

Environmental Monitoring Report

Semestral Report
November 2018

VIE: Water Sector Investment Program Tranche 2 - Hai Phong

Prepared by Hai Phong Water Supply Company for the Hai Phong CPC and the Asian Development Bank.

NOTE

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**REHABILITATING AND UPGRADING PROJECT OF HAIPHONG WATER SUPPLY SYSTEM
– PHASE 2
ADB LOAN NO.2961-VIE**

**SEMI-ANNUAL PROGRESS REPORT
(ENVIRONMENTAL SAFEGUARD AND OCCUPATIONAL SAFETY)
From August 01 to December 31, 2017**



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I. EXECUTIVE SUMMARY

This is the semi- annual report on environmental safeguard and occupational safety of this consulting service. This report covers the implementation progress of environmental safeguard and occupational safety activities from the Consultant's first service day on August 01, 2017 to December 31, 2017.

The civil work of the project started on August 01, 2017. The project has been fully compliant with policies of the Government and of the Donor on environmental safeguard and occupational safety. The approved or adopted reports include: Environmental Impact Assessment (EIA), Initial Environmental Examination (IEE) and Updated Environmental Management Plans (uEMP).

The Site Environmental Management Plan (SEMP) of 2 packages (HP-CW1 and HP- CW2) were prepared by the HP-CW1 and HP-CW2 Contractors and approved by the Consultant.

In general, the Contractor's implementation of Environmental Safeguard and Occupational Safety under the Project has been compliant with the project requirements. The Contractor has also implemented the environmental impact mitigation measures under the approved SEMP.

However, the environmental compliance needs to be improved under the following points:

- Environmental monitoring has not been fully conducted.
- Training and communication for workers on HIV/AIDS and public health has not been conducted.
- SEMP has not been completed by HP-CW2 Contractor, thus, the Contractor is required to immediately submit because this package commenced on 5/1/2018.
- The hygiene condition of workers' water closet in the construction site need to be improved and kept clean. The Contractors should require workers to use toilets in the site.
- The method pipeline installation on Provincial road DT363 should pay attention on the measures of prevention from soil & stone falling into the channel.
- The Contractors' log book should record more information on Environmental Safeguard and Occupational Safety.

Recommendations:

- The environmental (air, waste water, noise) monitoring at the site should be compliant with environmental monitoring plan of the uEMP as well as the Government regulations. The monitoring report should be completed continuously through pre-construction, construction and operation phase.
- (HP-CW1 Contractor hurry to choose subcontractor for monitoring. Carry the first water/air/noise quality monitoring (as uEMP) in the first quarter 2018)
- Construction waste such as wood, shell destruction, excess concrete or broken bricks should not be buried at site but should be treated at licensed disposal site.
- Fence should be installed at water ways at transmission pipeline installation sites, to avoid water pollution by excavated soil.
- Toilets at construction sites should be kept clean. A cleaner should be assigned.
- Contractors should provide training on occupational health and safety for all the workers.
- The Contractors should record more adequate issues of environmental and occupational safety in the daily report as basis for making monthly environmental report.
- HP-CW2 Contractor: It is necessary to improve the Contractor's Site Environmental Management Plan for being commented and approved by the parties.
- It is necessary to improve the Contractor's document filing on Environmental safeguard and occupational safety.

1. PROJECT INTRODUCTION AND OVERVIEW

Name and code of Project	Rehabilitating and Upgrading Project of Haiphong Water Supply System – Phase 2 Project code: ADB No.2961-VIE	
Safeguards classification	Environment	Category B
Type of report	Semi-annual monitoring report	
Latest report date	N/A (This is the first report)	
Main activities from the last report	Main construction activities The Project includes 02 construction packages. The project as of December 31, 2017 is given as below:	
	HP-CW1 Package – Material supply and installation for Do Son Component	
	<i>Item</i>	<i>Construction completion progress</i>
	Item 1: Hung Dao Water Treatment Plant	30 %
	Item 2: Do Son Booster Pump Station	5%
	Item 3: Do Son Transmission Pipeline	20%
	Item 4: Distribution network for Do Son and surrounding area	0%
	Package: HP-CW2 – Material supply and installation for An Duong Component	
	Contract award and ground-breaking on January 05, 2018	
	Main environmental activities i) EIA Report and Environmental Protection Plan were approved. ii) ADB issued letter of no objection for IEEs. iii) uEMPs were updated and approved. iv) HP-CW1 Contractor’s SEMP was approved. v) HP-CW2 Contractor’s SEMP has been prepared and approved in Quarter 2, 2018.	
Report prepared by	Consultant on Contract Management and Construction Supervision (CMC): Joint Venture of Vietnam Water Sanitation and Environment (VIWASE) and Meinhardt (Vietnam) Company Limited	

2. MONITORING ON COMPLIANCE WITH ENVIRONMENTAL SAFETY AND OCCUPATIONAL SAFETY

a. Summary of compliance with Environment Monitoring & Assessment Plan (EMAP)

EMAP requirements	Status of compliance (yes, no, partly)	Remarks – reasons for non-compliance	Issues to be further handled
Pre-construction Stage			
Preparation of the Detailed Design: <ul style="list-style-type: none"> - Completion of Detailed design incorporated with EMP requirements - Adjusted or update O&M Manual, incorporated with EMP requirements 	<ul style="list-style-type: none"> - Yes, environmental issues were incorporated into detailed design - The O&M manual and been incorporated EMP requirement 		
Obtaining Approvals & Community Preparation: <ul style="list-style-type: none"> - Finalization of the Environment Protection Plan (EPP), based on the IEE & its uEMP - EPC registered with & certified by DPC - Intensive Awareness Program on communicable/ transmittable diseases conducted in all wards 	<ul style="list-style-type: none"> - The EPP have been prepared and approved. - The Environmental issues and risks of transmittable diseases have been consulted and informed with/to local government and community 		
Procurement <ul style="list-style-type: none"> - Procurement process to comply with the 	<ul style="list-style-type: none"> - All the requirements of EMP have been incorporated in 		

