/10/2012, 26/09/2013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Validity | Valid from 30/10/2012 to 25/09/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Item name | TT-03 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | Temperature of LFG which fed to overall flaring facility(reserve) from 27/08/2013 to 18/10/2013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type | PT 100Ω | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Accuracy class | ±0.1% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serial number | A6B3331T | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration frequency | 1 year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of last calibration | 30/10/2012, 26/09/2013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Validity | Valid from 30/10/2012 to 25/09/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Item name | TT-10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | Temperature of LFG which fed to 50MW power plant from 01/07/2013 to 25/09/2012 and from 27/09/2013 to 30/06/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type | PT 100Ω | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Accuracy class | ±0.2% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serial number | WS1025017 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration frequency | 1 year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of last calibration | 30/10/2012, 26/09/2013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Validity | Valid from 30/10/2012 to 25/09/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Measuring/ Reading/Recording frequency: | Continuous measuring & reading, hourly recording |
| Calculation method (if applicable): | Not applicable |
| QA/QC procedures: | State-check is made by responsible staff of SLC on a daily basis Regular maintenance is made by staff of Ecoenergy Periodically calibrated by approved 3 rd party authority |
| Purpose of data: | Calculation of baseline emissions |
| Additional comment: | |

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| Data / Parameter: | P | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Unit: | mmAq | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Description: | Pressure of LFG | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Measured/ Calculated /Default: | Measured | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Source of data: | MMI / DCS data The pressure transmitters, PT-02, PT-05 and PT-10 are continuously measure the pressure of LFG for the flow normalization. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Value(s) of monitored parameter: | -1,931.0 ~ 1,970.0 For applied value, please refer to the worksheet of '09-1_P_2nd_LF' and '09-2_P_Flares' of 'SLC CDM Data Workbook Phase 8' | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Monitoring equipment: | <table border="1"> <tr> <td>Item name</td><td>PT-02</td></tr> <tr> <td>Coverage</td><td>Pressure of LFG captured from 2nd landfill from 01/07/2013 to 25/09/2013 and from 07/10/2013 to 30/06/2014</td></tr> <tr> <td>Type</td><td>Smart gauge pressure transmitter</td></tr> <tr> <td>Accuracy class</td><td>±0.075% at span</td></tr> <tr> <td>Serial number</td><td>3940244</td></tr> <tr> <td>Calibration frequency</td><td>1 year</td></tr> <tr> <td>Date of last calibration</td><td>06/11/2012, 26/09/2013</td></tr> <tr> <td>Validity</td><td>Valid from 06/11/2012 to 25/09/2014</td></tr> </table> <table border="1"> <tr> <td>Item name</td><td>PT-05</td></tr> <tr> <td>Coverage</td><td>Pressure of LFG which fed to overall flaring facility from 01/07/2013 to 07/10/2013 and from 29/10/2013 to 30/06/2014</td></tr> <tr> <td>Type</td><td>Absolute pressure transmitter</td></tr> <tr> <td>Accuracy class</td><td>±0.5%</td></tr> <tr> <td>Serial number</td><td>A4J4159T</td></tr> <tr> <td>Calibration frequency</td><td>1 year</td></tr> <tr> <td>Date of last calibration</td><td>22/10/2012, 11/10/2013</td></tr> <tr> <td>Validity</td><td>Valid from 22/10/2012 to 10/10/2014</td></tr> </table> <table border="1"> <tr> <td>Item name</td><td>PT-10</td></tr> <tr> <td>Coverage</td><td>Pressure of LFG which fed to 50MW power plant from 01/07/2013 to 25/09/2013 and