

Initial Environmental Examination

September 2014

VIE: Viet Nam Water Sector Investment Program –
Nghie Son Water Supply Subproject

Prepared by Song Chu Irrigation Company for the Asian Development Bank.

Asian Development Bank

MFF0054-VIE: PFR3

NGHI SON WATER SUPPLY SUBPROJECT

**NGHI SON ECONOMIC ZONE, THANH HOA
PROVINCE**

FINAL REPORT

APPENDIX 11

INITIAL ENVIRONMENTAL EXAMINATION REPORT

September 2014

ABBREVIATIONS

BOD	Biochemical-oxygen demand
DDSC	Construction monitoring and consultation
COD	Chemical oxygen demand
ĐTM/ EIA	Environmental impact assessment
EMP	Environmental management plan
EPA	United States of America's Environmental Protection agency
FS	Feasibility study
FTA	United States of America's Federal traffic agency
GDP	Gross domestic products
LC	Land clearance
EM	Environmental monitoring
IDA	International development association
NSEZ	Nghi Son Economic Zone
WSP	Water supply plant
ODA	Official development assistance
QCVN	Vietnam national standards
QL	National Highway
QLDA	Project management
RP	Resettlement plan
SEMP	Site environmental management planning
TNMT/ DONRE	Department of natural resources and environment
TCVN	Vietnam national standards
TOR	Terms of reference
TSP	Total concentrations of suspended dust
TSS/ SS	Total suspended solids
ADB	Asian Development Bank
USD	The United States of America Dollar/US Dollar
VNĐ	Vietnam Dong
WHO	World health organization

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EXECUTIVE SUMMARY

Description of the project

1. In response to the needs of the increasing socio-economic development in Thanh Hóa province in general and in the Nghi Son Economic Zone in particular, the construction of the water supply system for the Nghi Son economic zone is a high priority. Pursuant to the above-mentioned issues and the implementation planning, the Thanh Hóa Province People's Committee requested the Ministry of Planning and Investment, the Ministry of Finance, the Asian Development Bank (ADB) their support for the implementation of the "Water Supply System Construction in Nghi Son Economic Zone, Thanh Hóa province" funded by ADB.

2. The project includes the following components:

Items	Technical solutions (according to the plan selected)
Raw water pipelines (433.22 billions VND)	<ul style="list-style-type: none">– Pipelines convey raw water from Nam Canal of Muc River to My Yen Lake, then supplying Nghi Son economic zone. Using pipes with diameter of DN600-DN1200.– Total length expected $\Sigma L=38.955$:<ul style="list-style-type: none">– Pipe DN1200; L = 3378m– Pipe DN1000; L = 11.262m– Black plastic-coated steel pipe DN800; L = 12.233m– Plastic pipe uPVC DN600; L = 8748m– Plastic pipe uPVC DN500; L = 3334m– Raw water pipelines will provide raw water to the water treatment plant (20 000m³/day) in Truc Lam Commune and for production in Nghi Son economic zone.
Raw water pumping station	<ul style="list-style-type: none">– Raw water BPS of Cong Liem (located in Trung Son area, Cong Liem commune) (18.66 billions VND) The station will pump raw water from Nam Canal of Muc River to Yen My lake. Pumping capacity is 60.000m³/day– Yen My Lake's raw water pumping station (located at Yen My Lake in Yen My Commune) (18.58 billions VND) The station will pump raw water from Yen My Lake to Nghi Son economic zone Pumping capacity is 90.000m³/day– Bau Da's raw water BPS (located in the field area near the current BPS in Phu Son Commune) (27.15 billions VND) The station will pump raw water from the station at Yen My Lake to Nghi Son economic zone. Pumping capacity is 90.000m³/day.
Water treatment plant 20.000m³/day (75.55 billions VND)	<ul style="list-style-type: none">– Water treatment plant with the capacity of 20 000 m³/day is expected to be built in agriculture area in Huu Loc village, Truc Lam commune.– Clean water from the treatment plant will be pumped to serve residential activities, commercial services, and public services in the urban area, resettlement areas, residential clusters within 4 Communes of Truc Lam, Hai Binh, Xuan Lam, Tinh Hai

Items	Technical solutions (according to the plan selected)
Distribution pipelines network (68.57 billions VND)	<ul style="list-style-type: none"> - Using plastic pipe uPVC-PN8-12,5 bar for distribution pipes D≤600. Total length expected: 23009m. - DN600-L=899m - DN500-L=2900m - D300-L=3455m - DN250 - =156m - DN200-L=2185m - DN150-L=1682m - DN100-L=2591
Pipeline network service (11.77 billions VND)	<ul style="list-style-type: none"> - Using plastic pipes HDPE-PN8 - DN90-L=6.000m - DN75-L=16.000m - DN63-L=7.200m - DN50-L=7.200m - DN40-L=12.000m - DN32-L=12.000m - DN20-L=12.000m
Household connection (12.27 billions VND)	5000 households

Environmental and socio-economic impacts and mitigation measures

Items	Environmental Impacts	Mitigation measures
Constructing of the water supply station		
Construction Phase	Air quality <ul style="list-style-type: none"> - dust from construction and transportation - noise, vibration from transport and work vehicles on the construction site and digging and filling activities - emissions from work and transport vehicles. 	<ul style="list-style-type: none"> - Transport equipment must be covered carefully and regularly washed and cleaned after being used. - Don't let machine run on idle mode On hot and dry days, regular watering on the transportation route and on the construction site 3 times per day to reduce dust. - The filling materials need to be piled and compacted to avoid windblown dust - Install fence around the construction site, tole fence 2.5 meters in height. - Contrcators should operate from 9.p.m. to 6.a.m.in order not to disturb local people's life. - Cover excavated materials and waste that cannot be remove or reuse immediately.. - Machinerics, construction vehicles must be ensured in term of registration certificate of environment and technique.
	Soil environment <ul style="list-style-type: none"> - Impacts of domestic waste and wastewater in the construction site 	<ul style="list-style-type: none"> - Collect waste on the construction site everyday, identify waste disposal location to avoid littering. Contract an environmental sanitation services or local environmental cooperation. - Install fence around the construction site.
	Water environment <ul style="list-style-type: none"> - Risk of flooding in the construction site during heavy rain 	<ul style="list-style-type: none"> - Backup pump for rainwater must be on stand-by. - Build a drainage system in the construction site. - Follow the schedule of construction and avoid overtime in rainy season (from June to October)

Items	Environmental Impacts	Mitigation measures
	Solid waste <ul style="list-style-type: none"> - domestic waste from workers camp - construction waste: soil, concrete debris, sand, cement ... 	<ul style="list-style-type: none"> - Execute on time waste disposal identify location to dispose waste to avoid littering. Contract an environmental sanitation services or local environmental cooperation. - Identify disposal area at building site, waste will be transported everyday to the disposal area of communes. - Construction waste, which is mainly building materials, will be gathered and sorted to facilitate recycling; - Waste oil will be collected and stored into a separated tank and should not be discharged into the environment - Inform workers on regulations on disposal on building site
	Social effects <ul style="list-style-type: none"> - Conflict between local people and workers on building site - Disturbance of production activities - Since the work sites are tightly circumscribed, security must be paid attention to. 	<ul style="list-style-type: none"> - Avoid construction outside agreed period; - Require that the local authority manage in a orderly fashion the law for the non-local workers. - Workers must have an ID card to enter the area of the project to facilitate the management and should respect working hours; - Communicate the progress and schedule of construction, - Store all materials in the construction area; - Construction sites should be adequately lighted at night;
	<ul style="list-style-type: none"> - Residents' tombs near the WTP area 	<ul style="list-style-type: none"> - Install fence around the water treatment plant construction site - Remind workers not to damage tombs. - Keep equipment generating vibration away from the tomb area; - The site preparation for the construction of the WTP is the phase causing the worst impacts on the grave. Thus, it is suggested that the contractor, construction units and construction supervision perform managing and monitoring measures strictly. - Violation of the residents graves will not be permitted. - In case of incidents, they should have the agreement to give the adequate compensation for people.
	Transportation impacts: <ul style="list-style-type: none"> - Internal transportation in Truc Lam village - Son Tra commune will be affected during construction period due to transportation - Traffic in the communes (Xuan Lam, Truc Lam Tinh Hai, Hai Binh) which set up water distribution pipe are affected as well - Risks of traffic accidents 	<ul style="list-style-type: none"> - Set up proper construction signs on the road through the village - Streamlining traffic logically. - Set up speed limit signs at the construction site. - Install fence around the construction area.
	Labor safety: <ul style="list-style-type: none"> - Risks of labor accidents at construction site 	<ul style="list-style-type: none"> - Fully equip workers with labor protection gear. - Training workers in labor safety. - Install first aid station on the construction site - Ensure adequate living conditions for workers, preparing camps for workers in the construction site. - Periodically inspect safety equipment, operation mode of devices. - Direct workers at construction site and operating officials must be trained and practiced proper operation rules if problems arise. - Rules and safety warning signs will be installed at construction site;

Items	Environmental Impacts	Mitigation measures
		<ul style="list-style-type: none"> - Construction sites should be adequately lighted at night; - Periodically checking workers health.
Operating phase	<ul style="list-style-type: none"> - Wastewater from treatment plants, filtered wash water. 	<ul style="list-style-type: none"> - Installation of a reservoir for waste and wash water in the WTP to filter sediment before being discharge.
	<ul style="list-style-type: none"> - Sludge from the treatment station 	<ul style="list-style-type: none"> - Dredge periodically and ship for disposal in accordance with provincial regulations. - Transport vehicles should be carefully covered, not overloaded to avoid spillage of mud on the the road. Thanh Hoa environment and urban construction one-member limited liability company should be hired for this task.
	<ul style="list-style-type: none"> - Incidents when running the treatment station: power failure, chemical leakage 	<ul style="list-style-type: none"> - Quantitative check of proper concentration of chemicals (chlorine) coming into a tank is mandatory. - Inspection of the chemical storage rooms regularly to reduce the risk and the gravity of chemical leakage. - The WTP must a stand-by generator.
	<ul style="list-style-type: none"> - Water quality at the treatment station 	<ul style="list-style-type: none"> - Controlling the quality of the input and output water of the treatment station,checking regularly to ensure the quality of treated water getting standard
Pumping station and raw water pipeline		
Constructing phase	<p>Air environment impact:</p> <ul style="list-style-type: none"> - Dust, noise, exhaust fume from transportation and construction activities (digging drains and scooping mixing concrete), returning ground which has major impact on workers on the construction site, some house near the PS of Cong Liem commune and the residents along the transport routes. 	<ul style="list-style-type: none"> - Similar to the WTP build.
	<p>Soil environment impact:</p> <ul style="list-style-type: none"> - Almost all of soil is residents farmland along the raw water pipelines which is affected by digging and covering activities. - Leaking from machines on the construction site could be an issue. 	<ul style="list-style-type: none"> - Establishing barriers around the construction site; - Planning to maintain and repair machinery, construction equipment - At first site of leakage, remove the leaking machine from the construcion site until it is fixed. - Manage Oil and grease managment should be dealt at a specific confined maintenance location away from the construction site.
	<p>Water environment impact :</p> <ul style="list-style-type: none"> - Leakage of contaminants into the lake and canal through inadequate drainage. 	<ul style="list-style-type: none"> - Temporary camps and accommodation must not be located close to Yen My lake. - Yard for material,mixing concrete station, spoil dumps are not located close to Yen My lake, Nam canal and Muc river. - Collect and clean up waste at the construction site everyday.

Items	Environmental Impacts	Mitigation measures
		<ul style="list-style-type: none"> - Build a temporary drainage system on the construction site to reduce waste and / or rain water on the construction site. - Propagating and educating workers about awareness of protecting environment. - Ensuring construction progress
	Solid waste: <ul style="list-style-type: none"> - Workers household waste; - Construction waste; - Toxic waste: Oil and grease from machinery, construction facilities 	<ul style="list-style-type: none"> - Provide temporary water treatment station, portable latrines. - Provide toxic waste disposal equipment. - Set up properly identified containers for the different residual matter. - Promote awareness of protecting natural resources and environment to the construction force
	<ul style="list-style-type: none"> - To ecosystem: the impact on Yen My lake where the PS is built is of small and ponctual scale. 	<ul style="list-style-type: none"> - Spoils will be managed on time or disposiion to avoid leakage into the lake such as plastic tarps will be implemented.
	Social impacts: <ul style="list-style-type: none"> - Disordering residents productive life if construction period is prolonged. - Social security could be disturbed by the prensence of migrant workers. 	<ul style="list-style-type: none"> - Similar as the build for WTP - Apply a successive construction method, plan construction between the harvest and sowing periods when possible; - Ensure construction progress;
	<ul style="list-style-type: none"> - Traffic safety: Normal Transport flow affected by the addition of vehicles transporting materials andwastes to and from the site. 	<ul style="list-style-type: none"> - Streamlining traffic, set up speed limitand construction site signs; - Coordinate with local authorities and traffic police to control the flow in the area - Request that all drivers comply to traffic rules. - Collect fall out material from transports scattered on traffic roads, construction siteand transport routes through the communities everyday. - Keep material properly piled up on the side of the road if needed. - Restoration of the road after installing the water pipeline.
Operating phase	<ul style="list-style-type: none"> - In case of incident, pipe may need to be dug, which affects the soil, productive life of the residents near pipeline - Power failure at PS 	<ul style="list-style-type: none"> - Follow technical procedure for pipe maintenance; - Implement a monitoring program to detect leaks and cracks of water pipe to remediate timely - Sludge from pipe disposed at prescribed places. - Adhering to the terms of labor hygiene and safety for employees - Implement a labor safety and hygiene program. - Check employees health - Monitoring input water quality to adjust treatment of water, which help to optimise the treatment products, optimise the facility, reduce WTP overload, rejection of products and improves treated water quality.

