# VERIFICATION REPORT
# VEMA S.A.

## VERIFICATION OF THE

**DEVELOPMENT AND IMPROVEMENT OF WATER SUPPLY SYSTEM, DRAINAGE SYSTEM AND WASTEWATER TREATMENT OF CITY COMMUNAL ENTERPRISE "MYKOLAYIVVODOKANAL"**

THE THIRD PERIODIC
FOR THE PERIOD OF 01/01/2012 – 31/07/2012

REPORT NO. UKRAINE-VER/0660/2012
REVISION NO. 02

BUREAU VERITAS CERTIFICATION

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| Date of first issue:<br>30/07/2012 | Organizational unit:<br>Bureau Veritas Certification Holding SAS |
| Client:<br>VEMA S.A. | Client ref.:<br>Fabian Knodel |

Summary:

Bureau Veritas Certification has made the 3rd periodic verification for the period from January 1, 2012 to July 31, 2012 of the project "Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal", project of VEMA S.A, located in Mykolaiv city, Ukraine, and applying JI specific approach, on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria (but for the crediting period) refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

The verification scope is defined as a periodic independent review and ex post determination by the Accredited Entity of the monitored reductions in GHG emissions during defined verification period, and consisted of the following three phases: i) desk review of the monitoring report against project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the verification process is a list of Clarification, Corrective Actions Requests, Forward Actions Requests (CR, CAR and FAR), presented in Appendix A.

In summary, Bureau Veritas Certification confirms that the project is implemented as planned and described in approved project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions. The GHG emission reduction is calculated accurately and without material errors, omissions, or misstatements, and the ERUs issued totalize 39 936 tonnes of $CO_2$ equivalent for the monitoring period from 01/01/2012 to 31/07/2012.

Our opinion relates to the project's GHG emissions and resulting GHG emission reductions reported and related to the approved project baseline and monitoring, and its associated documents.

| | | |
|---|---|---|
| Report No.:<br>UKRAINE-ver/0660/2012 | Subject Group:<br>JI | |
| Project title:<br>"Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal" | | |
| Work carried out by:<br>Oleg Skoblyk - Team Leader, Climate Change Lead Verifier<br>Kateryna Zinevych - Team Member, Climate Change Verifier | | |
| Work reviewed by:<br>Ivan Sokolov – Internal technical reviewer | | |
| Work approved by:<br>Ivan Sokolov – Climate Change Operational Manager | | |
| Date of this revision:<br>31/08/2012 | Rev. No.:<br>02 | Number of pages:<br>28 |

Bureau Veritas Certification Holding SAS

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# 1 INTRODUCTION

VEMA S.A. has commissioned Bureau Veritas Certification to verify the emissions reductions of its JI project "Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal" (hereafter called "the project") at Mykolaiv city, Ukraine.

This report summarizes the findings of the verification of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The verification covers the period from January 1, 2012 to July 31, 2012.

## 1.1 Objective

Verification is the periodic independent review and ex post determination by the Accredited Independent Entity of the monitored reductions in GHG emissions during defined verification period.

The objective of verification can be divided in Initial Verification and Periodic Verification.

UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

## 1.2 Scope

The verification scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and monitoring report, and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

The verification is not meant to provide any consulting towards the Client. However, stated requests for clarifications, corrective and/or forward actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

## 1.3 Verification Team

The verification team consists of the following personnel:

Oleg Skoblyk

Bureau Veritas Certification Team Leader, Climate Change Lead Verifier

Kateryna Zinevych

Bureau Veritas Certification Team Member, Climate Change Verifier

This verification report was reviewed by:

Ivan Sokolov
Bureau Veritas Certification Internal Technical Reviewer

# 2 METHODOLOGY

The overall verification, from Contract Review to Verification Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a verification protocol was customized for the project, according to the version 01 of the Joint Implementation Determination and Verification Manual, issued by the Joint Implementation Supervisory Committee at its 19 meeting on 04/12/2009. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from verifying the identified criteria. The verification protocol serves the following purposes:

- It organizes, details and clarifies the requirements a JI project is expected to meet;
- It ensures a transparent verification process where the verifier will document how a particular requirement has been verified and the result of the verification.

The completed verification protocol is enclosed in Appendix A to this report.

## 2.1 Review of Documents

The Monitoring Report (MR) submitted by VEMA S.A. and additional background documents related to the project design, baseline, i.e. country Law, Project Design Document (PDD), Approved CDM methodology, Determination Report of the project issued by Bureau Veritas Certification Holding SAS No. UKRAINE-det/0477/2012, version 01 dated 06/04/2012, Guidance on criteria for baseline setting and monitoring, Host party criteria, the Kyoto Protocol, Clarifications on Verification Requirements to be checked by an Accredited Independent Entity were reviewed.

The verification findings presented in this report relate to the Monitoring Report for the period from 01/01/2012 to 31/07/2012, version 01 as of July 25, 2012 and version 02 as of August 27, 2012 and the project as described in the determined PDD.

## 2.2 Follow-up Interviews

On 02/08/2012 Bureau Veritas Certification verification team visited the project implementation site (CCE “Mykolayivvodokanal”) and performed on-site interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of CCE “Mykolayivvodokanal” and VEMA S.A. were interviewed (see References). The main topics of the interviews are summarized in Table 1.