from 27/09/2013 to 30/06/2014</td></tr> <tr> <td>Type</td><td>Absolute pressure transmitter</td></tr> <tr> <td>Accuracy class</td><td>±0.5%</td></tr> <tr> <td>Serial number</td><td>WS1025015</td></tr> <tr> <td>Calibration frequency</td><td>1 year</td></tr> <tr> <td>Date of last calibration</td><td>12/11/2012, 26/09/2013</td></tr> <tr> <td>Validity</td><td>Valid from 12/11/2012 to 25/09/2014</td></tr> </table> | Item name | PT-02 | Coverage | Pressure of LFG captured from 2 nd landfill from 01/07/2013 to 25/09/2013 and from 07/10/2013 to 30/06/2014 | Type | Smart gauge pressure transmitter | Accuracy class | ±0.075% at span | Serial number | 3940244 | Calibration frequency | 1 year | Date of last calibration | 06/11/2012, 26/09/2013 | Validity | Valid from 06/11/2012 to 25/09/2014 | Item name | PT-05 | Coverage | Pressure of LFG which fed to overall flaring facility from 01/07/2013 to 07/10/2013 and from 29/10/2013 to 30/06/2014 | Type | Absolute pressure transmitter | Accuracy class | ±0.5% | Serial number | A4J4159T | Calibration frequency | 1 year | Date of last calibration | 22/10/2012, 11/10/2013 | Validity | Valid from 22/10/2012 to 10/10/2014 | Item name | PT-10 | Coverage | Pressure of LFG which fed to 50MW power plant from 01/07/2013 to 25/09/2013 and from 27/09/2013 to 30/06/2014 | Type | Absolute pressure transmitter | Accuracy class | ±0.5% | Serial number | WS1025015 | Calibration frequency | 1 year | Date of last calibration | 12/11/2012, 26/09/2013 | Validity | Valid from 12/11/2012 to 25/09/2014 |
| Item name | PT-02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | Pressure of LFG captured from 2 nd landfill from 01/07/2013 to 25/09/2013 and from 07/10/2013 to 30/06/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type | Smart gauge pressure transmitter | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Accuracy class | ±0.075% at span | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serial number | 3940244 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration frequency | 1 year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of last calibration | 06/11/2012, 26/09/2013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Validity | Valid from 06/11/2012 to 25/09/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Item name | PT-05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | Pressure of LFG which fed to overall flaring facility from 01/07/2013 to 07/10/2013 and from 29/10/2013 to 30/06/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type | Absolute pressure transmitter | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Accuracy class | ±0.5% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serial number | A4J4159T | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration frequency | 1 year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of last calibration | 22/10/2012, 11/10/2013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Validity | Valid from 22/10/2012 to 10/10/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Item name | PT-10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | Pressure of LFG which fed to 50MW power plant from 01/07/2013 to 25/09/2013 and from 27/09/2013 to 30/06/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type | Absolute pressure transmitter | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Accuracy class | ±0.5% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serial number | WS1025015 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration frequency | 1 year | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of last calibration | 12/11/2012, 26/09/2013 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Validity | Valid from 12/11/2012 to 25/09/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| Measuring/ Reading/Recording frequency: | Continuous measuring & reading, hourly recording |
| Calculation method (if applicable): | Not applicable |
| QA/QC procedures: | State-check is made by responsible staff of SLC on a daily basis Regular maintenance is made by staff of Ecoenergy Periodically calibrated by approved 3 rd party authority |
| Purpose of data: | Calculation of baseline emissions |
| Additional comment: | |