EMAP requirements	Status of compliance (yes, no, partly)	Remarks – reasons for non-compliance	Issues to be further handled
<p>uEMP's requirements: the ADB-cleared uEMP shall be a part of bidding documents</p> <ul style="list-style-type: none"> - Procurement requires CEMPs of all bidders to be based on the uEMP, addressing its requirements as minimum criteria, and particularly to include (but not limited to) plans for: <ul style="list-style-type: none"> ✓ aggregates management, excavation management (linked to removed soil management) ✓ dust, noise, vibration, water quality controls, gas emission mitigation, solid and hazardous waste management; ✓ traffic management (to be coordinated with relevant local authorities) ✓ occupational health and safety; ✓ grievance redress; ✓ emergency responses; ✓ environmental monitoring and reporting - Quantitative and qualitative evaluation of CEMPs against the uEMP as an integral component of bid evaluation - Final CEMP to be incorporated with PMU's/Haiphong Water's and ADB's comments - CEMP/uEMP compliance is stipulated in the Contract - The Work Contracts shall stipulate a tie-up between the schedule of progress payments and the collection of performance bond with performance in CEMP/EMP implementation 	<p>the bidding document.</p> <ul style="list-style-type: none"> - The procurement completed now. - The contractors prepared CEMP (based on uEMP) which meet the requirements of uEMP. - CEMP compliance is stipulated in the Contract 		
<p>Water Quality Monitoring</p> <ul style="list-style-type: none"> - At the intake location on Da Do River - 20m downriver from the intake structure on Da Do River 	<p>Complied: HPW-Water quality control Dept have schedule to test the rivers water quality on 1 March 2017 at the expected intake point of Hung Dao WTP and 20m downstream point. All the parameters met Vietnamese environmental standard (Appendix 3).</p>	<p>HPW has scheduled to test water sample at the current Da Do river which are using for Cau Nguyet WTP and future Hung Dao WTP.</p>	
<p>Air & Noise Quality Monitoring</p> <ul style="list-style-type: none"> - The site for Hung Dao WTP - The site for Do Son BPS - On a local road of Hung Dao ward 	<p>Air quality and noise level were monitored at Do Son WTP on 20 April 2017, and all the parameters met Vietnamese environmental standard (Appendix 6). However, monitoring was not carried out at the locations proposed by the uEMP (Hung Dao WTP, the site for Do Son BPS, and local road of Hung Dao ward).</p>	<p>The area is an agricultural area, with no factories and sparsely populated areas. Air is fresh & noise is low level, the air quality at Do Son WTP was good response to QCVN05-2009/BTNMT. On the other hand, we had air quality and noise level</p>	

EMAP requirements	Status of compliance (yes, no, partly)	Remarks – reasons for non-compliance	Issues to be further handled
		monitoring at the same site of the Dinh Vu water factory (0.1 km away from Hung Dao WTP), and all the parameters met Vietnamese environmental standard. (Appendix 5).	
Construction Stage			
Disruption of commercial activities, public services, service infrastructures and reduced accessibility to private properties	- No commercial households/public and private properties affected;		
Dredging material and related impacts	<p><u>On the standby 4ha:</u></p> <ul style="list-style-type: none"> - Volume of dredging material: 8400m³ of sludge - Volume of reused excavated material: 8400m³ - Volume of disposal unsuitable material: 0 <p><u>On the roads laying transmission mains:</u></p> <ul style="list-style-type: none"> - Volume of dredging material: 1000m³ of sludge - Volume of reused excavated material: 500m³ - Volume of disposal unsuitable material: 500m³ 	<p>This amount of excavation that ensures the standards had been reused to backfill level ground of Hung Dao WTP (factory ground level is still low). For unsuitable material and debris, the Contractor is temporarily gathering in the project site of Hung Dao WTP; and waiting for selection of service unit.</p>	The contractor must sign the contract with the service unit for collection, transport, and treatment of unsuitable material and debris.
Generation of solid wastes from construction activities and domestic wastes from workers' campsites that require proper disposal	<ul style="list-style-type: none"> - Volume of construction spoils and debris delivered to disposal sites: 3m³ - Yes, Cleanliness and sanitation in camps and field offices are satisfactory 	The disposal site's owner is Urban Environmental Companies (UEC) licensed by An Lao District People's Committee, Hai Phong city.	
Obstruction to local vehicle traffic - Traffic obstruction is caused by the transportation of construction materials or other activities of the contractor	<ul style="list-style-type: none"> - The contractors applied the mitigation measure as proposed in SEMP which does course obstruction to local vehicle - No traffic accident and no complaint from community; - Construction does not cause traffic congestion. 		
Possible social disorder created by migrant construction workers	<ul style="list-style-type: none"> - The Contractor hires residents' houses for workers - Number of migrant workers: about 45 people - Number of workers staying in camp sites or renting local 		

EMAP requirements	Status of compliance (yes, no, partly)	Remarks – reasons for non-compliance	Issues to be further handled
	households: about 45 people - Health certificates on none of communicable diseases: All workers of the contractor have been health checked regularly. The recruited worked submitted health certificate before recruited.		
Occupational health and safety risks to construction workers and local residents living near the Project's roads	- Signal boards and signal men have been located in pipeline location. - There are NO work stoppages due to work related accidents; - No construction site accidents involving local residents; - No complaints by local residents related to actions by construction workers.		
Impacts from the establishment of temporary material storage, i.e. dust, contamination of waterways, traffic congestion, increased risk for accidents, etc.	- No accidents involving temporary material storage activities; - No complaints by local residents, factories nearby; - No complaint from community about hours of delay in travel time due to operation of temporary material storage areas.		
- Exposed areas are confined within staking plan boundaries. - Unpaved surfaces and soil stockpiles are watered as prescribed. - Wind barriers are strategically installed at sand/soil stockpiles. - Speed limit of 10kph in component sites are observed. - Low-drop heights are applied when loading/unloading soil onto trucks/ground; soil is kept moist by water spraying. - Equipment engines do not left idling for more than 5 minutes.	All the mitigation measures mentioned have been conducted by contractors.		
- Adequate and well-kept sanitation facilities are maintained. - Workers must observe good sanitation practices. - No noisy or vibrating equipment shall operate from 5PM to 8AM. - Overtime works are only up to 10PM. - The sites are cleared of wastes and soil residuals after day's work. - Separate storages are prepared for solid and hazardous wastes, enclosed and able to contain spills. - Reflectorized guides, signage and markers are	All the mitigation measures mentioned have been conducted by contractors. The contractor trained all workers on sanitation issues in the camp and in the site. They also issued regulations for workers. Moreover, they also install information board and banner the remind workers.		

EMAP requirements	Status of compliance (yes, no, partly)	Remarks – reasons for non-compliance	Issues to be further handled
<ul style="list-style-type: none"> installed to direct vehicular traffics. - Construction vehicles/equipment are parked appropriately. - Aggregates are stockpiled only in designated areas. - Visible signages on truck speed limit and truck designated lanes are installed in strategic locations. - Pumped water from excavation is led to drainage (natural or man-made) or a water drum/tank. - Diversion of impeded surface runoff routes is provided. 			
<ul style="list-style-type: none"> - Stockpiles of aggregates and spoils are placed away from surface drainage routes. - Service interruption plans are informed to communities at least 01 week prior to their effectiveness. - Energy conservation measures are adopted. 	All the mitigation measures mentioned have been conducted by contractors.		
<ul style="list-style-type: none"> - Waste reduction, segregation, reuse and recovery, together with proper waste storages and disposal are implemented. 	Partly: <ul style="list-style-type: none"> - The amount of excavation that ensures the standards had been used to backfill level ground of Hung Dao WTP (factory ground level is still low). - For domestic waste was collected, transported and treated by Urban Environmental Companies. - For unsuitable material and debris (such as wood, shell destruction, excess concrete or broken bricks), the contractor is temporarily gathering in the project site of Hung Dao WTP; and waiting for selection of service unit. 		The contractor must sign the contract with the service unit for collection, transport, and treatment of unsuitable material and debris.
<ul style="list-style-type: none"> - Construction equipment and tools are promptly maintained to manufacturer's specifications. 	Complied: the construction equipment is well maintained.		
Emergency Preparedness: <ul style="list-style-type: none"> - Emergency Response Team are adequately staffed, trained and well-equipped; - Coordination with external emergency response teams are encouraged actively; - Emergency drills are conducted at least every 02 months. 	Complied: Emergency drills are conducted every two months and there was no incident happened on the site work.		
<ul style="list-style-type: none"> - Exposed areas which are not in immediate working, are covered. - Open excavations are carried out with adequate lighting, appropriate cover and/or reflectorized barriers, when not in working. 	Complied: Excavations are carried out with adequate lighting, appropriate cover and/or reflectorized barriers		
<ul style="list-style-type: none"> - Road excavations are properly backfilled after day's work. - Unsurfaced backfilled road sections are overlain with crushed gravel and with reflectorized warning sign. - Affected road sections are resurfaced as soon 	Complied: Excavated roads were will backfilled and the affected road sections are resurfaced as soon as possible.		