**Table 1 Interview topics**

| Interviewed organization | Interview topics |
|---|---|
| CCE “Mykolayivvodokanal” | ➢ Organizational structure<br>➢ Responsibilities and authorities |

| | |
|---|---|
| | ➢ Roles and responsibilities for data collection and processing<br>➢ Installation of equipment<br>➢ Data logging, archiving and reporting<br>➢ Metering equipment control<br>➢ Record keeping system, database<br>➢ IT management<br>➢ Training of personnel<br>➢ Quality management procedures and technologies<br>➢ Internal audits and check-ups |
| Consultant:<br>VEMA S.A. | ➢ Baseline methodology<br>➢ Monitoring plan<br>➢ Monitoring report<br>➢ Deviations from the PDD |

## 2.3 Resolution of Clarification, Corrective and Forward Action Requests

The objective of this phase of the verification is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the GHG emission reduction calculation.

If the Verification Team, in assessing the monitoring report and supporting documents, identifies issues that need to be corrected, clarified or improved with regard to the monitoring requirements, it should raise these issues and inform the project participants of these issues in the form of:

(a) Corrective action request (CAR), requesting the project participants to correct a mistake that is not in accordance with the monitoring plan;

(b) Clarification request (CL), requesting the project participants to provide additional information for the Verification Team to assess compliance with the monitoring plan;

(c) Forward action request (FAR), informing the project participants of an issue, relating to the monitoring that needs to be reviewed during the next verification period.

The Verification Team will make an objective assessment as to whether the actions taken by the project participants, if any, satisfactorily resolve the issues raised, if any, and should conclude its findings of the verification.

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in the verification protocol in Appendix A.

# 3 VERIFICATION CONCLUSIONS

In the following sections, the conclusions of the verification are stated.

The findings from the desk review of the original monitoring documents and the findings from interviews during the follow up visit are described in the Verification Protocol in Appendix A.

The Clarification, Corrective and Forward Action Requests are stated, where applicable, in the following sections and are further documented in the Verification Protocol in Appendix A. The verification of the Project resulted in 8 Corrective Action Requests and 2 Clarification Requests.

The number between brackets at the end of each section corresponds to the DVM paragraph.

## 3.1 Remaining issues and FARs from previous verifications

There aren't any remaining issues and FARs from previous verifications.

## 3.2 Project approval by Parties involved (90-91)

The project obtained approval by the Host party (Ukraine) - Letter of Approval No 1272/23/7 issued by the State Environmental Investment Agency of Ukraine dated 17/05/2012, and written project approval by the party – buyer of the emission reduction units (Switzerland) - Letter of Approval No. J294-0485 issued by the Federal Office for the Environment (FOEN) of Switzerland dated 14/05/2012.
The abovementioned written approval is unconditional.

The identified areas of concern as to the project approval by the parties involved, project participants responses and BVC's conclusions are described in Appendix A to this report (refer to CAR 01).

## 3.3 Project implementation (92-93)

The main purpose of the project is reduction of electric energy consumption by modernization and development of the centralized water supply, drainage and wastewater treatment system. This includes replacement and modernization of pumps, water distribution and drainage networks, installation of frequency regulators, optimization of the technological process of water pumping, introduction of mini hydroelectric power plant in the city of Mykolaiv. The implementation of the abovementioned technologies will allow for reduction of greenhouse gas ($CO_2$) emissions and promote sustainable development of the city.

The project measures include:

- modernization of pumping equipment;
- replacement of pumping equipment;
- optimization of the technological process of water pumping, i.e. change of operation modes of pumping plants;
- replacement of water supply and drainage networks;
- replacement of shut-off and control valves;

- installation of a new group of metering devices;
- modernization of water treatment technology;
- installation of frequency regulators;
- modernization of aerotanks;
- implementation of a mini hydroelectric power plant (MHEPP).

The project activity started at the end of 2005 and consisted in the first measures on optimization of the technological process of water pumping. Because of the fact that implementation of measures under the project commenced in 2005, in view of conservative approach the emission reductions generated due to these measures were not accounted in the project.

Measures that were implemented in the period of January 1, 2012 – July 31, 2012 are provided in Table 2 below:

**Table 2 Project implementation progress status in the period of 01/01/2012 – 31/07/2012**

| No. | Project measures | Number of units of works performed for the period of 01/01/2012 – 31/07/2012 | Starting date of project measures implementation | Expected date of completion of project implementation measures |
|---|---|---|---|---|
| 1 | Replacement of pumping equipment | 3 units | 01/01/2012 | 31/07/2012 |
| 2 | Replacement of water supply and drainage networks | 2 499 / 273.5 r.m. | 01/01/2012 | 31/07/2012 |
| 3 | Installation of frequency regulators | 1 unit | 01/01/2012 | 31/07/2012 |

The project measures are mainly implemented according to the implementation schedule presented in the determined PDD version 03.

Detailed information about implemented measures and installed equipment during the reporting period of January 1, 2012 – July 31, 2012 at departments and divisions is provided in Annex 4 to the Monitoring report.

The starting date of the crediting period did not change and remains the date of the first generated emission reduction units, namely: January 01, 2006.

The Monitoring System is in place and operational.

The monitoring equipment such as electricity meters, water meters are installed and comply with the industrial standards of Ukraine. All monitoring equipment is covered by the detailed verification (calibration) plan and is verified with periodicity, established by its manufacturer.

The project implementation doesn't provide for any negative impacts on the environment. The only impact on the environment is dismantled equipment, which will be further stored at the company's warehouses.