Information Disclosure, Public Consultation, and Grievance Redress

3. As regulation of Vietnamese law, to capacity over 50,000 m3/day to work using raw water like the Thai Nguyen WTP and per ADB Safeguard Policy Statement, it is necessary to conduct public consultation. As such, consultation on option of construction of WTP, technology processes, water supply alternatives, etc. is essential as a part of actual survey in project

preparation. Therefore, public information and consultation activities were carried out as part of a baseline survey of local environmental conditions along the projects sites. Public meetings were held in May and June 2013 in all 9 affected communes.

4. Through environmental consultation, local leaders and some HHs were introduced about project, environmental impact and mitigation measurements, project implementation schedule and relevant environmental issues. Overall, there was no opposition raised against the proposed project.

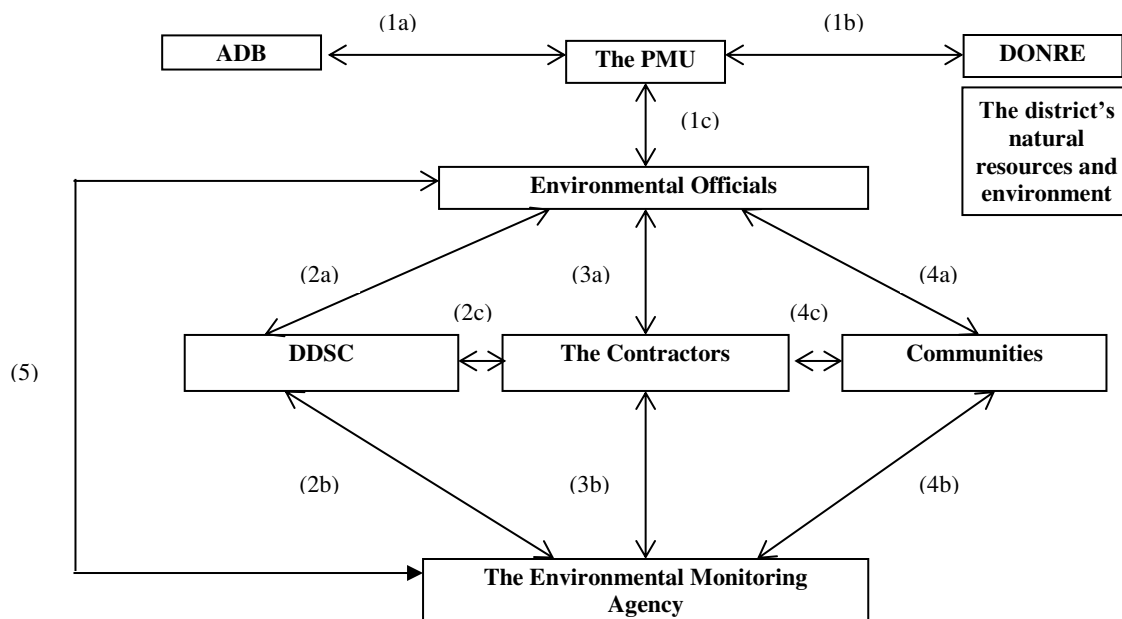
5. Three-step complaints solving procedure will be established to handle environmental impacts and land occupation. As a guideline, any complaints to any project's aspects will be solved through negotiation to get agreement. Complaints will be submitted toward 3 levels of entities: First through commune/ward's PC, then the Town's PC and finally through PPC. If an agreement was not reach, then they will be law court as the final method. Song Chu One Member Ltd. Company will bear all administrative and legal cost arising in such complaint solving processes.

Environmental management program

6. **Environmental Monitoring Plan:** The environment monitoring program will be conducted in 3 phases of the project: the phase of pre-construction (background environment before conducting the project); the construction phase (scheduled to last two years); the operation phase (first year following the start of the operation). The following table lists the total number of samples of soil, water and air/gases that will be expected to sample and analyze for monitoring the environment during each construction phase of the project:

Work section	Construction period	Total monitoring times	Number of surface water/waste water samples (time 1)	Number of soil samples (time 1)	Number of air/gase sample (time 1)	Number of surface water/ waste water samples	Number of soil samples	Number of air/gas samples
Water pipelines	24	9	4	0	3	36	0	27
Water treatment plant	24	9	0	0	2	0	0	18

Organization of implementation:



7. The implementation of environmental management plans for the project must comply with the regulations of Vietnam and ADB.

8. The Community will be entitled and encouraged to participate in implementation of monitoring the environment and reflect the problems of environmental pollution during the project implementation period.

9. The implementation of the monitoring described in the environmental management protection plan will cost around \$30'000 and will be financed under the PMU Incremental Costs.

Conclusions - Proposals – Commitments

10. **Conclusion:** The construction project of the water supplying system in Nghi Son economic zone, Thanh Hoa province is a feasible project and suit the orientation of planning the socioeconomic development of Thanh Hoa province.

11. The content of the environmental impacts assessment report complies with the current requests of environment impacts assessment of Vietnam government and ADB's policies. This report would be one of the most important to submit to the environmental state management agencies so they can determine the construction's location, scale and requirements for the investment license approval. In addition, this is also an important document in supporting the process of appraising, negotiating, and signing the loan agreement between Vietnam government and the ADB.

12. **Commitment:** During the whole process of project operation, the contractors commit to obey the regulations of Vietnam Environmental Protection Law, commit to obey the ADB's policies on environmental safety, commit to implement the measures of protecting the environment and minimizing the environmental impacts mentioned in EIA report.

I. BACKGROUND

1. Nghi Son Economic Zone (NSEZ) water supply project is part of the seven water supply subprojects¹ that formed the third Periodic Funding Request (PFR-3) of the Multi-tranche Financing Facility (MFF0054-VIE) for Support of the Water Sector in Viet Nam. The tranche finances 7 water companies for urban water supply, including one economic zone.

Figure 1: PFR-3 Sub-project locations.



2. This project, classified as Environment Category B, is judged to have some potential adverse environmental impacts, particularly in relation to pipeline construction activities and, to a lesser significance, the disposal of sludge from the water treatment process. The unavoidable construction impacts are temporary and can be mitigated, whereas adverse impacts related to sludge disposal have been avoided by incorporating sludge sedimentation tank in the design of the water treatment facility.

3. This report was prepared with reference to the ADB Safeguard Policy Statement (ADB SPS 2009). It follows the standard outline for environmental assessments: legal and administrative framework; description of the environment; description of the project and its significance; assessment of environmental impacts and mitigation measures, including alternatives considered; public consultation and information disclosure; and environment management plan.

4. The scope of this assessment covers: (a) 2 raw water intake with Pumping Station (PS) and transmission by pipeline of raw water, (b) water treatment facilities, and (c) treated water distribution.

¹ Subprojects in Nghe An Province (Thai Hoa, Vinh & Cua Lo), Thai Nguyen Province (Thai Nguyen City), Bac Giang Province (Bac Giang City), Quang Nam (Tam Ky City) and Thanh Hoa Province (Nghi Son Economic Zone)

II. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

5. Vietnam's Law of Water Resource was passed in June 2012. It establishes water as a resource to be managed as an economic good. Water resources boundaries are to be delineated according to hydrological rather than administrative boundaries. The law also gave strong institutional focus on creating a national apex body for water resources management, the setting up of river basin organizations, decentralization of management for water resources assets including infrastructure, and greater accountability for water services delivery.

6. The water law also provided for establishment of more effective regulatory institutions, including the use of abstraction licenses, discharge permits and more strengthened safety procedures for infrastructure development and operation. The Law was not only intended to facilitate shift to more sustainable and economically efficient development of the country's water resources; it was also intended to support achievement of the country's broader imperatives of poverty alleviation, socio-economic development and environmental protection.

7. The Ministry of Agriculture and Rural Development (MARD) was originally responsible for implementing the water law; this responsibility was later transferred to the Ministry of Natural Resources and Environment (MoNRE). Subsequently, MoNRE was mandated to direct river basin management activities throughout the country.

8. Under the Law on Water Resources, the GoV issued Decree No. 201/2013/ND-CP: on stricter regulations for effective water resource management. Under this Decree, projects requesting water abstraction from underground or surface water or for discharging wastewater into water bodies have in particular to get permits and to collect opinions of representatives of local communities. The aforesaid projects include reservoirs and dams with a total capacity of at least 500 cubic meters and works using surface water with a total flow of 10 cubic meters per second, reservoirs and dams interrupting rivers' and streams' current for at least one kilometer, and works discharging wastewater into local water sources with a flow of 10,000 cubic meters per day.

9. The Law of Environmental Protection (LEP) was originally passed in 2003 and took effect in January 2004. Decree 175/CP issued in October 2004 provided implementing guidelines for (a) assignment of environmental management responsibilities among ministries, provinces and people's organizations; (b) an environmental impact assessment system; and (c) a regulatory permitting system based on standards. Chapter III of Decree 175/CP contains requirements for the submission of environmental impact assessments by investors and enterprises; the appendices to the Decree also contained detailed provisions prescribing the format and content of EIA reports. In 1998, Circular 490 was issued providing additional guidelines for the preparation and review of EIA reports.

10. In November 2005, the LEP was revised. Decree 80/2006, issued in August 2006, provided detailed implementation guidelines for the amended law, replacing Decree 175/CP. The project based EIA system was strengthened, and a new environmental management tool was introduced in the form of strategic environmental assessments (SEA) for national, provincial and inter-provincial development plans, policies and programs. Responsibility for conducting SEAs is assigned to the state agency responsible for formulating the strategy or plan. For instance, the MoNRE (with technical assistance provided by ADB) undertook a strategic environmental impact assessment of the provinces and cities. Commitment to environmental protection made for small-scale projects to be implemented in two forms: environmental

protection commitment and simple environmental protection commitment with the approval of PC of commune/ward.

11. The National Assembly of Viet Nam approved a new Law on Environment Protection (LEP) on 23 June 2014. The Law will however be effective from 1 January 2015. Implementing guidelines and associated regulations are under preparation.

12. Environmental management in Viet Nam is administered on the national level by the MoNRE. The environmental arm of MoNRE, the National Environmental Agency (NEA), is the body specifically tasked with environmental protection. Aside from MoNRE, environment divisions in the various line Ministries are tasked with environmental management functions related to the specific sectors.

13. At the provincial level, the relevant management authorities are the Departments of Natural Resources and Environment (DoNRE) which carry out their environmental protection activities through their respective environment divisions. In the case of Thanh Hoa DoNRE, an Environment Protection Center is responsible for monitoring environment quality and providing technical solutions. The DoNREs come under the purview of the central MoNRE only in relation to administrative matters and technical guidance. For all other purposes, the DoNREs operate under the direct control of their respective provincial government, through the People's Committees.

14. The Project required GoV approval through the Thanh Hoa DoNRE. Contractors have to comply with all statutory requirements set out by DoNRE for use of construction equipment, hazardous waste & chemicals management, and operation of construction plants, e.g., concrete batching. Permits and certificates need to be obtained from the Thanh Hoa DoNRE for the Project. The delay for such approvals can take between 2 months to 3 months once the file is complete.

15. At district level, the relevant management agency is Division of Environment and Natural resources under District's PC. This division has qualified team responsible for environmental protection and consulting for District's PC leaders to make responding environmental decisions.

16. This project being funded in part by the ADB the Safeguard Policy Statement (SPS) applies and requires all the borrowers to identify project impacts and assess their significance; examine alternatives; and prepare, implement, and monitor environmental management plans. The SPS requires borrowers to consult people likely to be affected by the project and disclose relevant information in a timely manner and in a form and in languages understandable to those being consulted. Regarding IEE, SPS required the description of the environmental condition of a project, including potential impacts, the formulation of mitigation measures, and the preparation of institutional requirements and environmental monitoring for the project.