| Data / Parameter: | EL _{EX,LFG} | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---------------|---------|--|-----------|----------------|---------------|--|----------|----------------------------|----------------|-----------|---------------|----------------|-----------------------|---|--------------------------|------------------------|----------|-------------------------------------|-----|-------|-------|--|-----|----------|----------|--|-----|----------|----------|--|----------|----------|----------|--|-----|----------|----------|--|-----|----------|----------|--|-----|----------|----------|--|-----|----------|----------|--|-----|----------|----------|--|-------|-----------|-----------|--|
| Unit: | MWh | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Description: | Total amount of electricity exported out of the project boundary | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Measured/ Calculated / Default: | Measured | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Source of data: | Log sheet & KPX data The watt-hour meter, WH-01 is continuously measure the exported electricity and written in log sheet by operators | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Value(s) of monitored parameter: | <table><tr><th></th><th>Measured Value</th><th>Applied Value</th><th>Remarks</th></tr><tr><td>Jul 2013</td><td>26,153.7</td><td>26,153.7</td><td></td></tr><tr><td>Aug</td><td>26,738.2</td><td>26,738.2</td><td></td></tr><tr><td>Sep</td><td>12,945.0</td><td>12,945.0</td><td></td></tr><tr><td>Oct</td><td>393.9</td><td>393.9</td><td></td></tr><tr><td>Nov</td><td>11,769.8</td><td>11,769.8</td><td></td></tr><tr><td>Dec</td><td>18,843.5</td><td>18,843.5</td><td></td></tr><tr><td>Jan 2014</td><td>21,156.7</td><td>21,156.7</td><td></td></tr><tr><td>Feb</td><td>19,115.2</td><td>19,115.2</td><td></td></tr><tr><td>Mar</td><td>20,734.8</td><td>20,734.8</td><td></td></tr><tr><td>Apr</td><td>16,525.9</td><td>16,525.9</td><td></td></tr><tr><td>May</td><td>11,066.7</td><td>11,066.7</td><td></td></tr><tr><td>Jun</td><td>24,949.4</td><td>24,949.4</td><td></td></tr><tr><td>Total</td><td>210,392.9</td><td>210,392.9</td><td></td></tr></table> <p>For applied value and measured value, please refer to the worksheet of '06-1_EL_exp' of 'SLC CDM Data Workbook Phase 9'</p> | | | | | Measured Value | Applied Value | Remarks | Jul 2013 | 26,153.7 | 26,153.7 | | Aug | 26,738.2 | 26,738.2 | | Sep | 12,945.0 | 12,945.0 | | Oct | 393.9 | 393.9 | | Nov | 11,769.8 | 11,769.8 | | Dec | 18,843.5 | 18,843.5 | | Jan 2014 | 21,156.7 | 21,156.7 | | Feb | 19,115.2 | 19,115.2 | | Mar | 20,734.8 | 20,734.8 | | Apr | 16,525.9 | 16,525.9 | | May | 11,066.7 | 11,066.7 | | Jun | 24,949.4 | 24,949.4 | | Total | 210,392.9 | 210,392.9 | |
| | Measured Value | Applied Value | Remarks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jul 2013 | 26,153.7 | 26,153.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aug | 26,738.2 | 26,738.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sep | 12,945.0 | 12,945.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Oct | 393.9 | 393.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nov | 11,769.8 | 11,769.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec | 18,843.5 | 18,843.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jan 2014 | 21,156.7 | 21,156.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Feb | 19,115.2 | 19,115.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mar | 20,734.8 | 20,734.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Apr | 16,525.9 | 16,525.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| May | 11,066.7 | 11,066.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jun | 24,949.4 | 24,949.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 210,392.9 | 210,392.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Monitoring equipment: | <table><tr><td>Item name</td><td>WH-01</td></tr><tr><td>Coverage</td><td>Electricity exported from 50MW power plant</td></tr><tr><td>Type</td><td>Electronic watt-hour meter</td></tr><tr><td>Accuracy class</td><td>0.2 class</td></tr><tr><td>Serial number</td><td>PR-0411A055-02</td></tr><tr><td>Calibration frequency</td><td>3.5 ± 0.5 years (according to the Operational Directive of Korean Electricity Market controlled by KPX)</td></tr><tr><td>Date of last calibration</td><td>11/07/2007, 28/06/2010</td></tr><tr><td>Validity</td><td>Valid from 11/07/2007 to 27/06/2014</td></tr></table> | | | | Item name | WH-01 | Coverage | Electricity exported from 50MW power plant | Type | Electronic watt-hour meter | Accuracy class | 0.2 class | Serial number | PR-0411A055-02 | Calibration frequency | 3.5 ± 0.5 years (according to the Operational Directive of Korean Electricity Market controlled by KPX) | Date of last calibration | 11/07/2007, 28/06/2010 | Validity | Valid from 11/07/2007 to 27/06/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Item name | WH-01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | Electricity exported from 50MW power plant | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type | Electronic watt-hour meter | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Accuracy class | 0.2 class | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serial number | PR-0411A055-02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration frequency | 3.5 ± 0.5 years (according to the Operational Directive of Korean Electricity Market controlled by KPX) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of last calibration | 11/07/2007, 28/06/2010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Validity | Valid from 11/07/2007 to 27/06/2014 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Measuring/ Reading/Recording frequency: | Continuous measuring & reading, hourly recording | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calculation method (if applicable): | Not applicable | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| QA/QC procedures: | State-check is made by responsible staff of SLC on a daily basis Regular maintenance is made by staff of Ecoenergy Periodically calibrated by approved 3 rd party authority |
| Purpose of data: | Calculation of baseline emissions |
| Additional comment: | |