CCE "Mykolayivvodokanal" has all necessary reports, permissions, limits and licenses required by the Ukrainian legislation, including:

- permit for "Special water use";
- Form 2-TP (water industry), Report on water use;
- Form 11 MTP, Report on the results of fuel, heat energy and electric energy use.

Implementation of this project allows to improve servicing of water consumers. Experience of CCE "Mykolayivvodokanal" employees and adherence to the norms "On drinking water and drinking water supply" allow to minimize the occurrence of emergency situations in the course of this project implementation.

The identified areas of concern as to the project implementation, project participants responses and BVC's conclusions are described in Appendix A to this report (refer to CAR 02, CAR 03, CL 01).

## 3.4 Compliance of the monitoring plan with the monitoring methodology (94-98)

The monitoring occurred in accordance with the monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website.

For calculating the emission reductions, key factors such as volume of water to be supplied to the customers, applicable tariffs for water supply and drainage, state policies in potable water and potable water supply sector, experience in implementation of measures planned under the project, existing practice in Ukraine in this sphere, financial costs and experience as well as sectoral reform policy in the water supply sphere and legislation influencing the baseline emissions and the activity level under the project and the project emissions as well as risks associated with the project were taken into account, as appropriate.

Data sources used for calculating emission reductions such as appropriately calibrated metering equipment, the study of carbon dioxide emission factors are clearly identified, reliable and transparent.

Emission factors, including default emission factors, are selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice. Carbon dioxide emission factors (EF) for consumption of electricity from the nation power grid of Ukraine were set in accordance with:
- Decree of the National Environmental Investment Agency of Ukraine “On approval of carbon dioxide emission factors in 2011” No. 75 dated 12/05/2011;

The calculation of emission reductions is based on conservative assumptions and the most plausible scenarios in a transparent manner.

The monitoring periods per component of the project are clearly specified in the monitoring report and do not overlap with those for which verifications were already deemed final in the past.

The identified areas of concern as to the compliance of the monitoring plan with the monitoring methodology, project participants responses and BVC’s conclusions are described in Appendix A to this report (refer to CAR 04, CAR 05).

## 3.5 Revision of monitoring plan (99-100)

Not applicable.

## 3.6 Data management (101)

The data and their sources, provided in monitoring report, are clearly identified, reliable and transparent.
The implementation of data collection procedures is in accordance with the monitoring plan, including the quality control and quality assurance procedures.
The function of the monitoring equipment, including its calibration status, is in order.

According to the effective Law "On metrology and metrological activity" all metering equipment in Ukraine shall conform to stated requirements of corresponding standards and is subject to periodic calibration. Metering equipment used for monitoring is subject to periodic state verification. Calibration of CCE "Mykolayivvodokanal" metering equipment is conducted according to the national standards pursuant to the Certificate No. 071516 dated October 10, 2006 On the state metrological certification of the metrology CCE "Mykolayivvodokanal" department "Water metering workshop".

The project complies with legal requirements to the calibration and verification.
The evidence and records used for the monitoring are maintained in a traceable manner.
The data collection and management system for the project is in accordance with the monitoring plan.
The most objective and cumulative factor demonstrating whether the emission reductions actually occurred, is electricity saving. It may be determined as the difference between baseline electricity consumption and electricity consumption after the project implementation. If pumps consume electricity at the project level, then all other

indicators, such as efficiency of new pumps, aeration system, and loss of water in water distribution and drainage networks, are corresponding.

The monitoring procedure provides for the following:

1) Measures for control of electric energy, consumed by CCE “Mykolayivvodokanal”
2) Measures for control of water supplied to the consumers at CCE “Mykolayivvodokanal”
3) Measures for control of accounting of wastewater drained from consumers at CCE “Mykolayivvodokanal”
4) Measures for control of accounting of wastewater drained by wastewater treatment facilities (HWWTF, VWWTF) at CCE “Mykolayivvodokanal”
5) Measure for control of electric energy to be generated by CCE “Mykolayivodokanal” after the installation of the mini hydroelectric power plant.

Data and parameters that are subject to periodic monitoring according to the monitoring plan provided in the PDD version 03 as well as a list of constant values that are used to calculated emission reductions are given in Section B.2.1 of the Monitoring Report and Supporting document (Excel file) Annex 3 Calculation of GHG emission reductions due to electricity saving in water supply, drainage and wastewater treatment systems of CCE “Mykolayivvodokanal”.

Based on the obtained data that are subject to metering and control CCE “Mykolayivvodokanal” prepares the following documents:

- Electricity consumption report under the form 11-MTP, that is signed by CCE “Mykolayivvodokanal” director and submitted to Mykolaiv regional state administration;

- Report 2-TP (water industry) is made on the basis of monthly statements and submitted every three, six and twelve months to the Mykolaiv Administration of Water Resources. Payment for water transferred to consumers is made according to these reports.

CCE “Mykolayivvodokanal” collects and keeps the data relating to electric energy consumed and acquired water for water-supply in the forms of electric energy and acquired water bills.