17. The ADB determined that the Project is Category B and subject to IEE. The ADB defines a Category B project as follows (ADB SPS 2009):

Category B. *A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required.*

18. The National Assembly of Viet Nam approved a new Law on Environment Protection (LEP) on 23 June 2014. The Law will however be effective from 1 January 2015. Implementing guidelines and associated regulations are under preparation.

19. Note that a complete list of the decrees, circular and regulations are provided in the Annex 1.

III. APPLICATION METHOD IN THE URBANIZATION PROCESS

20. Matrix method is applied to detect environmental impact factors and select agents that cause environmental impact; the assessed factors should be determined based on identification and selection of different aspects of impacted areas, impact risks and factors.

21. Statistics method is used to collect and analyze figures, data on geology, hydrology, climate, environment and social-economic conditions.

22. Survey and public consultation is used to assess social-economic and environmental situation and collect opinions and suggestions contributed by the local authorities and people for the project.

23. Observation method is applied to collect and analyze water samples (sewage, surface water, underground water); air, noise, vibration and sludge. The environmental observation processes are carried out based on the Vietnamese standards for assessing environmental condition of the project area.

24. Comparison method is used to assess impacts, environmental conditions through the comparison of environmental observation figures and collected figures with the standards, regulations (Vietnamese standards).

25. Mathematical model method is used to predict the project's impacts in the process of environmental impact assessment.

IV. ORGANISATION AND IMPLEMENTATION OF IEE

26. The organization of to implement te IEE is presented below:

Investor representative

- Project Owner / Investor: Song Chu One Member Ltd. Company (previously known as Song Chu Irrigation Exploitation One Member Ltd. Company))
- Director of PMU: Mr. Le Van Minh, Deputy Director of Song Chu One Member Ltd. Company

Consulting unit:

- Name: Lac Viet Investment, Environment and Infrastructure Development Joint Stock Company (LAVIC)
- Legal Representative: Mr. Nguyen Phan Anh, General Director of LAVIC

27. Key staff participating in new urban implementation

- Le Van Thuy: General Director of Song Chu One Member Ltd. Company
- Le Van Minh: Deputy Director of Song Chu One Member Ltd. Company
- Key staff:
 - o Nguyen Le Phu Master in Environment
 - o Nguyen Viet Hung Doctor in Environment
 - o Vu Duc Nam Drainage engineer
 - o Bui Thai Bach Duong Engineer of Environment
 - o Ho Thi Huong Master in Environment
 - o Tran Thi Hien Master in Environment

28. In addition, there is involvement of other supporting experts.

V. DESCRIPTION OF THE PROJECT

29. NSEZ is the southern key economic region of Thanh Hóa province. It is located in the between the south of Thanh Hóa and the north of Nghệ An province. NSEZ has a deep-sea port, national railways and highways and a great resource of land. It is one of the four most important development zones in Thanh Hóa province. The location has adequate conditions to build an economic zone in order to create motivation to enhance the economic development in the vicinity while integrating in the nation's economic development. The population of Nghi Son economic zone in 2005 was 80,400 peoples and is expected to reach 160,000 people by 2015 including 19,000 current residents; 121,000 people living in the new urban and resettlement areas; 20,000 students, vocation-learning workers, the people serving in the military forces and the short-term workers by 2015 and it is expected to reach a total of 200,000 people by 2020

30. With these advantages and the potential for the significant development of Nghi Son - Thanh Hóa, Prime Minister issued Decision No. 102/2006/QĐ-TTg May 15, 2006 on the establishment and promulgation of the action of the Nghi Son economic zone and Decision No. 1364/QĐ-TTg October 10, 2007 on the approval of the master plan for building the Nghi Son Economic Zone in Thanh Hóa province.

31. Therefore the « Water Supply System construction for NSEZ in Thanh Hoa province» of the Song Chu One Member Ltd. Company is required for the :

- Construction of a raw water intake, three pumping stations and a raw water transmission pipeline D500-D1200 over 39 km.
- Construction of a new water treatment plan capacity 20,000 m3/day.
- Construction of 13.9 km distribution network with pipe diameter D100-D600 and 62.4 km of service pipeline with pipe diameter D20-D90.
- Installation of 5,000 household connections with meters
- Support for the implementation and operation of the project.

32. The project will benefit over 8,000 households, including 5,000 households receiving piped water for the first time.

33. The Project will only rehabilitate existing facilities (water treatment plant, pipeline network). The initial assessment did not identify any outstanding environmental issues related to the operation of these facilities. All mitigation measures defined in Table 45 pertaining to handling of chemicals, waste storage/stockpile, and / other storage in existing facilities will be

followed.

A. GEOGRAPHIC LOCATION OF THE PROJECT

34. Tinh Gia is the southernmost district of Thanh Hoa province. Tinh Gia's area is 457.3 km² with its population of 215,900 people (2004). The district's population density is 472 people per square kilometer. This area includes Tinh Gia town and 33 communes which are Thanh Thuy, Hai Chau, Thanh Son, Hai Ninh, Trieu Duong, Ngoc Linh, Hai An, Tan Dan, Hung Son, Anh Son, Cac Son, Dinh Hai, Hai Linh, Hai Nhan, Ninh Hai, Hai Hoa, Hai Thanh, Binh Minh, Nguyen Binh, Phu Son, Xuan Lam, Phu Lam, Truc Lam, Tung Lam, Tinh Hai, Mai Lam, Tan Truong, Hai Yen, Truong Lam, Hai Thuong, Hai Ha and Hai Binh.

35. NSEZ is located in the South of Tinh Gia District. It is 200 km far from Hanoi to the South and 1,500 km far from Ho Chi Minh city to the North, having the 1A Highway and South – North railway line run through. Nghi Son's deep water port is connected to the Ho Chi Minh road. It is also the gateway for transporting between the North and the Central, across Lao and into Ho Chi Minh city by road, railway, and waterway. NSEZ is not only a key economic zone but also a famous ecotourism location for its peaceful waters, scenic beauty and rich humanity. NSEZ includes: 12 communes in Tinh Gia, Thanh Hoa with natural area of 18,611.8 hectares.

36. In the framework of this project, the scope of water supply includes Nghi Son Economic Zone, urban residential clusters and resettlement in Nghi Son economic zone (research implemented within 4 communes of Truc Lam, Xuan Lam, Hai Binh, and Tinh Hai of Tinh Gia district).

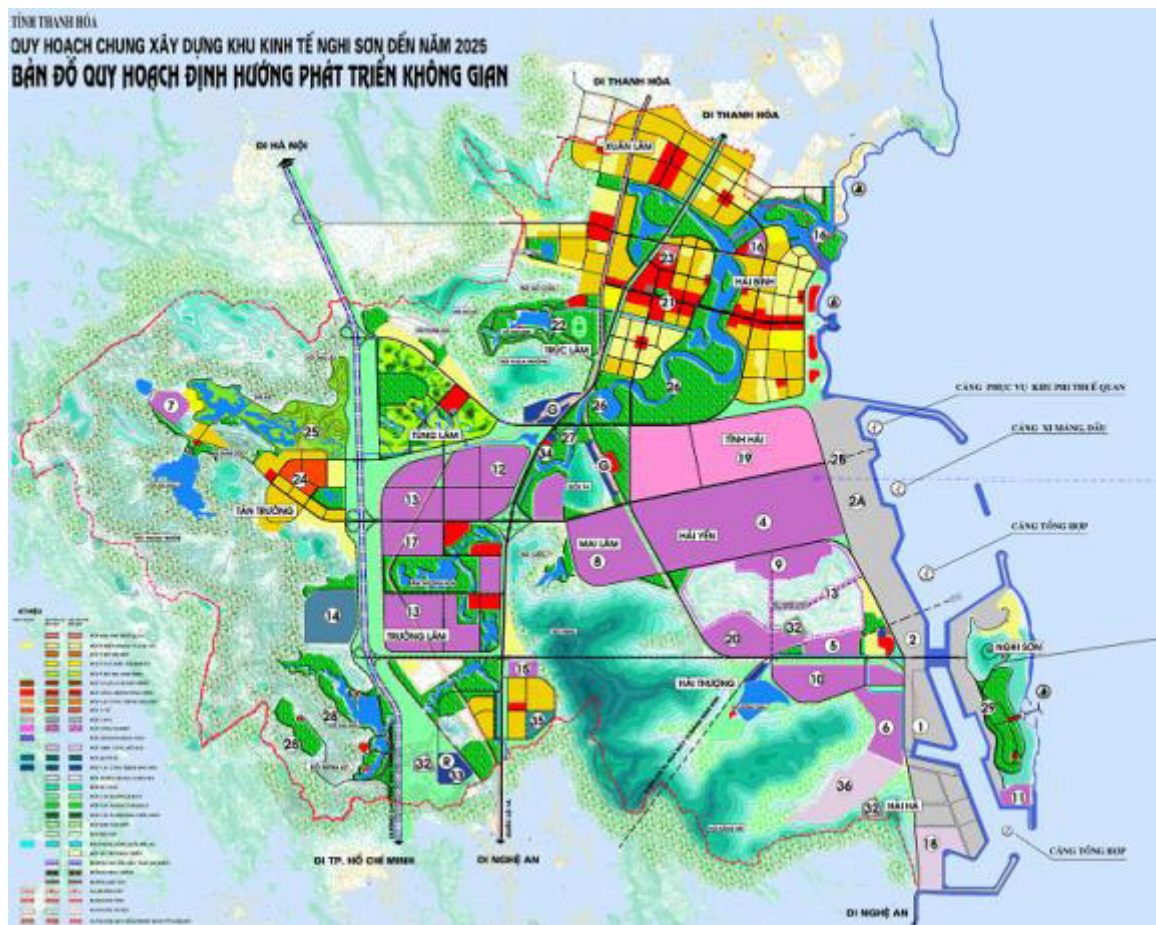


Figure 2: Master Plan of Nghi Son Economic Zone.

A. Project justification

37. Currently, the demand for water in the NSEZ is extremely urgent. Along with the strong investment in infrastructure and industrial parks here, the matter of water sources used for household and production purposes also need to be properly addressed. In the communes in the boundaries of the NSEZ, the majority of households are using groundwater wells, drilling wells and rainwater holding tanks. Because the water in the drilling wells in the districts and communes bordering the sea is contaminated by salt, the water in the drilling wells in mountainous communes is contaminated by ferrous compounds and most people have no water treatment system, the residents frequently undergo a clean water shortage, especially in dry season when the underground water runs out. The demand from the residents to be connected to a clean water network is very high. Currently, the NSEZ has only the water plant which was built at Đồng Chùa, with the capacity of 20,000 m³/day. This plant has mainly been supplying water for the southern industrial region of the Nghi Son economic zone. The Nghi Son Cement Plant (in the process of production) has been connected to a water distribution facility producing 3,000 m³/day gathered from 8 wells in Tân Trường commune, located 9 km from the WTP. The demand for water usage in the economic zone is forecasted as follows:

Table 1. Household water demand in the project area by 2020

Demand for the water of the resident area						
No.	Water using subjects	Households by 2020	Water supplied population rates	Used water norm per capita liter/day	Average flow rate (m ³ /24 h)	Maximum flow rate K=1.30 (m ³ /24 h)
1	Household water demand	74,287			5,457.22	7,094.39
1.1	– Water supply to the residents in the economic area	49,287	60%	100	2,957.22	3,844.39
1.2	– Water supply to workers at the industrial zones	25,000	80%	125	2,500.00	3,250.00
2	Water supply for the commercial and service uses in the urban area	Q _{dv} = 20%Q _{sh}			1,091.44	1,418.88
3	Water supply for watering trees and washing roads	Q _{rd} = 10%Q _{sh}			545.72	709.44
4	Lost water rate	Q _{rr} = 20%(Q _{sh} +Q _{dv} +Q _{rd})			1,418.88	1,844.54
5	Rate of the water used for the treatment plant	Q _{bt} = 10%(Q _{sh} +Q _{dv} +Q _{rd} +Q _{rr})			851.33	1,106.72
6	In total	Q = Q _{sh} +Q _{dv} +Q _{rd} +Q _{rr} +Q _{bt}			9,364.59	12,173.97
Round number						12,000.00
Demand for the water used for the industrial zone						
N.o	Water using subjects	Population by 2020	Water supplied population rate	Water using norm per capital (liter/day)	Average flow rate (m ³ /24 h)	Maximum flow rate K=1.30 (m ³ /24 h)
1	Clean water supplied to the industrial zone	Q _{cns}				28,000
Water demand by 2020					40.000	

source: FS Report of the project

Table 2. Household water demand by 2030

Water demand in the residential area						
No.	Water using subjects	Population by 2030	Water supplied population rate	Water using norm per capital (litter/day)	Average flow rate (m ³ /24 hours)	Maximum flow rate K=1.30 (m ³ /24 hours)
1	Household water needs(Qsh)	149,199			15,223.10	19,790.04
1.1	Water supply to the residents in the economic area	119,199	80%	120	11,443.10	14,876.04
1.2	Water supply to workers at the industrial zones	30,000	90%	140	3,780.00	4,914.00
2	Water supply for the commercial and service uses in the urban area	Qdv = 20%Qsh			2,288.62	2,975.21
3	Water supply for watering trees and washing roads	Qrd = 10%Qsh			1,522.31	1,979.00
4	Lost water rate	Qrr = 15%(Qsh+Qdv+Qrd)			2,855.11	3,711.64
5	Rate of the water used for the treatment plant	Qbt = 6%(Qsh+Qdv+Qrd+Qrr)			1,313.35	1,707.35
6	In total	Q = Qsh+Qdv+Qrd+Qrr+Qbt			23,202.49	30,163.24
Demand for the water use in the industrial zone						
No.	Water using subjects	Population by 2030	Water supplied population rate	Water using norm per capital (liter/day)	Average flow rate (m ³ /24 h)	Maximum flow rate K=1.30 (m ³ /24 h)
1	Clean water supplied to the industrial zone	Qcns				30,000
Demand for the clean water by 2030					60,000	

source: FS Report of the project

Table 3. Water demand for the industry in the project area by 2030

No.	PROJECT NAME	IMPLEMENTATION LOCATION	By 2020		By 2030	
			Raw water	Clean water	Raw water	Clean water
1	Clean water treating station	Trúc Lâm commune	20,000		40,000	
2	Công Thanh Cement Factory (Phase 1+2)	Tân Trường commune			4,000	
3	Công Thanh Nitrat/Ure Fertilizer Producing Plant	Tân Trường commune			6,000	
2	Công Thanh Thermo-Power Plant	Lot No. 9, Industrial Zone No. 2, Hải Yến commune	3,000	1,000	3,000	1,500
3	POMIDO Steel Rolling Plant	Hải Yến commune (industrial park No. 2)	4,000	1,000	4,000	1,500
4	Nghi Sơn Chem-Oil Refinery complex	Mai Lâm, Tĩnh Hải, Hải Yến communes	20,000	20,000	20,000	20,000
5	Nghi Sơn Thermal Power Plant No. 1	Hải Hà + Hải Thượng communes	4,000	1,000	4,000	1,500
6	Nghi Sơn Thermal Power Plant No. 2	Hải Hà + Hải Thượng communes	15,000	1,000	15,000	1,500
7	Nghi Sơn Cement Plant (phase 1 +2)	Hải Thượng commune	1,000	1,000	1,000	1,000
8	Nghi Sơn Steel Rolling Plant	Industrial Park - Hải Thượng commune	8,000	1,000	8,000	1,000
9	Metallurgical Industrial Park	Hải Thượng commune	8,000	2,000	8,000	2,000
10	Industrial Zone No. 1	Mai Lâm commune	7,000		7,000	
	IN TOTAL		90,000	28,000	120,000	30,000

source: FS Report of the project

38. With such forecasted water demand, if no investment is made to supply adequate amount of treated water to the economic zone, a severe shortage of water is anticipated. This could cause a strong negative impact on the socio-economic development in the Nghi Sơn economic zone while not meeting the expectations for the household water demand. Therefore the investment of crucial importance for the increase of the resident well-being and the development of the economic zone.

39. Pursuant to the above-mentioned problems and the goals of good implementation of the scheduled plans, the Thanh Hóa PPC request kindly to the Ministry of Planning and Investment, Ministry of Finance, Asian Development Bank (ADB) in Vietnam to facilitate and support the Thanh Hóa province to receive the investment capital from ADB's concessionary capital to implement the project "Water Supply System Construction in Nghi Sơn Economic Zone, Thanh Hóa province".

B. Project components description

40. The proposed project consists:

- Construction raw water intake, three pumping stations and a raw water transmission pipeline D500-D1200 over 39 km.
- Construction new water treatment plant capacity 20,000 m³/day.
- Construction 13.9 km distribution network with pipe diameter D100-D600 and 62.4 km of service pipeline with pipe diameter D20-D90.
- Installation of 5,000 household connections with meters;

41. Objectives of the project:

- Meeting the needs of improvement in synchronous development of Nghi Son Economic Zone;
- The construction works will improve socioeconomic conditions and are the basis for the development of other economic sectors.
- Modernizing the operation of water supply system, matching the general development of water supply technology of the country and of the world.
- Educating the community about general awareness of using and conserving clean water, protecting natural water resources, and regarding water as a wealth to cherish and preserve.

42. Short – term objectives:

- Urgent objective of phase I (2011 – 2015) ensures water supply for 60% of the population in the project area, with the water supply standard of 100- 130 l/day.
- Provide raw water and clean water for production and construction in NSEZ;

43. Long – term objectives :

- By 2020, striving to have 95% of the population use clean water, with the water supply standard of 130 - 150 l/day;
- Ensuring supply of raw water and clean water for living activities, and for production in NSEZ



Figure 4. Nghi Son Economic Zone – Raw Water Supply System



Figure 5. Nghi Son Economic Zone - Location of Main Components

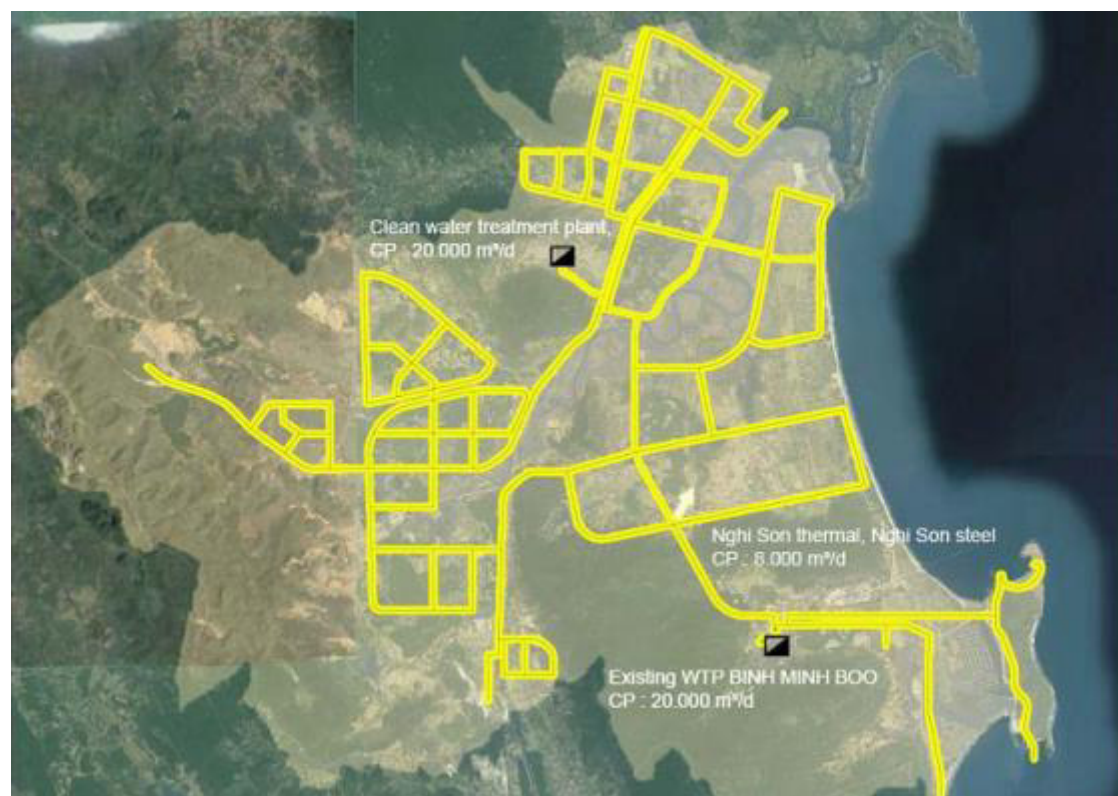


Figure 6. Nghi Son Economic Zone – Water Supply Network

a. Project mass and scale

44. Project on the construction of water supply system for Nghi Son economic zone includes the following major parts:

Table 4. Project Components

Items	Technical solutions (according to the plan selected)
Raw water pipelines (433.22 billion VND)	<ul style="list-style-type: none"> Pipelines convey raw water from Nam Canal of Muc River to My Yen Lake, then supplying Nghi Son economic zone. Using pipes of u.PVC plastic, steel and ductile cast iron with diameter of DN600-DN1200. Total length expected $\Sigma L=38.955$: <ul style="list-style-type: none"> Pipe DN1200; L = 3378m Pipe DN1000; L = 11.262m Pipe DN800; L = 12.233m Pipe DN600; L = 8748m Pipe DN500; L = 3334m Raw water pipelines will provide raw water for the WTP of 20 000m³/day in Truc Lam Commune and for production in Nghi Son economic zone.
Raw water pumping station	<ul style="list-style-type: none"> Raw water BPS of Cong Liem (located in the field area of Trung Son, Cong Liem commune) (18.66 billion VND) The task of the station is to pump raw water from Nam Canal of Muc River to Yen My Lake. Pumping capacity is 60.000m³/day Yen My Lake's raw water PS (located at Yen My Lake in Yen My Commune) (18.58 billion VND) The task of the station is to pump raw water from Yen My Lake to Nghi Son economic zone Pumping capacity is 90.000m³/day Bau Da's raw water BPS (located in the field area near the current BPS in Phu Son Commune) (27.15 billion VND) Pump raw water from the station at Yen My Lake to NSEZ. Pumping capacity is 90.000m³/day.
Water treatment plant 20.000m³/day (75.55 billion VND)	<ul style="list-style-type: none"> Water treatment plant with the capacity of 20 000 m³/day is expected to be built in the field of Huu Loc village, Truc Lam commune. Clean water from the WTP will be pumped to serve living activities, commercial services, and public services in the urban area, resettlement, residential clusters within 4 Communes of Truc Lam, Hai Binh, Xuan Lam, Tinh Hai
Distribution pipelines network (68.57 billion VND)	<ul style="list-style-type: none"> Using plastic pipe uPVC-PN8-12,5 bar for distribution pipes D<=600. Total length expected: 23009m. <ul style="list-style-type: none"> DN600-L=899m DN500-L=2900m D300-L=3455m DN250 - =156m DN200-L=2185m DN150-L=1682m DN100-L=2591
Pipeline network service (11.77 billion VND)	<ul style="list-style-type: none"> Using plastic pipes HDPE-PN8 <ul style="list-style-type: none"> DN90-L=6.000m DN75-L=16.000m DN63-L=7.200m DN50-L=7.200m DN40-L=12.000m DN32-L=12.000m DN20-L=12.000m
HH connection (12.27 billion VND)	<ul style="list-style-type: none"> 5000 households

Source: FS report

b. Earthwork volumes on each route can be estimated as follows:

45. **The treatment station:** Station area lifting core to 4.5 m needs about 68 000 m³ of soil.
46. **Water pipelines:** Estimated volume of excavated soil on the whole routes is 127 000 m³, the volume of soil reverting to ground is about 104 000 m³.
47. **Some disposal sites in the area:**
- Con Quan landfill, city of Thanh Hoa
 - Landfill in the area of Tinh Gia District including 3 communes of Hải Hòa, Ninh Hải, Hải Nhân (since 2002)

c. Items needed for building project:

i. Water intake from Nam Canal of Muc River:

48. The water intake is implemented at K8+541 on the side of Huu, Nam Canal of Muc River in Thang Tho Commune, Nong Cong district. The construction works include two chambers :

- The first chamber for collecting water is built of reinforced concrete with the size by 2.2 m wide x 3.0 m long, 2.45 m deep, and is located 200 mm higher than the canal bottom to collect water. On the receiver holes' surface install round steel trash bars of D10 with 50mm gap between two bars, bar's size is 2.2 x 2.2 m.
- The second chamber is built of reinforced concrete with the size by 3 x 4 x 4.65m high. Draw water from the collecting chamber to the receiving chamber by the DN1200mm pipes, install a valve to open and close at the end of the pipes. In the receiving chamber insert net trash with hole size of 3 x 3 mm, the area of the net under the water is 8.4 m².

ii. Công Liêm booster pumping station:

49. After water is removed from Nam Canal of Muc River in Thang Tho Commune, it will flow in the PVC pipe – DN1200 to Cong Liem raw water PS, located in the field of Trung Son village of Cong Liem Commune in Nong Cong District.