EMAP requirements	Status of compliance (yes, no, partly)	Remarks – reasons for non-compliance	Issues to be further handled
as possible to pre-excavation standards. - Affected road sections in each day's work are limited to: working lanes, about 50m long in minor roads.			
- Information on existing alignments of utilities is available on sites for crew's read reference/guide - Traffic management scheme is coordinated with the WPCs. - Billboards informing road/lane closure and traffic rerouting plan are installed strategically at least 02 weeks before effectiveness.	Complied: The contractor submitted the construction method and traffic management scheme to HP Department of Transportation (DOT) and get approval. Place the warning signs / instructions at the site and intersections with the current road. Place the information availability of works including construction timing, hotlines to contact with the representatives of PMU, CMC, Contractor.		
- At least 02 traffic (flag) persons are positioned on each end of affected road sections, at 8AM – 5 PM and during overtime. - Blocked accesses are accompanied with alternative safe accesses, i.g., steel planks of adequate grade, width and length, guide rails, etc.	Complied: The contractors assigned staff to instruct the traffic at each end of road when install the pipeline.		
- Safety measures are implemented in pagodas and school areas, while coordinated with respective authorities. - Safe accesses are provided to pedestrians. - Trucks hauling fine aggregates and cement must be well covered. - Trucks hauling chemicals and wastes must be well covered. - Materials deliveries should take place in non-peak hours.	Complied: These mitigation measures have been conducted		
- Environment Monitoring Reports are submitted on monthly basic.	Complied: The monthly reports were prepared by contractors and submitted to CMC and incorporated in the overall progress report.		
Water Quality Monitoring - At the intake location on Da Do River - 20m downriver from the intake structure on Da Do River Air & Noise Quality Monitoring - The site for Hung Dao WTP - The site for Do Son BPS - On a local road of Hung Dao ward	No	Construction activities mostly started from Nov/2017. Contractors had difficulty getting environmental monitoring unit.	Hurry to find subcontractor for environmental quality monitoring.

b. Issues to be further handled

Issues	Action	Responsibilities and time	Solution
Issues presented in the last report			
This is the first report			

New issues in this report			
During installation of transmission pipeline under provincial road DT 363, some excavated soil fell into the channel	+CMC requested contractor to be careful while working +Made fence to avoid falling soils to channel +Contractor has to clean falling soil	Contractor, CMC As soon as possible before 31/1/2018	Fence was installed to avoid soils fallen into the channel. Soil fell into the channel was cleaned. (Implementation of the corrective actions confirmed by CMC on 8 th January 2018)
Toilets in the site are not clean	+Site Manager and HSE Engineer to supervise and remind frequently	Contractor, CMC As soon as possible before 31/1/2018	A cleaner to make daily cleaning in workers' camps was assigned. (Implementation of the corrective actions confirmed by CMC on 20 th January 2018)
Da Do river water, air quality and noise level monitoring was not conducted	+HP-CW1 Contractor hurry to choose subcontractor for monitoring. +Carry the first water/air/noise quality monitoring (as uEMP) in the first quarter 2018.	HP-CW1 Contractor, first quarter 2018	The first monitoring was conducted in March 2018. The result will be included in the next monitoring report.
Unsuitable material and construction debris were not hauled to approved disposal sites	+The contractor will sign the contract with the service unit for collection, transport, and treatment of unsuitable material and debris.	HP-CW1 Contractor, CMC As soon as possible before 31/3/2018	The contractor has signed the additional appendix of Contract No. 100817/HĐ/MTX-VP with the service unit (Green Environment. Ltd) for collection, transport, and treatment of unsuitable material and debris in March, 2018.

c. Other activities

CMC and the Contractor should coordinate to carry out environmental monitoring (surface water, air, noise) quarterly according to the Governmental regulations and EMP.

3. OCCUPATIONAL HEALTH AND SAFETY MONITORING

a. Occupational health and labor safety for workers

Issues	Action	Responsibilities and time	Solution
Issues presented in the last report			
This is the first report			
New issues in this report			
Workers have not attended any training courses/ dissemination on HIV/ AIDS and infectious diseases in the community.	The Contractors need to organize training course and dissemination	Contractors hold a training for all workers as soon as possible.	Contractors should provide on-site training to workers or invite local health officers to disseminate to workers (HP-CW2 contractor held training for all workers in April and June 2018, while HP-CW1 contractor held in July 2018.)

b. Community safety

Issues	Action	Responsibilities and time	Solution
Issues presented in the last report			
This is the first report			
New issues in this report			
The Contractors have complied with all community safety issues			

4. INFORMATION DISSEMINATION AND CAPACITY IMPROVEMENT

Since the construction commencement, the project communication activities have been carried out in multi-media, in details:

- Hai Phong Radio and Television reported on the project in September 2017. The report refers to the ceremony commencement of the package and project scale.
- The Contractors' construction schedules were sent to local authorities and residents of the community in the pipeline construction area.
- Posters and signages of project information have been publicly listed by the contractors with full project information.
- The Contractors provided training / guidance to workers on occupational safety at the site.

5. COMPLAINT MECHANISM

- Project information as well as contact numbers are posted publicly in public places so that people can respond and complain if necessary.
- In the last 6 months of 2017, no complaints on the Environmental safeguard or Occupational Safety was recorded.

6. CONCLUSIONS AND RECOMMENDATIONS

a. Conclusions:

- The project has been generally compliant with the environmental regulations of Government and Donor (ADB).
- The Contractor's environmental and occupational safety management plan has been well established and implemented. In general, the Contractors have complied with the Environmental safeguard and Occupational safety issues.

b. Recommendations:

- The environmental (air, waste water, noise) monitoring at the site should be compliant with environmental monitoring plan of the uEMP as well as the Government regulations. The monitoring report should be completed continuously through pre-construction, construction and operation phase.
(HP-CW1 Contractor hurry to choose subcontractor for monitoring. Carry the first water/air/noise quality monitoring (as uEMP) in the first quarter 2018)
- The contractor must sign the contract with the service unit for collection, transport, and treatment of unsuitable material and debris at the site.
- Fence should be installed at water ways at transmission pipeline installation sites, to avoid water pollution by excavated soil.
- Toilets at construction sites should be kept clean. A cleaner should be assigned.
- Contractors should provide training on occupational health and safety for all the workers.
- The Contractors should record more adequate issues of environmental and occupational safety in the daily report as basis for making monthly environmental report.