Monitoring data collection at CCE “Mykolayivvodokanal” is carried out as follows:

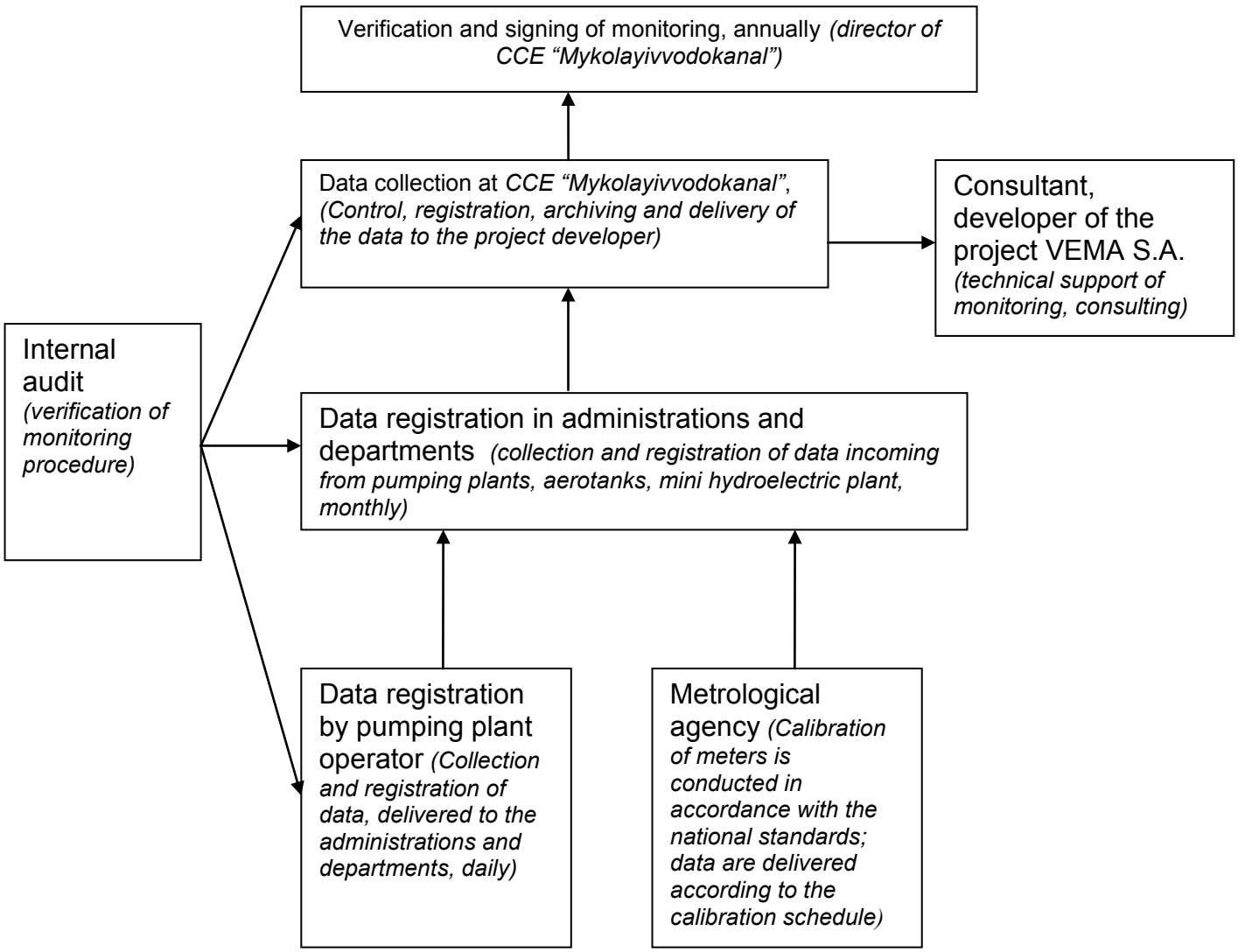


**Figure 1 Structure of monitoring data collection**

All necessary information for monitoring of GHGs emission reductions is stored in paper or/and electronic formats and will be kept till the end of the crediting period and for two years after the last operation with ERUs from the project.

The Monitoring Report version 02 provides sufficient information on the assigned roles, responsibilities and authorities for implementation and maintenance of monitoring procedures including data management. The verification team confirms effectiveness of the existing management and operational systems and finds them eligible for reliable project monitoring.

The identified areas of concern as to the data management, project participants responses and BVC's conclusions are described in Appendix A to this report (refer to CAR 06, CAR 07, CL 02).

## 3.7 Verification regarding programmes of activities (102-110)

Not applicable.

# 4 VERIFICATION OPINION

Bureau Veritas Certification has made the 3rd periodic verification for the period from January 1, 2012 to July 31, 2012 of the project "Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal" in Ukraine, which applies JI specific approach. The verification was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The verification consisted of the following three phases: i) desk review of the monitoring report against the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion.

The management of VEMA S.A. is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions of the project on the basis set out within the project Monitoring Plan indicated in the final PDD version 03. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project, is the responsibility of the management of the project.

Bureau Veritas Certification verified the Project Monitoring Report version 02 for the reporting period from January 1, 2012 to July 31, 2012. Bureau Veritas Certification confirms that the project is implemented as planned and described in approved project design documents. Installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately. The monitoring system is in place and the project is generating GHG emission reductions.

Emission reductions achieved by the project for the period from 01/01/2012 to 31/07/2012 do not differ significantly from the amount predicted for the same period in the determined PDD. See emission reductions predicted in the determined PDD version 03 and actual emission reductions stated in the MR version 02 in Table 3 of this Report.