| Data / Parameter: | EL _{IMP} | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|--|---------------|---------|-----------|----------------|---------------|--|----------|----------------------------|----------------|-----------|---------------|---------|-----------------------|--|--------------------------|------------|----------|-------------------------------------|-----|---------|---------|--|-----|-------|-------|--|-----|-------|-------|--|----------|-------|-------|--|-----|-------|-------|--|-----|-------|-------|--|-----|-------|-------|--|-----|-------|-------|--|-----|-------|-------|--|-------|---------|---------|--|
| Unit: | MWh | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Description: | Total amount of electricity imported to the project boundary | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Measured/ Calculated / Default: | Measured | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Source of data: | SLC's internal electricity surveillance system & KEPCO data Total of 2 watt-hour meters are installed to monitor electricity imported. WH-05 is for LFG blower of 2 nd landfill and WH-06 is for central flaring facility. The data of KEPCO Invoice is for imported electricity in 50MW power plant. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Value(s) of monitored parameter: | <table><tr><th></th><th>Measured Value</th><th>Applied Value</th><th>Remarks</th></tr><tr><td>Jul 2013</td><td>616.1</td><td>657.7</td><td></td></tr><tr><td>Aug</td><td>426.2</td><td>426.3</td><td></td></tr><tr><td>Sep</td><td>756.7</td><td>756.7</td><td></td></tr><tr><td>Oct</td><td>1,269.7</td><td>1,269.7</td><td></td></tr><tr><td>Nov</td><td>840.2</td><td>840.3</td><td></td></tr><tr><td>Dec</td><td>517.1</td><td>528.4</td><td></td></tr><tr><td>Jan 2014</td><td>480.1</td><td>480.1</td><td></td></tr><tr><td>Feb</td><td>409.1</td><td>409.2</td><td></td></tr><tr><td>Mar</td><td>479.3</td><td>479.3</td><td></td></tr><tr><td>Apr</td><td>461.3</td><td>461.3</td><td></td></tr><tr><td>May</td><td>486.5</td><td>486.5</td><td></td></tr><tr><td>Jun</td><td>322.0</td><td>322.0</td><td></td></tr><tr><td>Total</td><td>7,064.2</td><td>7,117.5</td><td></td></tr></table> <p>For applied value and measured value, please refer to the worksheet of '06-2_EL_imp_50MW', '06-3_EL_imp_LFG_mgt_centre' and '06-4_EL_imp_2nd_LF' of 'SLC CDM Data Workbook Phase 9'</p> | | | | Measured Value | Applied Value | Remarks | Jul 2013 | 616.1 | 657.7 | | Aug | 426.2 | 426.3 | | Sep | 756.7 | 756.7 | | Oct | 1,269.7 | 1,269.7 | | Nov | 840.2 | 840.3 | | Dec | 517.1 | 528.4 | | Jan 2014 | 480.1 | 480.1 | | Feb | 409.1 | 409.2 | | Mar | 479.3 | 479.3 | | Apr | 461.3 | 461.3 | | May | 486.5 | 486.5 | | Jun | 322.0 | 322.0 | | Total | 7,064.2 | 7,117.5 | |
| | Measured Value | Applied Value | Remarks | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jul 2013 | 616.1 | 657.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Aug | 426.2 | 426.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sep | 756.7 | 756.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Oct | 1,269.7 | 1,269.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Nov | 840.2 | 840.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dec | 517.1 | 528.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jan 2014 | 480.1 | 480.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Feb | 409.1 | 409.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mar | 479.3 | 479.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Apr | 461.3 | 461.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| May | 486.5 | 486.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Jun | 322.0 | 322.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | 7,064.2 | 7,117.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Monitoring equipment: | <table><tr><td>Item name</td><td>WH-05</td></tr><tr><td>Coverage</td><td>Electricity imported to the LFG blower of 2nd landfill</td></tr><tr><td>Type</td><td>Electronic watt-hour meter</td></tr><tr><td>Accuracy class</td><td>0.5 class</td></tr><tr><td>Serial number</td><td>1104001</td></tr><tr><td>Calibration frequency</td><td>7 years (according to the national standard)</td></tr><tr><td>Date of last calibration</td><td>14/02/2011</td></tr><tr><td>Validity</td><td>Valid from 14/02/2011 to 13/02/2018</td></tr></table> | | | Item name | WH-05 | Coverage | Electricity imported to the LFG blower of 2 nd landfill | Type | Electronic watt-hour meter | Accuracy class | 0.5 class | Serial number | 1104001 | Calibration frequency | 7 years (according to the national standard) | Date of last calibration | 14/02/2011 | Validity | Valid from 14/02/2011 to 13/02/2018 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Item name | WH-05 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Coverage | Electricity imported to the LFG blower of 2 nd landfill | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Type | Electronic watt-hour meter | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Accuracy class | 0.5 class | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serial number | 1104001 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Calibration frequency | 7 years (according to the national standard) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Date of last calibration | 14/02/2011 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Validity | Valid from 14/02/2011 to 13/02/2018 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | | |
|---|---|--|
| Monitoring equipment: | Item name | WH-06 |
| | Coverage | Electricity imported to the central flaring facility |
| | Type | Electronic watt-hour meter |
| | Accuracy class | 0.5 class |
| | Serial number | 10JAJ073(24) |
| | Calibration frequency | 7 years (according to the national standard) |
| | Date of last calibration | 05/04/2011 |
| | Validity | Valid from 05/04/2011 to 04/04/2018 |
| Measuring/ Reading/Recording frequency: | Continuous measuring & reading, hourly recording | |
| Calculation method (if applicable): | (WH-05) + (WH-06)+ (KEPCO data) | |
| QA/QC procedures: | WH-05 and WH-06; State-check is made by responsible staff of SLC on a daily basis Regular maintenance is made by staff of Ecoenergy Periodically calibrated by approved 3 rd party authority KEPCO data : Under control of KEPCO | |
| Purpose of data: | Calculation of baseline emissions | |
| Additional comment: | | |