- HP-CW2 Contractor: It is necessary to improve the Contractor's Site Environmental Management Plan for being commented and approved by the parties.
- It is necessary to improve the Contractor's document filing on Environmental safeguard and occupational safety.

II. APPENDIX 1: GENERAL LAYOUT OF TRANSMISSION MAIN SYSTEM OF DO SON, HUNG DAO AREA

LIST OF PIPELINES

[illegible]

NOTE - GHI CHÚ:

 W.T.P. - WATER TREATMENT PLANT **BOOSTER PUMPING STATION**

— — — EXISTING PIPELINE

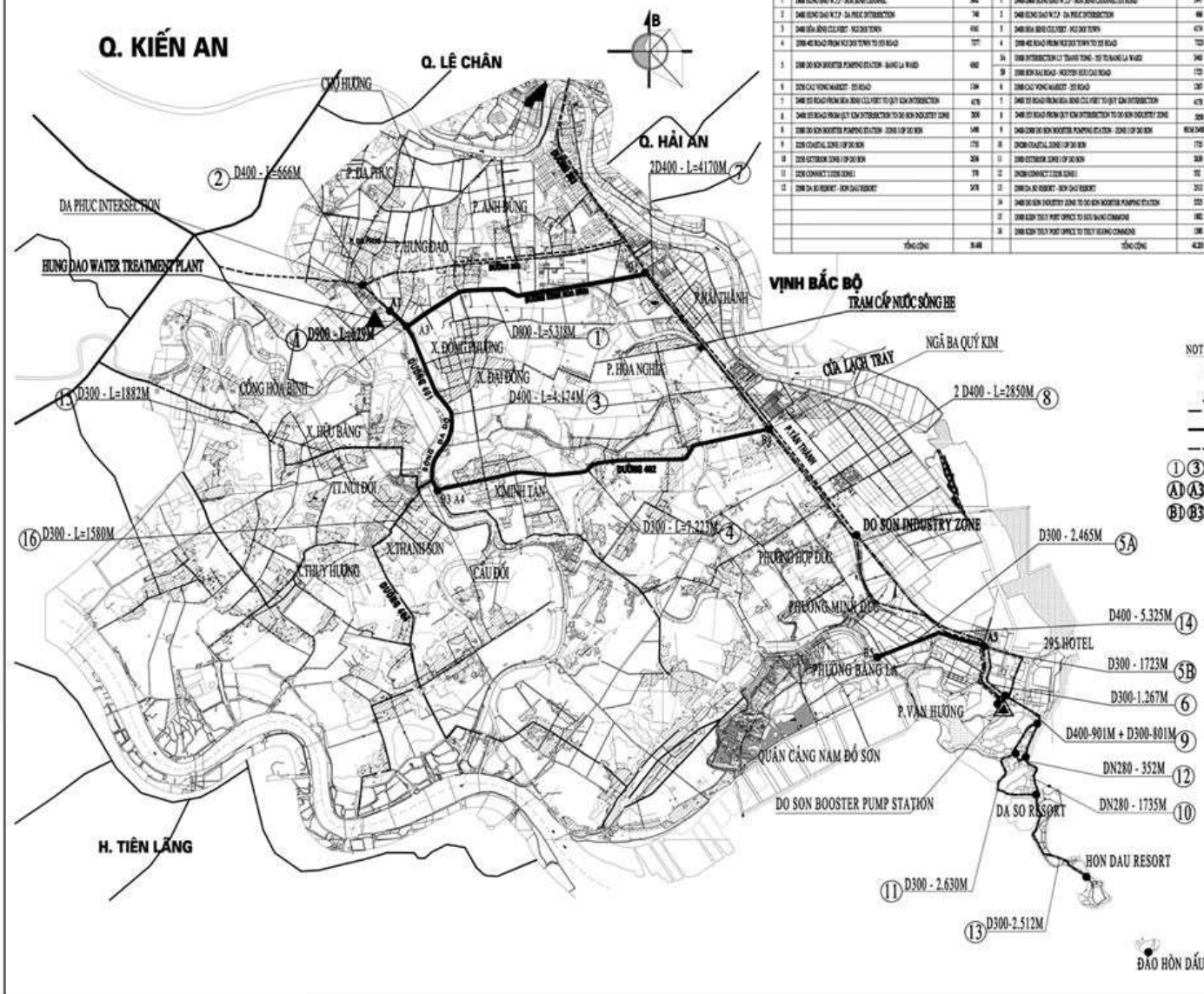
DESIGNED TRANSMISSION PIPELINES

--- PROPOSED TRANSMISSION PIPELINES

①③④⑤A DESIGNED TRANSMISSION PIPELINES

A1 A3 A4 A5 START POINT OF SECTIONS

B1 B3 B4 B5 END POINT OF SECTIONS



<div style="text-align: center;">  <p> CÔNG TY CỔ PHẦN CẤP NƯỚC HẢI PHÒNG HAI PHONG WATER SUPPLY JOINT STOCK COMPANY </p> </div>								
<div style="display: flex; justify-content: space-between;"> <div>  <p>INVERNESS</p> </div> <div> <p>KLN'S DESIGN: MAIN CONTRACTOR KLODIA CONSULTING & ENGINEERING CO. LTD. 70711 LACRET PLOMETER, SHIMADZU AND SHIMADZU INSTRUMENTS, INC.</p> </div> </div>								
<div style="display: flex; justify-content: space-between;"> <div>  <p>LACRET</p> </div> <div> <p>NHÀ THIẾT KẾ PHẠM THUY PHU</p> </div> </div>								
<div style="text-align: center;"> <p>THIẾT KẾ AN CẤP NƯỚC HẢI PHÒNG HỢP THỒNG THIẾT KẾ AN CẤP NƯỚC HẢI PHÒNG VÀ CÁC SẢN PHẨM VÀ DỤNG CỤ HAI PHONG WATER SUPPLY / SUB-PROJECT CONTRACT: DETAIL DESIGN AND PROCUREMENT AGREEMENT COMBIA TUNG 02 DO SON AND AN DUCONG COMPA</p> </div>								
<div style="display: flex; justify-content: space-between;"> <div> <p>GENERAL INFO OF TRANSDUCER MAIN SYSTEM OF DO SON, HANG DAO AREA</p> <p>GENERAL LAYOUT OF PIPELINE</p> </div> <div> <p>HỖ SẴN CHẾ TẠO</p> <p>MẪU SẴN CHẾ TẠO ĐỂ THIẾT KẾ VÀ SẢN XUẤT CHẾ TẠO SẴN VÀ DỤNG CỤ DO SON, HANG DAO</p> <p>MẪU SẴN CHẾ TẠO VÀ THIẾT KẾ</p> </div> <div> <p>REVISION:</p> <table border="1"> <thead> <tr> <th>REVISION</th> <th>DATE</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10/08/2018</td> <td>...</td> </tr> </tbody> </table> </div> </div>			REVISION	DATE	DESCRIPTION	1	10/08/2018	...
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1	10/08/2018	...						