**Table 3 Emission reductions predicted in the determined PDD version 03 and actual emission reductions stated in the MR version 02**

| Period | Estimated GHG emission reductions stated in the determined PDD, t $CO_{2e}$ | Actual GHG emission reductions stated in the Monitoring report, t $CO_{2e}$ |
|---|---|---|
| 01/01/2012-31/07/2012 | 43 657 | 39 936 |

The difference is explained by the fact that at the time of PDD writing it was impossible to obtain accurate data necessary for calculation of GHG emission reductions for the current monitoring period. To calculate the GHG emission reductions for the current monitoring period all the necessary information was given and this provided an opportunity to accurately determine the amount of emissions in the baseline and project scenarios. Amount of emission reductions for the period 01/01/2012-31/07/2012 provided in the determined PDD was calculated by dividing the total annual amount of emission reductions stated in the PDD by 12 (12 months) and multiplying by 7 (7 months).

Bureau Veritas Certification can confirm that the GHG emission reduction is accurately calculated and is free of material errors, omissions, or misstatements. Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the approved project baseline and monitoring, and its associated documents. Based on the information we have seen and evaluated, we confirm, with a reasonable level of assurance, the following statement:

Reporting period: From 01/01/2012 to 31/07/2012

In period from 01/01/2012 to 31/07/2012

| | | | |
|---|---|---|---|
| Baseline emissions | : | 75 475 | tonnes of $CO_2$ equivalent. |
| Project emissions | : | 35 539 | tonnes of $CO_2$ equivalent. |
| Emission Reductions | : | 39 936 | tonnes of $CO_2$ equivalent. |

# 5 REFERENCES

**Category 1 Documents:**
Documents provided by project participants that relate directly to the GHG components of the project.

| | |
|---|---|
| /1/ | Monitoring Report of JI project "Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal" for the period from 01/01/2012 to 31/07/2012, version 01, dated July 25, 2012 |
| /2/ | Monitoring Report of JI project "Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal" for the period from 01/01/2012 to 31/07/2012, version 02, dated August 27, 2012 |
| /3/ | Annex 1 to the Monitoring Report of JI project "Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal" for the period from 01/01/2012 to 31/07/2012 "Monitoring Plan Parameters" |
| /4/ | Annex 2 to the Monitoring Report of JI project "Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal" for the period from 01/01/2012 to 31/07/2012 "Project and monitoring equipment" (Excel file) |
| /5/ | Annex 3 to the Monitoring Report of JI project "Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal" for the period from 01/01/2012 to 31/07/2012 "Calculation of GHG emission reductions due to electric energy saving in the water supply, drainage and wastewater treatment systems of CCE "Mykolayivvodokanal" (Excel file) |
| /6/ | Annex 4 to the Monitoring Report of JI project "Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal" for the period from 01/01/2012 to 31/07/2012 "Measures that were implemented under the project" (Excel file) |
| /7/ | Annex 5 to the Monitoring Report of JI project "Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal" for the period from 01/01/2012 to 31/07/2012 "Monitoring values of the parameters used for GHG emission calculation" (Excel file) |
| /8/ | PDD "Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal", version 03 dated 02/04/2012 |
| /9/ | Determination Report issued by Bureau Veritas Certification Holding SAS No. UKRAINE-det/0477/2012 "Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal", version 01 dated 06/04/2012 |
| /10/ | Letter of Approval of the joint implementation project "Development and improvement of water supply system, drainage system and wastewater |

| | |
|---|---|
| | treatment of City Communal Enterprise "Mykolayivvodokanal" No. 1272/23/7 issued by the State Environmental Investment Agency of Ukraine dated 17/05/2012. |
| /11/ | Letter of Approval of the project under article 6 of the Kyoto protocol (JI) "Development and improvement of water supply system, drainage system and wastewater treatment of City Communal Enterprise "Mykolayivvodokanal" No. J294-0485 issued by the Federal Department on the Environment (FOEN) of Switzerland dated 14/05/2012 |

**Category 2 Documents:**
Background documents related to the design and/or methodologies employed in the design or other reference documents.

| | |
|---|---|
| /1/ | Work acceptance certificate, January 2012 (Repair of pumping equipment SM-100-65-200/2) |
| /2/ | Work acceptance certificate, January 2012 (Repair of water firefighting system) |
| /3/ | Work acceptance certificate, April 2012 (Replacement of AKU-88-2 pump with ND-125-100-250 pump) |
| /4/ | Work acceptance certificate, April 2012 (Caulk of combustion joints, installation of clamps, installation of repair clamps) |
| /5/ | Work acceptance certificate, April 2012 (Repair of wells, replacement of gravity-flowing collectors, replacement of pressure reservoirs, installation of covers, PPR) |
| /6/ | Certificate of completion of repair plan in June 2012 in Zavodskyi district (repair of shut-off valves, pipelines, wells…) |
| /7/ | Certificate of completion of repair plan in July 2012 in Leninskyi district (repair of shut-off valves, pipelines, wells…) |
| /8/ | Certificate of completion of repair plan in July 2012 in Central district (repair of shut-off valves, pipelines, wells…) |
| /9/ | Certificate of completion of repair plan in July 2012 in water conduits (ремонт засувок, трубопроводів, колодязів…) |
| /10/ | Certificate of completion of repair plan in May 2012 in Central district (repair of shut-off valves, pipelines, wells…) |
| /11/ | Certificate of completion of repair plan in May 2012 in Leninskyi district (repair of shut-off valves, pipelines, wells…) |
| /12/ | Certificate of completion of repair plan in May 2012 in Zavodskyi district (repair of shut-off valves, pipelines, wells…) |

| | |
|---|---|
| /13/ | Certificate of completion of repair plan in April 2012 in Leninskyi district (repair of shut-off valves, pipelines, wells...) |
| /14/ | Certificate of completion of repair plan in April 2012 in Korabelnyi district (repair of shut-off valves, pipelines, wells...) |
| /15/ | Performed work certificate dated July 2012 |
| /16/ | Performed work certificate dated June 2012 |
| /17/ | Performed work certificate dated May 2012 |
| /18/ | Information on energy consumption at CCE "Mykolayivvodokanal" for the period from January to July 2012 in the city and the conduit |