50. At this location a BPS with the capacity of 60 000m³/day is constructed to pump water to Yen My Lake. The BPS includes rubble embankment reservoirs and PSs built of reinforced concrete. Reservoir capacity is $W = 2.500\text{m}^3$, average size of the ground is 16.5 x 37 x 3m. The pumping station is constructed semi-floating and semi-submersible. The upper part is built by beams; the lower part is built of reinforced concrete. The size of the station is 16m x 9 m. The station is equipped with 3 centrifugal horizontal pumps. Technical specifications of each pump are $Q = 1375\text{m}^3/\text{h}$, $H = 50\text{m}$, $N = 250\text{KW}$, 2 pumps are put into operation; 1 pump is used for backup pump. In the station install a transformer of 750 KVA-35KV/0,4KV. Get power from the 35 kV medium-voltage lines (10 kV). The position of getting electricity is in column 11 of high voltage transmission lines with the grid for the electrical substation of Cong Liem 3 - 100KVA-10kV / 0.4 KVM in column 12. The distance between column 11 and the step-up substation is 446 m.

iii. Intake structure and raw water PS at Yen My Lake

51. The intake structure and raw water PS are constructed at a location near the raw water PS of the Phase I at Yen My Lake. The station has a capacity of 90.000m³/day and is built with steel beams and reinforced concrete, with an area of 12,53m x 7,56m, reinforced floor of 24m, reinforced bottom of 7,2m, and reinforced ground of 20,3m. Water from Yen My Lake through will flow through the new canal connected to the available canal to pump water to the collecting

hole of the station. The collecting hole is 38, 2 long, 10,2m wide, with a reinforced floor of 7,2m. Water from the collecting hole will flow to the PS by 2 black plastic coated steel pipes HDPE DN1000mm-L= 16m depending on water the canal being used. The station is equipped with 3 pumps. There are 2 pumps running with the capacity of 60 000 m³/day and a backup pump. Technical specifications are Q= 1.350m³/h, H= 40m, N= 239kw. When it is needed to raise the capacity to 90 000m³/day, one more pump will be installed, with 3 running pumps and a backup pump.

iv. Bau Da BPS

52. Water from the PS at Yen My Lake to Nghi Son faces difficulties of topographic differences and far distance. Therefore it is important to construct a second BPS to assure the transfer of raw water from Yen My to Nghi Son. The BPS is located in agricultural land of Nam Son village, Phu Son Commune.

53. This BPS is designed to have a capacity of 90 000m³/day that can directly pump pressure on the pipe to reduce construction cost, save power by taking advantages of excessive pressure on the pipe, and create convenience for the operation. It is planned to install combinations of 6 pumps (Monitor) of the submersible pump type, vertical turbine drilling well, stainless steel shell, including all valves, automatic electric control cabinet inverters, lightning protection, fittings, etc. The capacity of each machine is Q= 670m³/h, H=40m and N= 127kw. There are 6 running pumps and 1 backup pump.

v. The raw water pipelines

54. The installation of the raw water pipeline is composed of:

- gravity pipeline plastic tube DN1200 HDPE double-walled steel barrel, length L = 3378 m to draw water from Nam Canal of Muc River to Cong Liem BPS.
- a pressure resistant pipeline made of HDPE plastic coated steel pipe, the DN800 pressure pipe, length L = 8.315m to pump raw water to Yen My lake.
- a pressure resistant pipeline made of plastic coated steel pipe HDPE DN1.000-L = 4.643m from Yen My PS to Bau Da PS
- a plastic coated steel pipe made of HDPE - DN 1.000-L= 6.619m from Bau Da PS to National Highway 1A to Cong Thanh cement plant.
- a plastic coated steel pipe made of HDPE DN800-L=3.918m from Cong Thanh cement plant to Cau Ho.
- a plastic uPVC pipe - DN600mm-L=5.008m from Cau Ho to Nghi Son economic zone within the area of Khe Sanh Lake in Truc Lam Commune.
- a plastic pipe uPVC- DN600- L=3.740m from Cau Ho to refinery and petrochemical industrial park.
- a plastic uPVC pipe - DN500-L=3.334m from the refinery and petrochemical industrial park to Dong Chua Lake.

vi. The water treatment station with capacity of 20,000 m³

55. The tank is for distribution and chemical flocculation mixing by an agitator. It has a ground size of concrete 2,5m x 2,5m x 5,1m. The agitator has the capacity of 1,1kw; The flocculation tank uses an agitator and a sedimentation tank (lamell):

- It is divided into two tanks. Each tank has ground size of 5,0m x 10,0m, 5,1m high. Two tanks are divided into two compartments by length, each cavity insert a stir 14-10v/ph, with engine capacity of 0.55 kW, diameter of 1650mm, distribution of water to the tank to

fill 400 x 400mm. The tank is built of reinforced concrete combined with the sedimentation tank (lamell). Making the two-level tank response descending stirring speed and taper action of the velocity of water through the tank will help the process of flocculation become improved when raw water's quality or quantity change. The effectiveness of the tank will be much higher than the usual level 1 plan.

56. The sedimentation tank (lamel)

- Water from the reactor tank flows into the sedimentation tank through a perforated wall D100 to deliver water in the lamella tank, including two tanks, each tank has ground size of 16.3 m x 5.0 m x 5.1 and is divided into two compartments by length. The first chamber is to create a buffer to prevent the flow from creating vortices that can break the cotton residue buffer cavity with length by 20-30% of the sedimentation chamber. The sedimentation chamber is mounted blocks of lamella which are installed 600 vertically inclined to increase the energy consumption of the sediment particles to increase the ability to sediment.
- Return water is collected in the ditches collecting surface FRP attached with adjustable serrated trough. With pipe is designed on each tube settler module by modern technology, the plant operator can run overloaded with excess capacity allowing 20-30% of the raw water quality and sudden change.
- The sewage sludge on the bottom of the tank is sucked out by the suction of mud automatic constellation type Siphon CT2 of Leopold USA making the operation simple and effective which does not require cleaning the bottom. Sucking mud system works with the natural principle of differential pressure tank, saving sludge discharge water compared with conventional style. Frequency of mud suction can be adjusted by seasonal PLC or by day or hour-to-hour to save the maximum amount of water and mud discharge, which does not affect the program of work of the sludge tank discharge. With this mud suction device operation from control and very suitable and convenient. The tank was built of reinforced concrete block with reactor.

57. Rapid gravity filter

- Construct 5 sand filters with size of 8.0 m x 3.8 x 4.5 m, distribute wash water and collect filtered water washing by 2-story woven filter of HDPE plastic type S-USA, sand filter with $d = 0.9$ to 1.6 mm, control filtration speed by electronic valve.
- Combine wind and water to wash the filter, with wind machine of $Q = 36.0$ m³/min, $H = 6$ m, $N = 75$ kW and the wash pump of $Q = 670$ m³ / h, $H = 13$ m, $N = 37$ kw. Filter cleaning system is in automatic mode. Wind machines and wash pumps are located in the PS II

58. The clean water reservoir is built of reinforced concrete with a capacity of 4.500m³, size of $A \times B \times H = 32.7$ m x 32.7 m x 4.8 m. The reservoir is installed with equipment to notify the water level and surge.

59. Clean water PS and the wash pumping filter

- Install 3 pumps level II with technical specifications are as follows: $Q = 600$ m³ / h, $H = 60$ m, $N = 175$ Kw, in which 2 of maximum working and 01 reserved. PSs are designed to increase the capacity up to 40.000m³/day. Working mode of the PS is supplying water on demand of the water distribution network and the consumption HH. In the fitting station install 1 pump for washing the filter with $Q = 670$ m³ / h, $H = 13$ m, $N = 37$ kW.

- The technical pumping system uses 1 set of 3 inverter pumps of $Q = 8-24\text{m}^3 / \text{h}$, $H = 50\text{m}$, $N = 1.8 \text{ kW}$ to serve water for the needs of the preparation.
 - The chemical, sanitary service in the factory
 - The size of the PS II is 25.2 meters x 9 meters. The PS was built leaning down the leveling aggregation of 2.7 m. The submerged part is poured monolithic reinforced concrete grade 250; the floating part is built of brick concrete roof frame with crane girder loading 3 tons to remove devices in the station.
60. The chemical house and chemical storage is built next to the filter clusters, with size of $A \times B = 10.2 \text{ m} \times 17.6 \text{ m}$. The 1st floor is arranged for storing chlorine, alkaline, lime, alum and hygiene
61. The filter wash water reservoir
- The wastewater reservoir collects water from the filter tank and the sedimentation tank has a capacity of 3.000m^3 (save wash water filters for 4 days). The dimensions on the ground are $36\text{m} \times 29\text{m} \times 3.1 \text{ m}$ deep. Lake is stone embankment, and is divided into 2 chambers that collect water after being filtered. In one chamber, install pumps to draw water to the mixing tank salvage. The submersible pump is the type of $Q = 40\text{m}^3 / \text{h}$, $H = 15\text{m}$, $N = 3.7\text{kW}$, 1 running 1 reserved.
62. The auxiliary works. It includes: electrical substation, lightings, internal yard line, technical pipelines, drainage and sewage, fence gate.
- Electrical substation: Install a transformer with a capacity of $630\text{KVA}-35\text{KV} / 0.4$ for the water plant. Take power in column 9 from the medium-voltage grid 22KV which is powering the substation of Truc Lam $5-100\text{KVA}-10 (22) / 0.4 \text{ kV}$. Distance from the point of taking the plant's electricity substation to the economic zone is about 500m.
 - Lightings: Treatment plant is illuminated by high-pressure mercury lamp CS 125W hanging on the column according to layout planned space
 - The area of station yard is divided into different areas for constructing, planting trees, and implementing concrete work with the concrete 200 of 200mm thick.
 - The drainage system consists of the brick trenches of 300-800mm wide and 500-900 deep. The system is covered with the perforated reinforced concrete cloth to collect rainwater and wastewater. Wastewater flow in the trenches to the wastewater treatment lake, then being discharged to the irrigation ditch behind the treatment plant.
 - Grading fence: The fence around the water treatment station is built of solid bricks with head of 220, 2.1 m high, two layers of reinforced concrete bracing, stone foundation, with length surrounding the factory. Construct two main entrances to the plant, one gate of 10 meters wide in the Southwest, one gate in the northeast and a side entrance next to the Southwest gate.
 - The watch room is built with an area of $3\text{m} \times 3\text{m}$.
 - Office equipment, machines, transportation of construction equipment serve for construction management and water supply systems operating over a large area.
63. All filters wash water will be discharged into the sedimentation tank before pumping leverage. Sludge will be collected periodically for transport to the disposal area.

d. Pictures

64. All these locations can be partially observed in the following photos:

Figure 3: Pictures of proposed construction sites in the project



H1. Proposed water treatment plant site



H2. Yen My Lake – proposed pumping station site



H3. Yen My Lake – proposed water intake of Nam Song Muc Channel



H4. Proposed pipeline across rice fields

e. Execution

i. The pumping station:

65. Consolidate the ground engineering based on data of the engineering geological investigation. The body of the chambers and of the PS are built of reinforced concrete.

ii. The water treatment plant:

66. Consolidate ground engineering based on data of the engineering geological investigation. Work items are built according to Vietnam's standards.

iii. Raw water and clean water pipelines:

67. The pipelines of water distribution system will be installed on the side of the road according to priority measure. Pipelines will be installed under the ground if the pavement is too narrow in order not to invade other legal constructions.