III. APPENDIX 2: PHOTOS OF CONSTRUCTION ACTIVITIES AND COMPLIANCE WITH ENVIRONMENTAL SAFETY AND OCCUPATIONAL SAFETY OF THE CONTRACTOR

HPCW-01 PACKAGE PHOTOGRAPHS

Workers wearing protective equipment during construction of Admin house roof



Reservoir bottom concreting work



Fence and signal lamps to be installed during installation of transmission pipeline at night



Signage and signal man for traffic control of D800 pipeline on PR 363



Soils fallen into the channel when installation of D800 pipeline at PR363



Signages and fences/ handrails for installation of pipeline installation in Ho Sen Street



Signages and fences/ handrails for installation of pipeline in Ho Sen Street



Signages and fences/ handrails for installation of pipeline at DT361 PR



Signage ahead of site



Domestic water reservoir in workers' camp in Do Son



Covered building materials



IV. APPENDIX 3: RESULT OF WATER QUALITY MONITORING AT DA DO RIVER (1 MARCH 2017)



CÔNG TY CỔ PHẦN CẤP NƯỚC HẢI PHÒNG
PHÒNG KIỂM TRA CHẤT LƯỢNG NƯỚC

Địa chỉ PTN : 249 Tôn Đức Thắng - Hải Phòng
Điện thoại : 0313.835602
Email: hpwaterlab@gmail.com

KẾT QUẢ THỬ NGHIỆM TEST RESULTS

Số: 19.1 - 17NB/CNHP-KTCL

Đơn vị yêu cầu/ Client : Công ty Cấp nước Hải Phòng/ Hải Phòng water supply company.
Tên mẫu/ Name of sample : Mẫu 1: Sông Đa Độ tại điểm thu dự tính Nhà máy nước Hưng Đạo/
Da Do river- Hung Dao water treatment plan(expected intake point)
Mẫu 2: Cách 20m về phía hạ lưu của Nhà máy nước Hưng Đạo/
Da Do river- Hung Dao water treatment plan (20m downstream point).
Ngày lấy mẫu/ Sampling date : 01/03/2017;
Ngày thử nghiệm/ Analysis date : 01-03/03/2017.
Phương pháp lấy mẫu/ Sampling method: TCVN 6663-1:2011 & TCVN 6663-5:2009.

STT No	Tên chỉ tiêu Parameters	Đơn vị Units	Phương pháp thử Method of analysis	QCVN 08-MT:2015/ BTNMT Cột A2 Regular limit	Kết quả Results	
					Mẫu 1	Mẫu 2
1	Nhiệt độ. Temperature				20,2	20,3
2	* pH		TCVN 6492 : 2011	6,00 - 8,50	7,42	7,44
	Nhiệt độ (pH) Temperature				19,1	19,2
3	* Độ đục Turbidity	NTU	HD.ĐĐ.01 2100N- HACH	-	12,80	14,20
4	Độ dẫn điện Conductivity	µs/cm	HD. TS. 05 HQ 40d - HACH	-	257	265
5	* Tổng canxi, magie (độ cứng toàn phần) Total hardness	mgCaCO ₃ /L	TCVN 6224 : 1996	-	104	105
6	* Clorua Chloride	mg Cl ⁻ /L	TCVN 6194 : 1996	≤250,00 ⁽⁺⁺⁾	16,33	16,68
7	* Chỉ số pemanganat Permanganate index	mgO ₂ /L	TCVN 6186 : 1996	≤5,00 ⁽⁺⁺⁾	1,96	2,19

1. Kết quả thử nghiệm ghi trong phiếu này chỉ có giá trị đối với mẫu thử/Test result are only valid for the submitted sample(s).

2. Tên mẫu và tên đơn vị yêu cầu được ghi theo đề nghị của nơi gửi/ Sample name and client are specified by sending sample unit.

3. Kết quả này không được sao chép nếu không được sự đồng ý của Công ty/The test result must not be reproduced without the excepting written approval of HPWSC.

4. (*) Những phép thử đã được VILAS công nhận/ Methods are accredited by VILAS.

BM 5.10/01.1

Lần ban hành: 2.15 - Soát xét lần 1.15 - 01/10/2015

Trang: 1/2

STT <i>No</i>	Tên chỉ tiêu <i>Parameters</i>	Đơn vị <i>Units</i>	Phương pháp thử <i>Method of analysis</i>	QCVN 08-MT:2015/ BTNMT Cột A2 <i>Regular limit</i>	Kết quả <i>Results</i>	
					Mẫu 1	Mẫu 2
8	* Ammonia - N	mg/L	TCVN 6179-1 : 1996	$\leq 0,300$	0,061	0,064
9	Nitrite - N	mg/L	8507 HACH DR 5000 - USA	$\leq 0,050$	0,004	0,005
10	* Nitrate - N	mg/L	TCVN 6180 : 1996	$\leq 5,00$	0,792	0,810
11	Sắt tổng số/ <i>Total Iron</i>	mg/L	8008 HACH DR 5000 - USA	$\leq 1,00$	0,29	0,30
G 12	Manganese	mg/L	8149 HACH DR 5000 - USA	$\leq 0,200$	0,046	0,048
13	* Coliform tổng số <i>Total Coliform</i>	VK/100mL	SMEWW 9222B - 22 nd E	≤ 5000	1900	2000
14	* Fecal Coliform	VK/100mL	SMEWW 9222D - 22 nd E	-	400	460

- Ghi chú: 1. QCVN 08-MT:2015/BTNMT Quy chuẩn kỹ thuật quốc gia về chất lượng nước mặt/
National technical regulation on surface water quality
2. (+) Mức quy định theo QCVN 08-MT:2015/BTNMT (cột A1)/
Regular limit as QCVN 08-MT:2015/BTNMT (column A1)
3. (++) Tiêu chuẩn xây dựng TCXD 233:1999/
Construction standard TCXD 233:1999.