**Persons interviewed:**

List persons interviewed during the verification or persons that contributed with other information that are not included in the documents listed above.

| | Name | Organization | Position |
|---|---|---|---|
| /1/ | Larysa Tantsiura | CCE "Mykolayivvodokanal" | Head of water supply service |
| /2/ | Tamara Shapoval | CCE "Mykolayivvodokanal" | Head of production and technical department |
| /3/ | Oleksii Ababilov | CCE "Mykolayivvodokanal" | Chief energy engineer |
| /4/ | Oleksandr Zubov | CCE "Mykolayivvodokanal" | Chief mechanical engineer |
| /5/ | Andrii Misiura | CCE "Mykolayivvodokanal" | Deputy director |
| /6/ | Oleksandr Deli | CCE "Mykolayivvodokanal" | Chief engineer |
| /7/ | Ivan Pienov | CCE "Mykolayivvodokanal" | Head of resource and technical supplies department |
| /8/ | Mykola Moiseenko | CCE "Mykolayivvodokanal" | Head of drainage network |
| /9/ | Iryna Naumenko | "CEP" LLC | Consultant of VEMA S.A. |

APPENDIX A: VERIFICATION PROTOCOL

**BUREAU VERITAS CERTIFICATION HOLDING SAS**

**JI PROJECT VERIFICATION PROTOCOL**

**Check list for verification, according to the JOINT IMPLEMENTATION DETERMINATION AND VERIFICATION MANUAL (Version 01)**

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
|---|---|---|---|---|
| **Project approvals by Parties involved** | | | | |
| 90 | Has the DFPs of at least one Party involved, other than the host Party, issued a written project approval when submitting the first verification report to the secretariat for publication in accordance with paragraph 38 of the JI guidelines, at the latest? | The project has been approved by both Host Party (Ukraine) and the party involved (Switzerland). The Letters of Approval were issues by DFPs of Parties involved. Both Letters of Approval were available as of the start of the first verification.<br>**CAR 01.** Please, state the number of the Letter of Approval from Ukraine. | **CAR 01** | OK |
| 91 | Are all the written project approvals by Parties involved unconditional? | All the written project approvals by Parties involved are unconditional | OK | OK |
| Project implementation | | | | |
| 92 | Has the project been implemented in accordance with the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website? | **CL 01**. Please, in Section A.7. of the MR clarify the discrepancy between the volumes of lifted / pumped water, pumped wastewater, wastewater that is treated in the monitoring period, the amount of electricity consumed in the monitoring period stated in the MR | **CL 01** | OK |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
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| | | and the ones stated in the PDD. | | |
| 93 | What is the status of operation of the project during the monitoring period? | The implementation of the project activities is realized mainly according to the project plan.<br>There have been insignificant deviations from the project in the process of implementation of project activities aimed at modernization of pumping plants at CCE "Mykolayivvodokanal", namely:<br>- change of the capacity of the installed pumps caused by a change of volume of water to be supplied to the consumers;<br>According to the implementation schedule specified in the determined PDD, the development of the project documentation for the installation of frequency regulators started in December 2005.<br>Detailed information about measures implemented at pumping plants and divisions is provided in Annex 4 (Measures implemented under the project), attached to the Monitoring Report in electronic form (Excel file).<br>**CAR 02.** The monitoring period is incorrect in Section A.3. of the MR.<br>**CAR 03.** Please, provide information about the quantity of installed/replaced equipment units in the current monitoring period. | **CAR 02**<br>**CAR 03** | OK<br>OK |
| Compliance with monitoring plan | | | | |
| 94 | Did the monitoring occur in accordance | The only deviation from the initial monitoring plan is the | OK | OK |