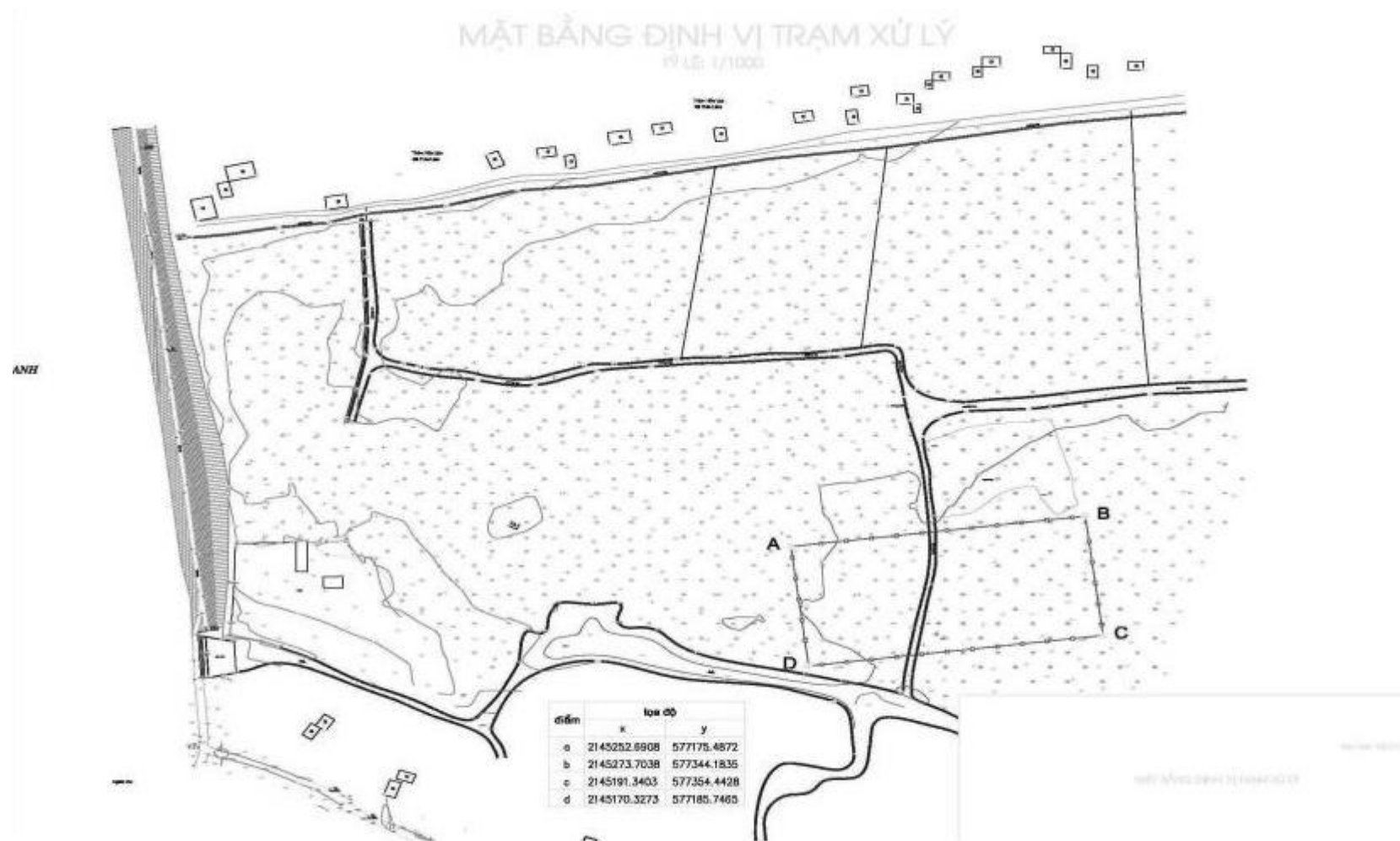
Table 5. Project capital distribution

* The period of 2011-2020

No.	Items	Costs (including VAT and contingency cost)		Annotation
		USD	VND	
1	The total investment	46.70 millions	982.38 billions	VAT included
2	Base cost	32.26 millions	678.69 billions	VAT included
3	Contingencies	12.42 millions	261.37 billions	VAT included
9	Interest during construction	2.01 millions	42.31 billions	

Source: FS report

Figure 7. Location of the Water Treatment Plant



f. Costs of management, operation and maintenance**Table 6. Some main production costs**

No	Type	Volume/Year	Price(đ)	Amount (billion đ/year)
1	Cost of Electricity (Kw/year) 0.5kw/m ³	14,421,332.5	18,000.0	25,958.4
2	Cost of chlorine (Kg/year)	11,315.0	15,000.0	169.73
3	Cost of alum and Polymer (Kg/year)	141,437.0	8,000.0	1,131.5
4	Labor Cost (36 persons)	432.0	5,160,000.0	2,229.12

Estimated treated water price

- Average raw water 5,400 VNĐ/m³
- Average pure water 10,022 VNĐ/m³

Raising the price of water is expected to:

- From 2016 to 2030: the price is increased 6% on the present amount per year.
- And providing clean water as well as raising the price of water must be decided by the Province's People Committee

g. List of main equipment in the project

68. The main types of machines needed in the process of project implementation are an excavator, dress-machine, machine levelling, automotive, pumps, and a crane.

69. There are also all kinds of other types of machinery. During construction process, these machines generate emissions, dust, noise and possibly petroleum base products into the environment.

h. Material supplying source of the project

70. In regional areas, there are a number of supply of raw materials for the project are as follows:

- Truong Lam Quarry in Truong Lam, Thanh Hoa province, Tinh Gia districts an exploitation of 142.32 hectares, the reserve of 100,000m³ - 200,000 m³ / year. Produce all kinds of stone construction such as: 1x2, 4x6....
- Tailings from the mine at Tinh Hai-Hai Yen-Hai Thuong Thanh Hoa Tinh Gia district as an exploitation of 505.43 ha and produce a capacity of 800.000m³ / year.
- The Copper and Gold Mine of Tung Lam-Tan Truong Thanh Hoa Tinh Gia district is 384.6 ha and produce 640.000m³ of tailings per year

i. Project's investment capital and progress**i. Project's investment capital**

- **Total investment of the project** (estimated): **\$ 46.70M US**. Of which: ADB: **\$ 41.41M US** (accounting for 88.67% of capital investment) and counterpart fund from the GOV: **\$ 5.29 M US** (accounting for 11.33% of the capital investment).
- **Form of providing ODA:** Original Capital Resource (OCR).

- **Capital project preparation:** Thanh Hoa Provincial People's Committee, the Management Board Nghi Son Economic Zone and Chu River TNHMTV Company committed after detailed outline is approved, will allocate sufficient funds to carry out project preparation work including feasibility study report and the basic design, construction survey, environmental impact assessment reports, economic reports, committed connection, compensation re-settled.

ii. The Project's Progress

Table 7. The project's progress

Tasks	Tentative schedule
Loan agreement negotiation and signing	11/2014
Establishment of PMU	Early 2015
Preparation of detailed design, cost estimate and bidding document, procurement and selection of bidder.	2nd Quarter 2015
Update EMP and conduct consultation with downstream communities;	3 rd Quarter 2015
Coordinate with the Environment Protection Center on regulatory compliance issues	All duration of the project
Construction duration (24 months)	Start Early 2016

j. Organization and personnel management of the project

i. The organizational structure of the project

- **Project name:** Investment Project Water supply system construction of Nghi Son Economic Zone in Thanh Hoa province.
- **Code of the project:** E36
- **Name of funding agency:** The Asian Development Bank (ADB).
- **Agency:** Thanh Hoa Provincial People's Committee
 - a) Contact Address: 35 Le Loi Boulevard, Lam Son Ward, Thanh Hoa
 - b) Phone : 0373 852246 Fax: 0373 851255.
- **Implementing agency:** Nghi Son Economic Zone management board.
 - a) Contact Address: Social Truc Lam Tinh Gia District, Thanh Hoa Province
 - b) Phone : 0373 617239 Fax: 0373 617239
- **The project:** mining company TNHMTV Works Irrigation Thanh Hoa Chu River
 - a) Contact: 24 Pham Bang - P. Ngoc Trao - Thanh Hoa
 - b) Phone: 0373 852506; 0373 721023 Fax: 0373 750390
- **Time:** 2011-2015
- **Location:** Nghi Son Economic Zone Tinh Gia District, Thanh Hoa Province

ii. Implementation Arrangements

71. The executive agency Thanh Hoa Provincial People's Committee, handed over the management and administration of the project to the investor company TNHMTV exploitation of Irrigation the Chu Thanh Hoa River, this is the water resources management is the lake

reservoirs, water supply situation and will manage the entire water supply system for the project area;

72. Type of project: Open bidding domestic and international items of work: survey, design, construction supervision, supply of equipment and materials, built in accordance with Vietnamese law and under the guidance of the ADB;

73. Asian Development Bank (ADB) will guide and verification for comments on the contents of the feasibility study report, the socio-economic report of the project, compensation and resettlement plans and social security Assembly, the process of implementation of the project from bid invitation, bid evaluation, construction supervision, disbursement, the progress of each job and the final settlement.

iii. Project management mechanism

74. In order to implement the project effectively, all relevant agencies are required to participate in and take responsibility for the project.

75. Under Vietnam regulations, the management and implementation of the project will comply with the Decree No. 12/2009/ND-CP dated February 10th 2009 and Decree No. 83/2009/ND-CP dated October 15th 2009 of the government amending and supplementing a number of articles of Decree No: 12/2009 ND-CP on the project management and construction investments;

76. The process of the project implementation can be divided into 3 periods: preliminary investment, investment, and testing and operational handover.

77. **Preliminary investment:** The Project Management Unit (PMU) of the One Member Limited Liability Company for the Exploitation of Chu River Irrigation Works implements the followings: organize the project, submit and approve the project, establish necessary procedures in the preliminary investment.

78. **Investment:** After having the bidding results, the (PMU) continues to perform the followings: Establishing the bidding consultant dossier, the construction and installation bidding dossiers, conducting bidding evaluation, signing contract with the contractor, implementing the construction contract on work completion, commissioning, handing over, accounting the construction work, putting the work into operation.

79. **Operation:** The operation and maintenance of Nghi Son water supply systems after being put into use will be transferred to the One Member Limited Liability Company for the Exploitation of Chu River Irrigation Works

80. **The ability of organizing, managing, and implementing of the project owner:** the One Member Limited Liability Company for the Exploitation of Chu River Irrigation Works is required to manage and implement the project. Currently, the company is managing and maintaining the water supply system of the Nghi Son economic zone, including: the raw water pipelines and the raw water PS with a capacity of 30,000 m³/day. When construction work is completed and put into use, the One Member Limited Liability Company for the Exploitation of Chu River Irrigation Works will take on a complete production facility. It will increase its revenue and generate revenue for the local, as well as ensuring debt payment.

C. Infrastructure conditions**a. Water drainage and waste water treatment systems**

81. The project area does not have a waste water sewage collection and treatment system.

b. Water supply system

82. At present, inhabitants in Nghi Son economic zone and surrounding area use rainwater, borehole water and deep well for daily use. There is only one WTP with a capacity of 3.000 m³/day collected from the underground water of Tan Truong commune and it is for the specific usage of the Nghi Son cement plant. An expansion of this type of water resource is unlikely because a high content of salt due to the proximity of the sea.

83. Water sources: Underground water

c. Solid waste management and treatment

84. Solid wastes in the studied area are of domestic, medical, and industrial origins.

85. There is still no collection and treatment system for domestic solid waste. According to current description of residents through the survey results Households in the entire area collect and treat their wastes themselves. As reported by the commune, waste gathering place is still not localized, waste discharging places of households are located on the river banks and boundaries surrounding of the commune. In the region, only in Xuan Lam commune, there is one waste collection group formed by the people in the hamlet of the commune. This group consists of 60 households who collect waste with the purpose of avoiding environment pollution in the village.

86. Overall, according to the local government leaders, the waste collection problem is considered as a serious issue and need to be properly attended. The widespread waste discharging around the commune poses a serious pollution problem for the residents and the natural environments. Forms of waste disposal are used by the people in the village are burning or throwing into the river. This causes a huge impact on the environment not only in the region but also in the surrounding areas.

Table 8. Forms of waste collection and treatment of these families

No.	Forms of waste treatment	Quantity	Rate (%)
	Burning/ Burying in the garden	776	61
	Taking into public disposal area	10	0,1
	Discharging into cattle's stable	6	0,1
	Throwing to fields/ bushes/ ponds/ rivers/ canals	464	37
	Others	6	0,1

87. Industrial solid waste arising from active industrial zone, a part of them is buried and discharged freely that pose the bad effects on the environment.

d. Current conditions of transport system

88. Nghi Son economic zone is directly accessed by 3 types of traffic: Road, railway and sea route. Besides, Nghi Son still can use indirect air traffic through Vinh airport in Nghe An province

89. **Railway traffic:** National railway line through Nghi Son has a length of 16,8 km with road track of 1meter wide. This line is running along the West of 1A national highway. On this line, Khoa Truong station is the main railway station for passing point, management and maintenance.

90. **River route:** Flowing through Nghi Son Lach Bang River, which originated from Nhu Thanh southern mountainous area, flows out the sea 34, 5 km down into Bang estuary. There is Lach Bang fishing port is located near the Bang estuary.

91. **Sea route:** At the moment, Nghi Son port use is dedicated only for cement shipping with three thousand tons ship that can go in and out the port.

- Jet into Nghi Son port: 2 km; Depth: 7,5 m; the highest water level for ships going in and out the port: 8,5m.
- Storage area: Total area is about 110,000 m².

Table 9. Wharf system statistics

Name / Mark	Length (m)	Depth (m)	Type of ship / Type of goods
1st station	165	7,5	Collective
2nd station	225	10	

Road infrastructures:

92. **National highway:** National Highway 1A goes through the NSEZ with a length of about 14,7km, asphalt concrete pavement has width of 10,5m, and the foundation of 14,5m.

93. **Province, district, and commune route are found throughout the studied area:** Nghi Son- Bai Chay route is a part of route connecting Nghi Son urban and Ho Chi Minh road with the total length of 56 km under construction, and the part crossing Tinh Gia has a length of 22 km.