Hải Phòng, ngày 03 tháng 03 năm 2017

THỦ NGHIỆM VIÊN

TRƯỞNG PHÒNG
KIỂM TRA CHẤT LƯỢNG NƯỚC



Trần Thị Linh



Nguyễn Minh Trang



VILAS 449
Ngô Quỳnh Hoa

1. Kết quả thử nghiệm ghi trong phiếu này chỉ có giá trị đối với mẫu thử/Test result are only valid for the submitted sample(s).
2. Tên mẫu và tên đơn vị yêu cầu được ghi theo đề nghị của nơi gửi/ Sample name and client are specified by sending sample unit.
3. Kết quả này không được sao chép nếu không được sự đồng ý của Công ty/The test result must not be reproduced without the excepting written approval of HPWSC.
4. (*) Những phép thử đã được VILAS công nhận/ Methods are accredited by VILAS.
BM 5.10/01.1 Lần ban hành: 2.15 - Soát xét lần 1.15 - 01/10/2015 Trang:2/2

V. APPENDIX 4: RESULT OF WATER QUALITY MONITORING AT INTAKE POINT OF CAU NGUYET WATER TREATMENT PLANT (6 JULY 2017)

MINISTRY NAVY COMMANDER
CENTER FOR MARINE ENVIRONMENTAL CONSERVATION
Address: Phu Hai, Anh Dung ward, Duong Kinh District, Hai Phong City
 Tel: 031.3814019 Fax: 031.3814.017 Email: memac@vnn.vn

ANALYTICAL RESULTS REPORT

Company: HaiPhong Water Joint Stock Company

Address: 54, Dinh Tien Hoang str, Hong Bang Dist, HaiPhong city.

Monitor Measurement Location: Intake point of Cau Nguyet WTP – HPW Branch No.4

Sample: Water, Qty: 01

Sampling date: 06/07/2017, Analysis date: 06~22/07/2017

Sampling state: freeze, PET&Glass bottle

Monitoring Data Result:

No	Parameter	Testing method, Equipment	Unit	Result	National standard QCVN 08-MT:2015/BTNMT (Column A2)
1.	BOD ₅ (*)	TCVN 6001-1:2008	mg/l	7	6
2.	As (*)	EPA 200.8, IPC	mg/l	0.0021	0.02
3.	Ni (*)	EPA 200.8, IPC	mg/l	0.0041	0.1
4.	Cd (*)	EPA 200.8, IPC	mg/l	0.00014	0.005
5.	Hg (*)	EPA 200.8, IPC	mg/l	KPH (<0.00022)	0.001
6.	Pb (*)	EPA 200.8, IPC	mg/l	0.0024	0.02
7.	Zn (*)	EPA 200.8, IPC	mg/l	0.0014	1.0
8.	Total Crom	EPA 200.8, IPC	mg/l	0.015	0.1
9.	Total Phenol	SMEWW5530C:2012, IPC	mg/l	KPH (<0.001)	0.005
10.	Surfactant (**)	TCVN 6036:1998	mg/l	0.041	0.2
11.	Total oil (*)	SMEWW5520B:2012	mg/l	0.32	0.5
12.	Aldrin(**)	EPA 8081B	µg/l	KPH (<0.01)	0.1
13.	Dieldrin(**)	EPA 8081B	µg/l	KPH (<0.01)	0.1
14.	Benzen hexachloride (BHC) (**)	EPA 8081B	µg/l	KPH (<0.01)	0.02
15.	Total Dechloro diphenyl trichlorethane (DDTs) (**)	EPA 8081B	µg/l	KPH (<0.01)	1.0
16.	Heptachlor and heptachlorepoxyde (**)	EPA 8081B	µg/l	KPH (<0.01)	0.2
17.	Total radioactivity α (**)	TCVN 6053:1995	Bq/l	0.041	0.1
18.	Total radioactivity β (**)	TCVN 6219:1995	Bq/l	0.26	1.0
19.	E.coli	SMEWW9222B:2012	Cfu/100ml	20	50

Note:

- KPH (...): cannot detect, less than of the method limit
- Sample name, sample location as customer requirement
- QCVN 08-MT:2015/BTNMT (A2): National technical standards on surface water quality; Column A2 Surface water quality standards for domestic water supply, but appropriate treatment technologies must be applied

Hanoi, Date 09/08/2017

On behalf for Lab	QA	Director (signed, seal)
----------------------	----	----------------------------

This result may not be copied in part without the written consent of MEMAC

This result is only valid on the sample which had been analysed
Parameters (): are accredited by Vilas; Parameters (**) are carried by subcontractor.*



BỘ TƯ LỆNH HẢI QUÂN
TRUNG TÂM QUAN TRẮC - PHÂN TÍCH MÔI TRƯỜNG BIỂN

Địa chỉ: **Phủ Hải - Anh Dũng - Dương Kinh - Hải Phòng**
Điện thoại: **0225.3814019** Fax: **0225.3814017** Email: **memac@ymn.vn**

Số: 120.3.03/2017/KQ-MTg



VILAS 425

PHIẾU KẾT QUẢ PHÂN TÍCH MẪU NƯỚC

Tên mẫu: *Nước thô nhà máy nước Cầu Nguyệt*
Vị trí lấy mẫu: *Họng thu nước sông Đa Độ tại nhà máy nước Cầu Nguyệt*
Khách hàng: *Công ty Cổ phần Cấp nước Hải Phòng*
Địa chỉ: *số 54 Đinh Tiên Hoàng - Hải phòng*
Số lượng mẫu: *01*
Ngày nhận mẫu: *06/7/2017*
Ngày phân tích: *06/7/2017 ÷ 22/7/2017*
Tình trạng mẫu: *Mẫu đựng trong chai TT và chai nhựa, có bảo quản lạnh.*

TT	Chỉ tiêu	Phương pháp thử	Đơn vị	Kết quả	QCVN 08-MT: 2015/BTNMT (A2)
1	BOD ₅ ^(*)	TCVN 6001-1:2008	mg/l	7	6
2	Asen ^(*)	EPA 200.8, ICP	mg/l	0,0021	0,02
3	Niken ^(*)	EPA 200.8, ICP	mg/l	0,0041	0,1
4	Cadimi ^(*)	EPA 200.8, ICP	mg/l	0,00014	0,005
5	Thủy ngân ^(*)	EPA 200.8, ICP	mg/l	KPH (<0,00022)	0,001
6	Chi ^(*)	EPA 200.8, ICP	mg/l	0,0024	0,02
7	Kẽm ^(*)	EPA 200.8, ICP	mg/l	0,0014	1,0
8	Tổng Crom	EPA 200.8, ICP	mg/l	0,015	0,1
9	Phenol tổng số	SMEWW5530C:2012	mg/l	KPH (<0,001)	0,005
10	Chất hoạt động bề mặt ^(**)	TCVN 6336:1998	mg/l	0,041	0,2
11	Tổng Dầu mỡ ^(*)	SMEWW 5520B:2012	mg/l	0,32	0,5
12	Aldrin ^(**)	EPA 8081B	µg/l	KPH (<0,01)	0,1
13	Dieldrin ^(**)	EPA 8081B	µg/l	KPH (<0,01)	0,1
14	Benzen hexachloride (BHC) ^(**)	EPA 8081B	µg/l	KPH (<0,01)	0,02
15	Tổng Dichloro diphenyl trichloroethane (DDTs) ^(**)	EPA 8081B	µg/l	KPH (<0,01)	1,0
16	Heptachlor và Heptachlorepoxyde ^(**)	EPA 8081B	µg/l	KPH (<0,01)	0,2
17	Tổng hoạt độ phóng xạ α ^(**)	TCVN 6053 : 1995	Bq/l	0,041	0,1