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| | with the monitoring plan included in the PDD regarding which the determination has been deemed final and is so listed on the UNFCCC JI website? | application of carbon dioxide emission factors (EF) for consumption of electricity from the nation power grid of Ukraine set in accordance with:<br>- Decree of the National Environmental Investment Agency of Ukraine "On approval of carbon dioxide emission factors in 2011" No. 75 dated 12/05/2011. | | |
| 95 (a) | For calculating the emission reductions or enhancements of net removals, were key factors, e.g. those listed in 23 (b) (i)-(vii) above, influencing the baseline emissions or net removals and the activity level of the project and the emissions or removals as well as risks associated with the project taken into account, as appropriate? | For calculating the emission reductions, key factors such as volume of water to be supplied to the customers, applicable tariffs for water supply and drainage, state policies in potable water and potable water supply sector, experience in implementation of measures provided by the project, existing practice in Ukraine in this sphere, financial costs and experience, sectoral policies of reforms in the water supply sphere and legislation influencing the baseline emissions, the activity level of the project and the project emissions as well as risks associated with the project were taken into account, as appropriate. | OK | OK |
| 95 (b) | Are data sources used for calculating emission reductions or enhancements of net removals clearly identified, reliable and transparent? | Yes, data sources used for calculating emission reductions are clearly identified, reliable and transparent.<br>**CAR 04**. Section B.2.1. of the MR contains references to NEIA orders that do not relate to the data used in the current monitoring period.<br>**CAR 05**. It is stated in Section B.2.1. of the MR that the total amount of electricity generated by mini hydroelectric power plant will be subject to monitoring after 01/03/2012 while construction of the mini | **CAR 04**<br>**CAR 05** | OK<br>OK |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
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| | | hydroelectric power plant is not finished yet. | | |
| 95 (c) | Are emission factors, including default emission factors, if used for calculating the emission reductions or enhancements of net removals, selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice? | Yes, emission factors, including default emission factors, if used for calculating the emission reductions, are selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice.<br>In calculations carbon dioxide emission factors (EF) for consumption of electricity from the nation power grid of Ukraine were used in accordance with:<br>- Decree of the National Environmental Investment Agency of Ukraine "On approval of carbon dioxide emission factors in 2011" No. 75 dated 12/05/2011. | OK | OK |
| 95 (d) | Is the calculation of emission reductions or enhancements of net removals based on conservative assumptions and the most plausible scenarios in a transparent manner? | Calculation of emission reductions is based on conservative assumptions and the most plausible scenarios in a transparent manner. | OK | OK |
| Applicable to JI SSC projects only | | | | |
| 96 | Is the relevant threshold to be classified as JI SSC project not exceeded during the monitoring period on an annual average basis?<br>If the threshold is exceeded, is the maximum emission reduction level estimated in the PDD for the JI SSC project or the bundle for the monitoring period determined? | N/a | N/a | N/a |
| Applicable to bundled JI SSC projects only | | | | |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
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| 97 (a) | Has the composition of the bundle not changed from that is stated in F-JI-SSCBUNDLE? | N/a | N/a | N/a |
| 97 (b) | If the determination was conducted on the basis of an overall monitoring plan, have the project participants submitted a common monitoring report? | N/a | N/a | N/a |
| 98 | If the monitoring is based on a monitoring plan that provides for overlapping monitoring periods, are the monitoring periods per component of the project clearly specified in the monitoring report?<br>Do the monitoring periods not overlap with those for which verifications were already deemed final in the past? | N/a | N/a | N/a |
| Revision of monitoring plan | | | | |
| Applicable only if monitoring plan is revised by project participant | | | | |
| 99 (a) | Did the project participants provide an appropriate justification for the proposed revision? | N/a | N/a | N/a |
| 99 (b) | Does the proposed revision improve the accuracy and/or applicability of information collected compared to the original monitoring plan without changing conformity with the relevant rules and regulations for the establishment of monitoring plans? | N/a | N/a | N/a |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
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| Data management | | | | |
| 101 (a) | Is the implementation of data collection procedures in accordance with the monitoring plan, including the quality control and quality assurance procedures? | The implementation of data collection procedures is in accordance with the monitoring plan, including the quality control and quality assurance procedures.<br>**CAR 06**. Provide information on the manufacturer of ZMD 405SCR44 meters in Section B.1. of the MR.<br>**CAR 07**. Please, provide the number of table “Types of flowmeters and their producers” in Section B.1. | **CAR 06**<br>**CAR 07** | OK<br>OK |
| 101 (b) | Is the function of the monitoring equipment, including its calibration status, is in order? | Yes, The function of the monitoring equipment, including its calibration status, is in order.<br>According to the effective Law of Ukraine "On metrology and metrological activity" all metering devices in Ukraine shall conform to stated requirements of corresponding standards and be calibrated periodically. Calibration of CCE "Mykolayivvodokanal" metering equipment is conducted according to the national standards pursuant to the Certificate No. 071516 dated October 10, 2006 On the state metrological certification of the metrology CCE "Mykolayivvodokanal" department "Water metering workshop".<br>The project complies with legal requirements to the calibration and verification.<br>**CAR 08.** State calibration intervals for meters of SA-4-I678 and SA-4-679 type in Table 5, Section B.1.2. | **CAR 08** | OK |
| 101 (c) | Are the evidence and records used for the monitoring maintained in a traceable manner? | The evidence and records used for the monitoring are maintained in a traceable manner. CCE "Mykolayivvodokanal" collects and keeps the data | OK | OK |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
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| | | relating to electric energy and acquired water for water-supply in the forms of electric energy and acquired water bills. All information necessary for monitoring of GHGs emission reductions is stored in paper or/and electronic formats and will be kept till the end of the crediting period and for two years after the last transaction with ERUs from the project. | | |
| 101 (d) | Is the data collection and management system for the project in accordance with the monitoring plan? | The data collection and management system for the project is in accordance with the monitoring plan. The verification team confirms effectiveness of the existing management and operational systems and found them eligible for reliable project monitoring. **CL 02.** Please, provide necessary information relating to the volumes of water consumed. | **CL 02** | OK |
| Verification regarding programs of activities (additional elements for assessment) | | | | |
| 102 | Is any JPA that has not been added to the JI PoA not verified? | N/a | N/a | N/a |
| 103 | Is the verification based on the monitoring reports of all JPAs to be verified? | N/a | N/a | N/a |
| 103 | Does the verification ensure the accuracy and conservativeness of the emission reductions or enhancements of removals generated by each JPA? | N/a | N/a | N/a |
| 104 | Does the monitoring period not overlap with previous monitoring periods? | N/a | N/a | N/a |
| 105 | If the AIE learns of an erroneously included JPA, has the AIE informed the JISC of its | N/a | N/a | N/a |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
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| | findings in writing? | | | |
| Applicable to sample-based approach only | | | | |
| 106 | Does the sampling plan prepared by the AIE:<br>(a) Describe its sample selection, taking into<br>account that:<br>(i) For each verification that uses a sample-based approach, the sample selection shall be sufficiently representative of the JPAs in the JI PoA such extrapolation to all JPAs identified for that verification is reasonable, taking into account differences among the characteristics of JPAs, such as:<br>− The types of JPAs;<br>− The complexity of the applicable technologies and/or measures used;<br>− The geographical location of each JPA;<br>− The amounts of expected emission reductions of the JPAs being verified;<br>− The number of JPAs for which emission reductions are being verified;<br>− The length of monitoring periods of the JPAs being verified; and<br>− The samples selected for prior verifications, if any? | N/a | N/a | N/a |
| 107 | Is the sampling plan ready for publication | N/a | N/a | N/a |