94. Route 513 connecting 1A National Highway to Nghi Son port has asphalt concrete cover with the width of 8 m which is mainly used for goods transportation from Nghi Son port to 1A National Highway.

95. 2B route with the length of 27 km and the wide cross-section of 5km to 6km connects the communes within Nghi Son area. On this route, some sections are being upgraded but the remaining is aggregate road and many parts are in bad conditions.

96. The route from 1A National Highway to Lach Bang fishing port has length of 6km, tarred foundation, and a width of 3,5m. This line consists of 12 concrete and built culverts, 1 concrete bridge, and 1 mixed bridge and culvert set.

97. The route from Hai Nhan to kilometer D26 has 24km long dirt roads, 4 sewers and 6 temporary bridges.

98. Besides main routes, there are many paths made by residents that have width from 2 to 4 m and mostly made of dirt roads and gravel.

e. Power system

99. Power supply sources:

The design area is supplied in power by 220Kv and 110Kv national grid of north-central area, directly from 220/110Kv Nghi Son-125mVA substation. In the project area, the following 110Kv stations are present:

100. Power Grid:

- 500kV grid: 500kV national grid go far away the design area.

- 200kV grid: the 220kV line from Thanh Hoa to Vinh in design area, directly provide power for 220kV Nghi Son(Lau Bridge) station. This will be the main power supply for the headworks of the economic zone.
- 110kV grid: 110kV line running through Nghi Son cement station is customer line, not used to connect to other 110kV stations. The 110kV line to 110kV Tinh Gia station is just built, having AC-185 clamping circuit wire
- medium voltage grid: the medium voltage grids providing power for living and public activities in economic zone communes, mainly using the voltage of 35kV and 10kV. 10kV grid behind Xuan Lam intermediate station is relatively full-load, and need to re-transform.
- The step-down station in region mainly are pole mounted substation with a capacity of 100-630kVA
- The step-down grid using in design area are 0,4Kv floating grid. In present, many areas even use rural grid with long radius and great losses.

101. Related investment project:

The economic zone has been studied and set up a Nghi Son coal-heated power station centre. This is one of the key projects of Viet Nam power sector and is the important additional power supply sources for North Central area. As planned, Nghi Son power centre consists of three coal-heated power plants, each plant has 2 units. To be specific, Nghi Son I thermal Power Plant has a capacity of 2x 300 MV with traditional heat power condensation technology; Nghi Son II and III have a capacity of 2x 600 MV each.

f. Other constructions

102. The irrigation constructions:

The lake system: the study area has many big lakes such as: Dong Chua lake with FLV = 9,2km², Kim Giao lake with FLV = 9,3 km², Que Son FLV =3,1 km², Yen My lake with FLV = 137km² and many small lakes such as Khe Lay lake with FLV = 1,4km², Khe Sanh lake with FLV = 3,5km², Ao Sen lake with FLV=2,3km², Khe Tuan lake with FLV=13,6km², Khe Nhoi lake with FLV=1,8km², Thach Ban lake with FLV=2,4km², Ong Gia lake with FLV=1,4km², Khe Mo lake with lake=0,8km², Dap Chua lake with FLV=1,2km², Miss Huong lake with FLV =4,0km², Dap Quy lake with FLV=1,2km² mainly locate in the west of 1A highway. The function of lakes are storing water for irrigating rice-field when the dry season comes, reducing stream flow and limiting erosion when rainy season comes.

103. Dykes:

Dyke at level IV construction is protected by dyke of Bang River and has the total length of 18,79km. The height of the dyke ranges between 3m to 4m ensuring design frequency p=10%. The dyke is solidified by concrete.

104. Construction foundation:

The project area of Nghi Son economic zone generally consists of a gradual slope going west to east. It is mainly occupied by agriculture, forested land and hilly regions having a height ranging between 0.3 to 45.4m. Furthermore, the villages of communes intersperse with existing ground elevation from 1.5 to 13.5m.

- Mountainous region: existing ground elevation is from (125-339.5)m and the foot-hill has existing ground base elevation from(20.5-55.5)m.
- Delta: the regions of western 1 A highway are relatively flat, the land which is expected to develop has existing ground elevation from(1.85-12.5)m and build-up area has existing ground elevation from (2.45-13.0)m.
- Lowland: this is a land lying closely with Bang river basins, deeply in floodplain and salt-water, having elevation from (-0.30-0.85)m .
- Coastal area: including Hai Binh, Hai Yen, Hai Ha and Nghi Son commune. The land which is not build-up has existing ground elevation from (1.05-4.5)m and build-up area has elevation from (2.85-4.55)m.

105. **Drainage:** the design area does not have drainage system.

The main direction of drainage is from west to east, and then it flows into the Main River and stream system such as Le Dynasty River, Yen River and Bang River and finally flow into the sea.

106. **Assessment of estate:** Basing on natural conditions, hydrologic data, terrain of design area, the types of soil are assessed as follow:

107. **Favorable estate:** including areas having existing ground elevation 2.5m, grading create slope; the areas with base elevation is -2.0m, the height of terrace is from (0.5-1.0)m and areas having natural slope from (0.5-id-10)%

108. **Less favorable estate:** including areas having the height of terrace from (1.07-1.70) m and areas having slope of base from (10<id-20) %.

109. **Unfavorable estate:** including areas being in deep floodplain, areas having height of terrace >2.0m and mountainous regions having natural slope >20%.

Table 10. Table of estate's types

No	Estate's types	Area(ha)	(%)
1	Build-up area	2175	11.69
2	Favorable estate	3455	18.56
3	Less favorable estate	1075	5.78
4	Unfavorable estate	2050	11.01
5	Unfavorable estate	8931.8	47.99
6	Limited-development land	925	4.97
7	Total	18611.8	100

VI. DESCRIPTION OF THE ENVIRONMENT

A. Natural conditions

a. Geographical and geological conditions

i. Thanh Hoa province

110. Thanh Hoa's terrain is diverse. It is divided and oriented in a Northwest – Southeast pattern. In the North-West there are mountains of over 1,000 meters to 1,500 meters high, sloping, lengthening and extending southeast and hills account for over three quarters of the total area of the province. Thanh Hoa's terrain can be divided into three distinct regions: mountain and midland, plains, and coastal areas with the following characteristics:

111. **Mountain and midland:** Associated with the high northwest mountains and southern Truong Son mountain ranges, it includes eleven districts, with a total area of 7999.07 km² (Thanh Hoa TK Yearbook 2007), accounting for 71.84% of the total area of the province. The average height of the mountains range from 600 to 700m, inclined at around 25°. Midland mountains have an average height of 150 to 200 meters. Being inclined between 15° to 20°, they are mainly low hills, flat peaks, and gentle slopes.

112. The economic gap between mountainous region and delta region is still great.

113. **Plains:** Delta's land area is 1904.98 km², accounting for 17.11% of the total area of the province and consist of ten districts. This is a region deposited by four major river systems: Ma River, Bang River, Yen River, and Hoat River. This region has great tilt, less plainness, with average height ranging from 5 to 15 meters from sea level, but in some valley parts such as Ha Trung the height ranges from 0 to 1 m. The topography alternates between plains with low hills and independent limestone mountains. This is the key rice area of the province and is a favorable area for integrated economic development in the direction of industrialization and modernization.

114. **Coastal area:** The coastal area includes six districts running along the coast with a length of 102 km. This area is 1230.67 km², accounting for 11.05% of the land area of the province. The terrain is relatively flat. Along the coast there are estuaries. The coastal sand area has an average height of 3 – 6 meters. In the South of Tinh Gia district the terrain has a form of buffalo spine due to the long hills stretching to the sea. The dry upland areas are mixed with the hard drainage areas. This area is suitable for developing crops (rice, short-term industrial crops), for feeding livestock and poultry. This area is also suitable for aquaculture; industrial development, small scale industry; and sea transport. Nghi Son economic zone is recognized for its deep-sea port, oil refinery industry and the Nghi Son Cement Plant.

ii. Nghi Son economic zone

115. Tinh Gia district has a semi-mountainous topography, including wild caves, plains and coastal beaches, and a coastal line with fine sand, along with a few small islands, 3 bays, and 2 major ports. These favourable conditions make Tinh Gia become a high potential area for development.

116. Nghi Son's terrain is quite complicated and can be divided into 4 main forms:

- High mountainous area: includes communes of Tân Trường, Trường Lâm, Mai Lâm, Hải Thượng and parts of communes of Trúc Lâm, Hải Hà which belong to mountains of Xuoc, Chuột Chù, Đoàn, Đồng Chùa, Cung area of relatively great slopes. The average height is between 45,5 and 339,5 m.

- Plain area: includes communes of Xuân Lâm, Trúc Lâm, Tùng Lâm, Tĩnh Hải and northern part of communes of Mai Lâm. It is a flat area with small difference of height. The natural average height is ranges between 1,85 and 12,5 m. This area has poor drainage system, so floods often take place.
- Low lands: Located along the Bang and Ha Nam Rivers, this area is often in salt water with an area of over 100 ha of communes of Hải Bình, Hải Thượng, Hải Hà. The average height is just over the main sea level. This area is currently used for aquaculture and salt production.
- Coastal area: is along the coastal region of the communes of Hải Bình, Hải Yến, Hải Hà, Hải Thượng and Nghi Sơn island. The land gently inclines from West to East. There is golden sand along the coast suitable for the tourism industry. The average height ranges between -1,1 and 4,65m.

117. **Quaternary Geological events.** Vietnam has been classified as a low seismicity region. However, some moderate earthquakes occurred in Vietnam. 90% of Earthquakes have taken place in the northwestern Vietnam. In the other regions, there was not any earthquake of magnitude larger than 5.5. A Seismological Station is located in Vinh city.

118. **Climate.** The Thanh Hoa province is located in the tropical monsoon climate with two seasons: Summer being hot, humid and rainy, and under the influence of hot dry southwest wind and winter being cold and with fewer precipitations.

119. **Temperatures.** The Thanh Hoa province has a high mean annual temperature of about 23, 5°C. Diurnal amplitude ranges between 7°C - 10°C and the full amplitude between 11°C and 12°C. The average temperature in January 2010 was 18, 3°C; the average temperature in June 2010 was the highest with 30, 63°C.

Table 11. Monthly average temperature(oC) from 2009 to 10/2010

Year	1	2	3	4	5	6	7	8	9	10	11	12
2009	16.2	22.0	20.8	24.1	26.7	30.0	29.1	27.6	27.8	25.7	21.3	19.8
2010	18.3	20.7	21.4	23.0	28.2	30.6	29.9	27.4	27.9	24.6	-	-

(Source: Environmental Report of Thanh Hoa Thanh Hoa 2010 - Department of Natural Resources and Environment)

120. **Humidity.** Seasonal humidity changes, but the humidity difference between the seasons is small. Monthly mean annual humidity is about 85 %.

Table 12. Average moisture (%)in 2009 to 10//2010

Year	1	2	3	4	5	6	7	8	9	10	11	12
2009	78	88	88	87	87	74	82	85	83	84	76	82
2010	87	85	85	91	85	74	80	89	86	79		

Source: Environmental Report of Thanh Hoa Thanh Hoa 2010 - Department of Natural Resources and Environment)

121. **Precipitations.** Rainfall in Thanh Hoa province is quite important, but very unevenly distributed between the two seasons and rises from north to south and from west to east. The dry season, from November to May, receives only 15 to 20% of annual rainfall. In contrast, the rainy season from June to October receive 80 to 85% of the annual precipitation.

Table 13. Total monthly rainfall (mm) per month in 2009 to 10/2010

Year	1	2	3	4	5	6	7	8	9	10	11	12
2009	8,6	3,9	45,6	85,9	234,1	109,7	272,7	157,6	502,8	232,9	16,6	8,9
2010	72,0	7,5	6,1	44,7	31,6	79,4	248,3	866,7	347,6	471,9	-	-

Source: Environmental Report of Thanh Hoa Thanh Hoa 2010 - Department of Natural Resources and Environment)

122. **Sunshine.** The month with the most hours of sunshine in the year are from May to October ranging from 159 to 229 hours / month in 2010, the months of January through April have the lowest number of hours of sunshine.

Table 14. Average numbers of sunny hours months from 2005 - 10/2010

Month	1	2	3	4	5	6	7	8	9	10	11	12
2009	111.0	98.0	63.0	95.0	160.0	187.0	165.0	181.0	139.0	128.0	123.0	87.0
2010	43.0	88.0	74.0	73.0	178.0	187.0	229.0	125.0	159.0	113.0		

Source: Environmental Report of Thanh Hoa Thanh Hoa 2010 - Department of Natural Resources and Environment)

123. **Solar Radiation.** The total radiation in the summer months are very high, reaching between 12.2 to 15.6 cal/cm²/month in 2010 from May to October IX, which is the period of dispersed clouds and sun near the zenith. The winter-spring period is more covered with less sunshine coming through.