1. Kết quả này không được phép sao chép từng phần ngoại trừ toàn bộ nếu không được sự đồng ý bằng văn bản của MEMAC.

2. Kết quả này chỉ có giá trị cho mẫu được nhận tại phòng thí nghiệm MEMAC.

3. Chỉ tiêu đánh dấu ^(*) được VILAS công nhận. Chỉ tiêu đánh dấu ^(**) được phân tích bởi nhà thầu phụ.

TT	Chỉ tiêu	Phương pháp thử	Đơn vị	Kết quả	QCVN 08-MT: 2015/BTNMT (A2)
18	Tổng hoạt độ phóng xạ $\beta^{(*)}$	TCVN 6219 : 1995	Bq/l	0,261	1,0
19	E.coli	SMEWW 9222B:2012	cfu/100ml	20	50

Ghi chú:

- KPH (.....): Không phát hiện (< giới hạn phát hiện của phương pháp)
- Tên và vị trí lấy mẫu được ghi theo yêu cầu của khách hàng.
- QCVN 08-MT:2015/BTNMT (A2): Quy chuẩn kỹ thuật Quốc gia về chất lượng nước mặt. Cột A2 Quy định chất lượng nước mặt dùng cho mục đích cấp nước sinh hoạt nhưng phải áp dụng công nghệ xử lý phù hợp.

Hải Phòng, ngày 09 tháng 8 năm 2017

ĐẠI DIỆN NHÓM PHÂN TÍCH

TRƯỞNG NGÀNH

GIÁM ĐỐC





Th.S Nguyễn Thị Ngọc Anh

Th.S Nguyễn Thị Lợi

TS. Nguyễn Quang Tuyền

1. Kết quả này không được phép sao chép từng phần ngoại trừ toàn bộ nếu không được sự đồng ý bằng văn bản của MEMAC.
2. Kết quả này chỉ có giá trị cho mẫu được nhận tại phòng thí nghiệm MEMAC.
3. Chỉ tiêu đánh dấu (*) đã được VILAS công nhận. Chỉ tiêu đánh dấu (**) được phân tích bởi nhà thầu phụ

BM 19.01

Lần ban hành: 1

Ngày ban hành: 20/02/2009

Trang: 2/2

VI. APPENDIX 5: RESULT OF AIR QUALITY AND NOISE LEVEL MONITORING AT THE PIPELINE OF DINH VU WATER TREATMENT PLANT (20 JULY 2017)

CENTER FOR ENVIRONMENTAL AND MINERAL MONITORING

DEPARTMENT OF ENVIRONMENTAL QUALITY ANALYSIS

Address: LK423, Yen Lo Service Area, Yen Nghia Ward, Ha Dong Dist, Hanoi City

ANALYTICAL RESULTS REPORT

Company: Dinh Vu Water Treatment Plant

Address: 361 Road, Da Phuc ward, Duong Kinh Distric, Hai Phong city

Monitor Measurement Location: Dinh Vu WTP, Pipe line

Sample: Air, Qty: 02

Sample Code: K0717_215

Sampling date: 20/07/2017, Completed analysis date: 01/08/2017

Monitoring Data Result:

No	Indicator	Unit	Result		Testing method	QCVN 05:2013/ BTNMT
			K1	K2		
1.	Wind speed	m/s	0.5	0.6	QCVN 46:2012/BTNMT	-
2.	Temperature	°C	30.4	29.8		-
3.	Humidity	%	72.1	68.8		-
4.	Flying dust	mg/m ³	0.18	0.20	TCVN 5067:1995	0.3
5.	Noise level	dBA	62.5	65.8	TCVN 7878-2:2010	70 ⁽¹⁾
6.	CO*	mg/m ³	4.21	3.55	TD/SOP/QTMT/AA04	30
7.	NO ₂	mg/m ³	0.095	0.118	TCVN 6137:2009	0.2
8.	SO ₂	mg/m ³	0.171	0.152	TCVN 5971:1995	0.35
9.	VOC _s *	mg/m ³	3.25	3.01	NIOSH Method 1501	-(²)
10.	Vibration	dB	55.8	56.2	TCVN 6963:2001	75 ⁽³⁾

Note:

- Sampling locations:
 - +K1: surround air in Dinh Vu WTP area
 - +K2: Pipe line
- Comparative Standard:
 - + QCVN 05:2013/BTNMT: National technical standard for ambient air quality (average an hour)
 - + ⁽¹⁾QCVN 26:2010/BTNMT: National technical noise standards
 - + ⁽²⁾QCVN 06:2009/BTNMT: National technical regulation on some hazardous substances in ambient air (average an hour)
 - + ⁽³⁾QCVN 27:2010/BTNMT: National technical standard for vibration (average an hour)

Hanoi, Date 01/08/2017

On behalf for Lab

Deputy Director
(signed, seal)

(-): No requirement; (*): has not been accredited by Vincerts and vilas.

This result is only valid on the sample analysis

Overdue the sample storage period, the laboratory will not settle the complaint about the test results



TRUNG TÂM MÔI TRƯỜNG VÀ KHOẢNG SÀN
PHÒNG PHÂN TÍCH CHẤT LƯỢNG MÔI TRƯỜNG

Đ/c: LK423, Khu đất dịch vụ Yên Lộ, P. Yên Nghĩa, Q. Hà Đông, TP. Hà Nội

Tel: 024.32007600



VIMCERTS 034

Số: 012228/KQPT/2017

VILAS 756

PHIẾU KẾT QUẢ PHÂN TÍCH

Tên khách hàng : Nhà máy nước Đình Vũ
Địa chỉ : Đường 361, Đa Phúc, Dương Kinh, Hải Phòng
Tên cơ sở quan trắc : Nhà máy nước Đình Vũ
Địa điểm quan trắc : Đường 361, Đa Phúc, Dương Kinh, Hải Phòng
Tên mẫu : Không khí Số lượng: 02
Mã mẫu : K0717_215¹⁻³
Ngày lấy mẫu : 20/07/2017 Ngày hoàn thành phân tích: 01/08/2017

Kết quả phân tích mẫu không khí khu vực xung quanh:

Stt	Thông số	Đơn vị	Kết quả phân tích		Phương pháp phân tích	QCVN 05:2013/ BTNMT
			K1	K2		
1	Tốc độ gió	m/s	0,5	0,6	QCVN 46:2012/BTNMT	-
2	Nhiệt độ	°C	30,4	29,8		-
3	Độ ẩm	%	72,1	68,8		-
4	Bụi lơ lửng	mg/m ³	0,18	0,20	TCVN 5067:1995	0,3
5	Độ ồn	dBA	62,5	65,8	TCVN 7878-2:2010	70 ⁽¹⁾
6	CO*	mg/m ³	4,21	3,55	TD/SOP/QTMT/AA04	30
7	NO ₂	mg/m ³	0,095	0,118	TCVN 6137:2009	0,2
8	SO ₂	mg/m ³	0,171	0,152	TCVN 5971:1995	0,35
9	VOCs*	mg/m ³	3,25	3,01	NIOSH Method 1501	~ ⁽²⁾
10	Độ rung*	dB	55,8	56,2	TCVN 6963:2001	75 ⁽³⁾

Ghi chú:

- Vị trí lấy mẫu:

+ K1: Không khí khu vực nhà máy nước Đình Vũ

+ K2: Không khí khu vực hoạt động xây dựng tuyến truyền tải

- Quy chuẩn so sánh:

+ QCVN 05:2013/BTNMT: Quy chuẩn kỹ thuật Quốc gia về chất lượng không khí xung quanh (trung bình 1 giờ).