| | |
|---|---|
| Data / Parameter: | Regulatory requirements relating to landfill gas project |
| Unit: | Not applicable |
| Description: | Regulatory requirements relating to landfill gas projects |
| Measured/ Calculated / Default: | Not applicable |
| Source of data: | Investigation of legislation by CDM monitoring staff (Lae Bong HAN) |
| Value(s) of monitored parameter: | Not applicable |
| Monitoring equipment: | Not applicable |
| Measuring/ Reading/Recording frequency: | Annually recorded |
| Calculation method (if applicable): | Not applicable |
| QA/QC procedures: | Not applicable |
| Purpose of data: | Not applicable |
| Additional comment: | |

| | |
|----------------------------------|--|
| Data / Parameter: | Hours |
| Unit: | Hours |
| Description: | Operation of the energy plant (50MW power plant) |
| Measured/ Calculated / Default: | On site measurement |
| Source of data: | Generated (exported) amount of electricity by 50MW power plant |
| Value(s) of monitored parameter: | 6,816 |

| | |
|---|--|
| Monitoring equipment: | Same as above 'EL _{EXLFG} ' |
| Measuring/ Reading/Recording frequency: | Continuous measuring & reading, hourly recording |
| Calculation method (if applicable): | Electricity exported to grid > 0 kWh |
| QA/QC procedures: | Not applicable |
| Purpose of data: | Not applicable |
| Additional comment: | |

| | |
|---|---|
| Data / Parameter: | LPG |
| Unit: | Kg |
| Description: | The amount of LPG used for start-up (ignition) of 50MW power plant and each flares |
| Measured/ Calculated /Default: | Measured |
| Source of data: | Log data and invoices |
| Value(s) of monitored parameter: | 190 Kg Please refer to the worksheet of '10_PE_LPG' of 'SLC CDM Data Workbook Phase 9'. |
| Monitoring equipment: | Not applicable |
| Measuring/ Reading/Recording frequency: | Monthly recorded |
| Calculation method (if applicable): | Not applicable |
| QA/QC procedures: | Not applicable |
| Purpose of data: | Calculation of project emissions |
| Additional comment: | |

D.3. Implementation of sampling plan

>>

Not applicable

SECTION E. Calculation of emission reductions or GHG removals by sinks

E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

>>

According to applied methodology ACM0001 (Version 04), emission reductions are calculated by following equation (page 2).