| DVM Paragraph | Check Item | Initial finding | Draft Conclusion | Final Conclusion |
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| | through the secretariat along with the verification report and supporting documentation? | | | |
| 108 | Has the AIE made site inspections of at least the square root of the number of total JPAs, rounded to the upper whole number? If the AIE makes no site inspections or fewer site inspections than the square root of the number of total JPAs, rounded to the upper whole number, then does the AIE provide a reasonable explanation and justification? | N/a | N/a | N/a |
| 109 | Is the sampling plan available for submission to the secretariat for the JISC.s ex ante assessment? (Optional) | N/a | N/a | N/a |
| 110 | If the AIE learns of a fraudulently included JPA, a fraudulently monitored JPA or an inflated number of emission reductions claimed in a JI PoA, has the AIE informed the JISC of the fraud in writing? | N/a | N/a | N/a |

**TABLE 2 RESOLUTION OF CLARIFICATION AND CORRECTIVE ACTION REQUESTS**

| Clarification and corrective action requests issued by the verification team | Ref to checklist question in Table 1 | Summary of project participant's response | Verification team conclusion |
|---|---|---|---|
| **CAR 01.** Please, state the number of the Letter of Approval from Ukraine. | 90 | Letter of Approval No 1272/23/7 issued by the State Environmental Investment Agency of Ukraine dated 17/05/2012 | The issue is closed as relevant information was provided. |
| **CAR 02.** The monitoring period is incorrect in Section A.3. of the MR. | 93 | The monitoring period is 01/01/2012 – 31/07/2012. Relevant corrections were made in the MR, version 02. | The issue is closed as relevant corrections were made in the MR, version 02. |
| **CAR 03.** Please, provide information about the quantity of installed/replaced equipment units in the current monitoring period. | 93 | Information about the quantity of installed/replaced equipment units in the current monitoring period is provided in Table 2 of the MR. | The issue is closed as relevant information was provided in the MR, version 02. |
| **CAR 04**. Section B.2.1. of the MR contains references to NEIA orders that do not relate to the data used in the current monitoring period. | 95 (b) | Irrelevant information was deleted. Refer to the MR version 02. | The issue is closed as irrelevant information was deleted. |
| **CAR 05**. It is stated in Section B.2.1. of the MR that the total amount of electricity generated by mini hydroelectric power plant will be subject to monitoring after 01/03/2012 while construction of the mini hydroelectric power plant is not finished yet. | 95 (b) | The total amount of electricity generated by mini hydroelectric power plant will be subject to monitoring after the mini hydroelectric power plant is built. | The issue is closed as relevant corrections were made. |

| | | | |
|---|---|---|---|
| **CAR 06**. Provide information on the manufacturer of ZMD 405SCR44 meters in Section B.1. of the MR. | 101 (a) | The manufacturer of ZMD 405SCR44 meters is LANDIS GYR Ltd. (Switzerland). | The issue is closed as relevant information was provided. |
| **CAR 07**. Please, provide the number of table "Types of flowmeters and their producers" in Section B.1. | 101 (a) | The number of the table is provided. Refer to the MR version 02. | The is closed as the requirement was satisfied. |
| **CAR 08.** State calibration intervals for meters of SA-4-I678 and SA-4-679 type in Table 5, Section B.1.2. | 101 (b) | The calibration intervals for meters of SA-4-I678 and SA-4-679 type are 4 years. Relevant information was added to the latest MR version. | The issue is closed as relevant information was provided in the MR version 02. |
| **CL 01**. Please, in Section A.7. of the MR clarify the discrepancy between the volumes of lifted / pumped water, pumped wastewater, wastewater that is treated in the monitoring period, the amount of electricity consumed in the monitoring period stated in the MR and the ones stated in the PDD. | 92 | This happened due to the fact that during the development of the PDD the expected figures of the plan for the period 01/01/2012 - 31/07/2012 were provided. It was impossible to determine the figures before the project implementation. | The issue is closed as relevant information was provided. |
| **CL 02.** Please, provide necessary information relating to the volumes of water consumed. | 101 (d) | Necessary documents were provided to the verification team. | The documents were checked. The issue is closed. |