+ ⁽¹⁾QCVN 26:2010/BTNMT: Quy chuẩn kỹ thuật quốc gia về tiếng ồn.

+ ⁽²⁾QCVN 06:2009/BTNMT: Quy chuẩn kỹ thuật quốc gia về một số chất độc hại trong không khí xung quanh (trung bình 1 giờ).

+ ⁽³⁾QCVN 27:2010/BTNMT: Quy chuẩn kỹ thuật quốc gia về độ rung

Hà Nội, ngày 01 tháng 08 năm 2017

TM. PHÒNG PHÂN TÍCH

[Signature]

Phạm Thị Thảo



PHÓ GIÁM ĐỐC

Khuất Anh Tuấn

- (-): Không có quy định.

- Kết quả này chỉ có giá trị trên mẫu phân tích;

- Quá thời hạn lưu mẫu, Phòng phân tích chất lượng Môi trường không giải quyết việc khiếu nại kết quả xét nghiệm.

- Các thông số đánh dấu (*) chưa được công nhận Vimecert và Vilas

- Tên mẫu và tên khách hàng được ghi theo yêu cầu của khách hàng

BM: 08/04

Bản hành lần: 04

Trang: 1/1

VII. APPENDIX 6: RESULT OF AIR QUALITY AND NOISE LEVEL MONITORING AT THE GATE OF DO SON WATER TREATMENT PLANT (20 APRIL 2017)

MINISTRY NAVY COMMANDER
CENTER FOR MARINE ENVIRONMENTAL CONSERVATION
Address: Phu Hai, Anh Dung ward, Duong Kinh District, Hai Phong City
Tel: 031.3814019 Fax: 031.3814.017 Email: memac@vnn.vn

ANALYTICAL RESULTS REPORT

Company: HaiPhong Water Joint Stock Company

Monitor Measurement Location: Do Son WTP – HPW Branch No.6

Sample: Surround Air, Qty: 01

Sampling date: 20/04/2017, Completed analysis date: 20~28/04/2017

Sampling Location: At the gate of DoSon WTP (N20° 42' 34,6'', E 106° 47' 13.,1'')

Monitoring Data Result:

No	Indicator	Testing method, Equipment	Unit	Result	National standard
1.	Noise level	TCVN 7878-2:2010 NL21-RION, Japan	dBA	52.1	70 ⁽¹⁾
2.	Flying dust	TCVN 5067:1995	µg/m ³	65	300 ⁽²⁾
3.	SO ₂	TCVN 5971:1995	µg/m ³	24	350 ⁽²⁾
4.	CO*	MEMAC PT.11:2014	µg/m ³	3100	30 000 ⁽²⁾
5.	NO ₂	TCVN 6137:2009	µg/m ³	7	200 ⁽²⁾
6.	Clo	MASA Method 202	µg/m ³	KPH (<20)	100 ⁽³⁾

Note:

- KPH (...):cannot detect, less than of the method limit
- + ⁽¹⁾QCVN 26:2010/BTNMT: National technical noise standards
- + ⁽²⁾QCVN 05:2013/BTNMT: National technical standard for ambient air quality (average an hour)
- + ⁽³⁾QCVN 06:2009/BTNMT: National technical regulation on some hazardous substances in ambient air (average an hour)

Hanoi, Date 10/05/2017

On behalf for Lab	QA	Director (signed, seal)
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This result may not be copied in part without the written consent of MEMAC
This result is only valid on the sample which had been analysed



BỘ TƯ LỆNH HẢI QUÂN
TRUNG TÂM QUAN TRẮC - PHÂN TÍCH MÔI TRƯỜNG BIỂN

Địa chỉ: Phú Hải – Anh Dũng – Dương Kinh – Hải Phòng
Điện thoại: 031.3814019 Fax: 031.3814017 Email: memac@vnn.vn

Số : 120.6.07/2017/KQ-MTg

PHIẾU KẾT QUẢ THỬ NGHIỆM

Khách hàng: Công ty CP Cấp nước Hải Phòng
Địa chỉ: Nhà máy nước Đồ Sơn – Chi nhánh Cấp nước Hải Phòng 6
Tên mẫu thử: Không khí xung quanh Số lượng mẫu: 01
Ngày quan trắc, lấy mẫu: 20/4/2017
Ngày phân tích mẫu: 20/4 ÷ 28/4/2017
Vị trí lấy mẫu:

K1: Khu vực cổng Nhà máy nước Đồ Sơn (N 20° 42' 34,6'', E 106° 47' 13,1'')

TT	Chỉ tiêu	Phương pháp, thiết bị	Đơn vị	Kết quả	QCVN
				K1	
1	Tiếng ồn	TCVN 7878-2:2010 NL21-RION, Nhật	dB	52,1	70 ⁽¹⁾
2	Bụi	TCVN 5067:1995	µg/m ³	65	300 ⁽²⁾
3	SO ₂	TCVN 5971:1995	µg/m ³	24	350 ⁽²⁾
4	CO	MEMAC PT.11:2014	µg/m ³	3100	30.000 ⁽²⁾
5	NO ₂	TCVN 6137:2009	µg/m ³	7	200 ⁽²⁾
6	Clo	MASA Method 202	µg/m ³	KPH (<20)	100 ⁽³⁾

Ghi chú:

- KPH (...): Không phát hiện (< giới hạn phát hiện của phương pháp).

⁽¹⁾ QCVN 26:2010/BTNMT: Quy chuẩn kỹ thuật quốc gia về tiếng ồn.

⁽²⁾ QCVN 05:2013/BTNMT: Quy chuẩn kỹ thuật quốc gia về chất lượng không khí xung quanh.

⁽³⁾ QCVN 06:2009/BTNMT: Quy chuẩn kỹ thuật quốc gia về một số chất độc hại trong không khí xung quanh.

Hải Phòng, ngày 10 tháng 5 năm 2017

ĐẠI DIỆN NHÓM PHÂN TÍCH

QLCL

GIÁM ĐỐC

Th.S Thân Văn Hậu

Th.S Vũ Thị Quỳnh Chi

TS. Nguyễn Quang Tuyền

1. Kết quả này không được phép sao chép từng phần ngoại trừ toàn bộ nếu không được sự đồng ý bằng văn bản của MEMAC.
2. Kết quả này chỉ có giá trị cho mẫu tại thời điểm được lấy

VIII. APPENDIX 7: MAP OF AIR, NOISE AND SURFACE WATER QUALITY SAMPLING LOCATIONS