Emission Reduction

The greenhouse gas emission reduction achieved by the project activity during a given year “y” (ER_y) are estimated as follows:

$$ER_y = (MD_{project,y} - MD_{reg,y}) * GWP_{CH4} + EL_y * CEF_{electricity,y} - ET_y * CEF_{thermal,y} \quad (1)$$

where:

| | |
|-----------------------|--|
| ER_y | is emissions reduction, in tonnes of CO ₂ equivalents (tCO ₂ e). |
| $MD_{project,y}$ | the amount of methane that would have been destroyed/combusted during the year, in tonnes of methane (tCH ₄) |
| $MD_{reg,y}$ | the amount of methane that would have been destroyed/combusted during the year in the absence of the project, in tonnes of methane (tCH ₄) |
| GWP_{CH4} | Global Warming Potential value for methane for the first commitment period is 21 tCO ₂ e/tCH ₄ |
| EL_y | net quantity of electricity exported during year y, in megawatt hours (MWh). |
| $CEF_{electricity,y}$ | CO ₂ emissions intensity of the electricity displaced, in tCO ₂ e/MWh. This can be estimated using either ACM0002 or AMSI.D, if the capacity is within the small scale threshold values, when grid electricity is used or displaced. |
| ET_y | incremental quantity of fossil fuel, defined as difference of fossil fuel used in the baseline and fossil use during project, for energy requirement on site under project activity during the year y, in TJ. |
| $CEF_{thermal,y}$ | CO ₂ emissions intensity of the fuel used to generate thermal/mechanical energy, in tCO ₂ e/TJ |

Figure 8 Emission reduction equation in ACM0001 (Version 04) (page 2)

As there are no consideration about project emissions and leakage in ACM0001 (Version 04), above equation can be used to calculate baseline emissions;

$$BE = (MD_{project} - MD_{reg}) \times GWP_{CH4} + EL \times CEF_{electricity} + ET \times CEF_{thermal}$$

Where this project does not include thermal energy displacement and MD_{reg} is calculated by AF (Adjustment factor), above equation can be simplified as below, which could be divided into two steps, baseline emissions from methane avoidance and from electricity generation;

$$BE = (MD_{project} \times (1 - AF) \times GWP_{CH4} + (EL_{exp} - EL_{imp}) \times EF$$

Baseline emissions from methane avoidance

In accordance with applied methodology ACM0001 (Version 04), captured amount of LFG and treated amount of LFG should be compared and smaller value ($LFG_{selected}$) should be used to determine the amount of methane destruction.

Next, weighted average of methane fraction from 1st and 2nd landfill multiplied in order to calculate methane content and global warming potential and AF applied to calculate baseline emissions.

$$BE_{methane_avoidance} = (LFG_{selected} \times W_{CH4} \times D_{CH4} \times (1 - AF) \times GWP_{CH4}$$

$$MD_{project} = LFG_{selected} \times W_{CH4} \times D_{CH4}$$

| | LFG _{selected} (Nm ³) | W _{CH4} (%) | MD _{project} (tCH ₄) | AF applied BE (tCH ₄) | BE from CH ₄ avoidance (tCO ₂ e) |
|--------------|---|-------------------------|--|--------------------------------------|---|
| Jul 2013 | 25,981,974.7 | 41.5 | 7,726.5 | 3,001.7 | 75,043 |
| Aug | 26,260,304.5 | 47.6 | 8,977.0 | 3,487.5 | 87,188 |
| Sep | 21,980,932.6 | 46.2 | 7,477.4 | 2,904.9 | 72,623 |
| Oct | 21,293,573.7 | 45.6 | 7,053.0 | 2,740.1 | 68,501 |
| Nov | 25,502,630.1 | 46.1 | 8,440.2 | 3,279.0 | 81,974 |
| Dec | 19,105,620.4 | 45.7 | 6,272.5 | 2,436.8 | 60,921 |
| Jan 2014 | 20,897,714.4 | 47.1 | 7,100.5 | 2,758.5 | 68,962 |
| Feb | 21,551,880.6 | 48.9 | 7,569.0 | 2,940.5 | 73,513 |
| Mar | 21,768,829.3 | 46.5 | 7,290.9 | 2,832.5 | 70,811 |
| Apr | 21,404,141.5 | 46.2 | 7,101.7 | 2,759.0 | 68,975 |
| May | 23,929,193.4 | 47.1 | 8,084.3 | 3,140.7 | 78,518 |
| Jun | 23,581,523.4 | 45.7 | 7,723.4 | 3,000.5 | 75,013 |
| Total | 273,258,318.6 | 46.1 | 90,816.4 | 35,281.7 | 882,041 |

* The above data, sum of each month, may not be equal to calculation. Calculation of emission reductions is more accurate than the above data because it was calculated on daily basis and especially, CH₄_{treated} on hourly basis. Please refer calculation spread sheet file for more detailed calculation.

Baseline emissions from electricity generation

In accordance with methodology, the amount of net generation and CO₂ emission factor of grid (EF) shall be used to calculate baseline emissions.

$$BE_{electricity_generation} = (EL_{exp} - EL_{imp}) \times EF$$

| | Elec. exported (MWh) | Elec. imported (MWh) | Net generation (MWh) | BE from elec. generation (tCO ₂ e) |
|--------------|-------------------------|-------------------------|-------------------------|--|
| Jul 2013 | 26,153.7 | 657.7 | 25,496.0 | 14,446 |
| Aug | 26,738.2 | 426.3 | 26,311.9 | 14,908 |
| Sep | 12,945.0 | 756.7 | 12,188.3 | 6,906 |
| Oct | 393.9 | 1,269.7 | - 875.8 | - 495 |
| Nov | 11,769.8 | 840.3 | 10,929.5 | 6,192 |
| Dec | 18,843.5 | 528.4 | 18,315.1 | 10,377 |
| Jan 2014 | 21,156.7 | 480.1 | 20,676.6 | 11,715 |
| Feb | 19,115.2 | 409.2 | 18,706.0 | 10,598 |
| Mar | 20,734.8 | 479.3 | 20,255.5 | 11,476 |
| Apr | 16,525.9 | 461.3 | 16,064.6 | 9,102 |
| May | 11,066.7 | 486.5 | 10,580.2 | 5,995 |
| Jun | 24,949.4 | 322.0 | 24,627.4 | 13,953 |
| Total | 210,392.9 | 7,117.5 | 203,275.4 | 115,172 |

* The above data, sum of each month, may not be equal to calculation because emission reductions are calculated with several decimal places i.e. it is calculated in kWh unit instead of MWh for accuracy. Please refer calculation spread sheet file for more detailed calculation

Baseline emissions from 9.88MW power plant

The 9.88MW power plants had not been operated since 03/2007 due to the technical problem. Therefore, the rest of LFG which is not treated in 50MW power plants was destroyed by central flaring facility only.

Emissions from the electricity generated by the existing 9.88MW power plants are regarded as baseline emissions and should be deducted from calculated baseline emissions.

For conservativeness, maximum theoretical output of 9.88MW power plant (78,760MWh/yr or 215.79MWh/day, approx. 91% of total capacity) has been chosen for additional baseline emission calculation. Since this monitoring period is 1 year (365 days), total of 44,628 tCO₂ (215.79MWh × 365 days × 0.5666tCO₂/MWh) is deducted from emission reductions.

$$BE_{9.88MW} = \text{Maximum theoretical output of 9.88MW power plant} \times \text{monitoring period} \times EF$$

| | Maximum theoretical output of 9.88MW (MWh) | Monitoring period (days) | EF (tCO ₂ /MWh) | BE _{9.88MW} (tCO ₂) |
|--------------|--|--------------------------|----------------------------|--|
| Total | 215.79 | 365 | 0.5666 | 44,628 |

E.2. Calculation of project emissions or actual net GHG removals by sinks

>>

Project emissions calculation is included in E.1 Emission reductions calculation, e.g. electricity usage is included in EL_{imp} except project emissions from fossil fuel usage, which is not included in above emission reductions calculation equation.

Project emissions from fossil fuel (LPG) usage are calculated as following equation:

$$PE_{LPG} = Usage(Kg) \times 0.509 Nm^3 / Kg \times 57.8 MJ / Nm^3 \times 20.2 CKg / GJ \times 10^{-6} \times \frac{44}{12} CO_2 / C$$

| | Usage of 50MW power plant (Kg) | Usage of central flaring facility (Kg) | PE _{LPG} (tCO ₂ e) |
|--------------|--------------------------------|--|--|
| 2011 | 0 | 40 | 0.08717 |
| 2012 | 0 | 40 | 0.08717 |
| 2013 | 50 | 0 | 0.10896 |
| 2014 | 0 | 60 | 0.13075 |
| Total | 50 | 140 | 0.41405 |

For conservativeness, 1 tCO₂e applied though calculated project emissions from LPG usage were 0.41405 tCO₂e.

E.3. Calculation of leakage

>>

There was no leakage in this monitoring period (in accordance with applied methodologies, leakage considered as zero (0) in PDD).

E.4. Summary of calculation of emission reductions or net anthropogenic GHG removals by sinks

| Item | Baseline emissions or baseline net GHG removals by sinks (t CO ₂ e) | Project emissions or actual net GHG removals by sinks (t CO ₂ e) | Leakage (t CO ₂ e) | Emission reductions or net anthropogenic GHG removals by sinks (t CO ₂ e) |
|--------------|--|---|-------------------------------|--|
| Total | 952,584 | 1 | 0 | 952,584 |

E.5. Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

| Item | Values estimated in ex-ante calculation of registered PDD | Actual values achieved during this monitoring period |
|--|---|--|
| Emission reductions or GHG removals by sinks (t CO ₂ e) | 1,201,315 | 952,584 |

E.6. Remarks on difference from estimated value in registered PDD

>>

Claimed actual emission reductions are about 79.3% of estimated ones in PDD. This is mainly owing to the difference between estimated LFG generation by MELF model in PDD and actual amount of treated LFG which caused by model's own limitation and change of characteristics of reclaimed waste (portion of degradable organic waste decreased).

Recently, due to supplementation of calculation method for LFG monitoring, the issuance success ratio was increased compare to estimated value in registered PDD. Compared to other landfill projects listed in CDM Pipeline (dated 01/08/2014), the performance of this project is not extraordinary

E.7. Actual emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

| Item | Actual values achieved up to 31 December 2012 | Actual values achieved from 1 January 2013 onwards |
|--|---|--|
| Emission reductions or GHG removals by sinks (t CO ₂ e) | 0 | 952,584 |

Appendix 1. Contact information of project participants and responsible persons/ entities

| | |
|--|--|
| Project participant and/or responsible person/ entity | <input checked="" type="checkbox"/> Project participant <input checked="" type="checkbox"/> Responsible person/ entity for completing the CDM-MR-FORM |
| Organization name | Sudokwon Landfill Site Management Corp. |
| Street/P.O. Box | #58 Baekseok Dong, Seo Gu |
| Building | |
| City | Incheon |
| State/Region | |
| Postcode | 404-706 |
| Country | Republic of Korea |
| Telephone | +82-32-560-9600 |
| Fax | +82-32-560-9615 |
| E-mail | hlb2305@slc.or.kr |
| Website | www.slc.or.kr |
| Contact person | Lae Bong Han |
| Title | Director |
| Salutation | - |
| Last name | Han |
| Middle name | |
| First name | Lae Bong |
| Department | Climate Change Business Division |
| Mobile | +82-10-3308-2305 |
| Direct fax | - |
| Direct tel. | +82-32-560-9600 |
| Personal e-mail | hlb2305@slc.or.kr |

| | |
|--|--|
| Project participant and/or responsible person/ entity | <input checked="" type="checkbox"/> Project participant <input checked="" type="checkbox"/> Responsible person/ entity for completing the CDM-MR-FORM |
| Organization name | Sudokwon Landfill Site Management Corp. |
| Street/P.O. Box | #58 Baekseok Dong, Seo Gu |
| Building | |
| City | Incheon |
| State/Region | |
| Postcode | 404-706 |
| Country | Republic of Korea |
| Telephone | +82-32-560-9605 |
| Fax | +82-32-560-9615 |
| E-mail | tercker@slc.or.kr |
| Website | www.slc.or.kr |
| Contact person | WonGu Hwang |
| Title | Staff |
| Salutation | - |
| Last name | Hwang |
| Middle name | |
| First name | WonGu |
| Department | Climate Change Business Division |
| Mobile | +82-10-5183-1979 |
| Direct fax | - |
| Direct tel. | +82-32-560-9605 |
| Personal e-mail | tercker@slc.or.kr |

Document information

| <i>Version</i> | <i>Date</i> | <i>Description</i> |
|---|-----------------|---|
| 04.0 | 25 June 2014 | <p>Revisions to:</p> <ul style="list-style-type: none"> • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>; • Editorial improvement. |
| 03.2 | 5 November 2013 | Editorial revision to correct table in page 1. |
| 03.1 | 2 January 2013 | Editorial revision to correct table in section E.5. |
| 03.0 | 3 December 2012 | Revision required to introduce a provision on reporting actual emission reductions or net anthropogenic GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11). |
| 02.0 | 13 March 2012 | Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20). |
| 01 | 28 May 2010 | EB 54, Annex 34. Initial adoption. |
| Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report | | |