Table 15. Solar radiation (Kcal/cm²) average in 2005 to 10/2010

Month	1	2	3	4	5	6	7	8	9	10	11	12
2009	6.1	5.7	6.4	8.9	11.8	12.1	13.7	14.0	12.1	10.8	7.2	5.8
2010	5.4	6.1	8.4	9.1	12.2	13.6	14.4	15.6	13.0	11.8		

Source: Environmental Report of Thanh Hoa Thanh Hoa 2010 - Department of Natural Resources and Environment)

124. Wind direction and regime:

Table 16. Wind direction and average wind speed (m/s)

Season	Winter (from November to April of the following year)	Summer (from May to October)
Direction	North, Northeast	Southeast, South, Southwest
Speed (m/s)	1,5 - 1,7	1,7 - 1,9

(Source: Center for hydro-meteorological forecasting in Thanh Hoa)

125. **Climate change.** Expected climate change impacts in the Center of Vietnam include increased in frequency and/or intensity of tropical cyclones; increased rainfall and run-off; an expansion in flooded areas and a rise in annual flood levels. Although the intergovernmental panel for climate change, (IPCC) does not forecast any great changes in the timespan of the project 2030 but more in the years 2060 to 2090 when punctual events due to climate change, notably recurrent flashfloods could affect the infrastructures. As such, climate change impacts will be considered during detailed design. In addition, a salinity increase could occur due to sea level rise but the salinity question is of no concern since the intakes are located in a reservoir. In addition, drought events aggravated by climate change could also occur during the same period. This could cause two potential risks: decrease of water quantity and quality and misuse of treated water. The question of the quantity and quality will be resolved by the location of the intake pipe in the river channel and an adjustment of the treatment at the WTP. The second issue, if it happens, will probably auto regulate itself with the water being charge to the user.

126. Preliminary Climate Risk Screening Checklist has been filled and is presented in a separate document. Results from this screening shows medium risk for the Sub-Project.

B. Hydrological condition and hydrogeology

a. Hydrological condition

127. **Hydrology.** Bang River is derived from Bo Lan Mountain which borders with Thanh Hoa – Nghe An provinces and flows through Tinh Gia Mountain from northwest to southeast. To Khoa Truong, the river runs in a southwest – northeast direction, flowing down the plain and emptying into Bang estuary. Despite being located in an area with high rainfall, the river is regularly influenced by salt-water intrusion because of its plan and short basin and the tidal forces. Bang River is 34.5 km long with a watershed area of approximately 246.5 km². The total amount of water is about 800 million m³, connected with Hoang Mai River, Yen River by Nha Le canal and surrounded by three-meter high dikes.

128. Hydrographic observations:

Water level

The nautical chart levels in the area are 1.85m below the mainland topographic elevations (Hvn2000 + 185 cm).

According to historical data collected in Hon Ngu, the highest water level observed was 388 cm (dated 22/12/1972). Respectively, the water level in Nghi Son was 402 cm.

b. Hydrogeology

129. According to the report of Hydrogeological Team 47 Division II, the underground water here is mainly in: the rock layer at the age of T2 and E2. The total amount of water in 8 boreholes is about 13.306m³/ day.

c. Ecology Environment of the Project Area

130. According to the survey, the project area has poor ecosystem and biological resources. No rare or endangered species have been identified. The ecology environment of the main components are described below:

– Raw Water Pumping station and raw water pipelines

The raw water PS is located at the Yen My lake (see photo p 17). The ecology environment is characterized by low - mountain ecosystem with secondary vegetation, consisting mainly of drought-resistant shrubs and grass. No natural forest is affected. No rare or endangered fauna and flora is present.

Agriculture is also present along the raw water pipeline. Agriculture includes food plants, mainly short-term plants planted on the agricultural land.

– Water Treatment Plant

The water treatment plant will be built in agriculture area in Huu Loc village, Truc Lam commune (see photo p 17). It includes diverse sorts of food crops such as corn, rice and peanuts. Its area has been partly changed recently to grow vegetables, beans, flowers and ornamental plants.

– Distribution area

The distribution area is located in existing and planned urban areas of the Nghi Son Economic Zone. The future urban areas are currently dominated by agriculture (see above)

C. Physical environment

a. Methods of collecting information

131. Research has been conducted in the project area of the NSEZ so that a general portrait of the environment status can be described. The water treatment station located near Khoa Truong mountain area and Khe Sanh Lake is people's farming area. Scope of constructing this treatment station is located next to the tomb area of the locals, separated from residential areas. Status of air quality in the area is good because of the absence of production activities and low traffic density. People in this area use groundwater for daily activities. Current road systems are small roads, intersected by National Highway no. 1 and the railway.

132. Water pipelines from Yen My Lake to the treatment station parallel National Highway no.1 and Provincial Road no. 505, running through paddy fields of the local.

133. Water pipelines from Nam canal Muc Lake to the Yen My Lake also run through paddy fields.

134. To evaluate the environmental quality of the project area, the Consultants has conducted a survey on secondary data documents in the departments and agencies. In addition, they also investigated the sites and sampled the environment. The information about sampling location and criteria of the analysis are presented in the table below.

Table 17. Locations of sampling quality of the environment

Sample	Quantity	Description	
Surface water sample	8	N1-2 Sample at Yen My Lake where water runs into the treatment station.	The area of constructing pump station (with the capacity of 90.000 m ³), carrying water to the treatment
		N3-4 2 Sample at Yen My Lake	The area of receiving water from water pipelines from Nam canal Muc River
		N7-8 Sample at Dong Chua Lake	The area of receiving water from water pipelines from Yen My Lake
		N5-6 Sample at Nam canal Muc River	The area of constructing water pipelines from Nam canal Muc River to Yen My River.
Underground water sample	5	-Area of constructing Water treatment Station	
Air - microclimate sample (2 samples/position at 2 timelines of a day)	20	A1- The position of treatment station (Khoa Truong mountain – near Khe Sanh Lake)	Near the residential area.
		A2- National Highway A1 Tung Lam – Tinh Gia – Thanh Hoa.	Near the construction area of the water pipelines carrying water to the treatment station.
		A3- The area of booster pump station at Bau Da Slope	Near the residential area, on Provincial Road 502
		A4- The area of Yen My Lake	Near treatment station area at Yen My Lake
		A5- The intersection	- On Provincial Road 505, near

		area leading to Bau Da slope (5km way)	residential area, along water pipelines carrying water to the treatment station, Dong Chua Lake. NOTE: Dusty, have an important number of vehicle
		A6- Near residential area near water supply treatment station	
		A7- The area of Yen My Lake	Near the area of receiving water from water pipelines from Nam canal Muc River
		A8 My Phong – Yen My – Nong Cong	Along the pipelines (at Nam canal Muc River) carrying water to Yen My Lake, near residential area.
		A9- The area of constructing the pump station at Cong Liem commune.	
		A10- Near the gate of Thuong Van village – Thang Tho	Near the area receiving water from Nam canal Muc River, near the residential area.
Noise sample	20	Like the location of air - microclimate sample	
Soil / Sludge	5	Đ1: Soil sample in the paddy field near Cong Liem pump station Đ2: Soil sample in the paddy field which is 4km way from Bau Da slope Đ3: Soil sample in the paddy field which is 5km way from Bau Da slope Đ4,5: Soil sample in the paddy field at the treatment station area.	

135. The results of analyzing and assessing the current status of environment in the town and other proposed areas of the projects as follow:

b. Current status of air quality

136. In general, air quality in the area of the WTP construction site is good. The results of the analysis show that all criteria are within the limits allowed by National Technical Regulation on ambient air quality QCVN 05:2009 / MONRE and National Technical Regulation on a number of toxic substances in the air under QCVN 06:2009 / MONRE. According to these results, there are just several locations on National Highway no.1 (sample 2) and on the way to Bau Da Slope (sample 5) which have dust concentration almost reaching the standard limit of QCVN 05:2009/MONRE. This is because of the large number of vehicle coming across this route, especially the vehicles carrying raw materials. The noise level of the 2 samples also exceeds the standard QCVN 26:2010/MONRE at certain times during the day.

Table 18. Results of air quality analysis in the project area

No	Analysis parameter	Result										Testing method	QCVN 05:2009 (average 1h)
	Sample symbol	A1-1	A1-2	A2-1	A2-2	A3-1	A3-2	A4-1	A4-2	A5-1	A5-2		
Sampling location coordinates		19°23'06.97"N 105°44'31.69"E		19°22'40.93"N 105°44'16.34"E		19°25'16.88"N 105°40'49.89"E		19°26'47.57"N 105°39'16.50"E		19°22'04.21"N 105°41'40.85"E			
Sampling time		19th May 7.35	19th May 13.30	19th May 8.15	19th May 14.10	19th May 9.30	19th May 15.25	19th May 10.15	19th May 16.10	19th May 11.25	19th May 17.10		
1	Temperature (oC)	28,3	29,0	28,5	29,2	28,5	29,2	29,0	29,0	29,2	28,5	94 TCN 6-2001*	-
2	Humidity (%)	67	63	65	66	66	67	64	64	65	66		-
3	Wind direction	North East	North East	North East	North East	North East	North East	North East	North East	North East	North East		-
4	Wind speed (m/s)	0,2	0,2	0,4	0,3	0,3	0,4	0,4	0,3	0,3	0,2		-
5	Noise level (dBA)	45	36	73	71	62	64	60	58	69	65	TCVN 5964:1995	70**
6	Dust (ug/m³)	50	54	120	240	70	80	54	63	290	283	TCVN 5067:1995	300
7	NO₂ (ug/m³)	25,6	27,4	40,8	44,6	41,5	39,2	34,3	32,4	73,0	64,8	TCVN 6137:1996	200
8	SO₂ (ug/m³)	26,3	24,6	54,3	56,2	42,3	43,1	35,2	32,0	78,2	69,4	TCVN 5971:1995	350
9	CO (ug/m³)	146	143	322	345	333	352	288	256	365	350	52 TCN 352-89-BYT-1993	30000
10	HC (ug/m³)	ND	ND	ND	ND	ND	ND	ND	ND	54	43	NIOSH Method 1400	5000
11	Vapor and lead dust (ug/m³)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ISO-9855/1993	-

ND: Not Detected

Table 19. Results of air quality analysis in the project area (continue)

No	Analysis Parameter	Result										Testing method	QCVN 05:2009 (average 1h)
	Sample symbol	A6-1	A6-2	A7-1	A7-2	A8-1	A8-2	A9-1	A9-2	A10-1	A10-2		
Sampling location coordinates		19°23'17.09"N 105°44'25.03"E		19°29'50.06"N 105°39'51.17"E		19°30'06.71"N 105°40'19.90"E		19°33'13.31"N 105°39'40.85"E		19°34'47.75"N 105°38'48.70"E		94 TCN 6-2001*	-
Sampling time		20th May 7.00	20th May 17.30	20th May 9.10	20th May 16.30	20th May 1.00	20th May 15.30	20th May 10.50	20th May 14.30	20th May 11.40	20th May 13.30		
1	Temperature (oC)	28,5	29,0	28,7	29,3	29,0	29,5	29,1	29,2	29,3	29,5	94 TCN 6-2001*	-
2	Humidity (%)	72	70	77	80	68	70	74	73	73	75		-
3	Wind direction	North East	North East	North East	North East	North East	North East	North East	North East	North East	North East		-
4	Wind speed (m/s)	0,2	0,3	0,4	0,4	0,3	0,4	0,2	0,2	0,3	0,2		-
5	Noise level (dBA)	35	37	56	57	68	67	69	64	63	61	TCVN 5964:1995	70**
6	Dust (mg/m ³)	47	50	53	51	64	60	58	55	57	53	TCVN 5067:1995	300
7	NO ₂ (ug/m ³)	24,5	25,0	27,1	24,8	22,5	26,3	34,1	33,7	32,5	35,1	TCVN 6137:1996	200
8	SO ₂ (ug/m ³)	23,7	25,4	35,3	34,5	37,0	38,3	32,2	30,4	32,9	41,6	TCVN 5971:1995	350
9	CO (ug/m ³)	138	147	254	243	262	254	230	243	275	283	52 TCN 352-89-BYT-1993	30000
10	HC (ug/m ³)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NIOSH Method 1400	5000
11	Vapor and lead dust (ug/m ³)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ISO-9855/1993	-

ND: Not Detected

Notes: * Regulation of surface weather observation (Standard of meteorology and hydrology department)

** QCVN 26: 2010/BTNMT – National Technical Regulations on noise level from 6 a.m. to 9 p.m. in common areas

c. The quality of surface water

i. Water from Yen My lake

137. Yen My is a lake reservoir with one of the largest volume reserve in the nation, which is used for agriculture-irrigation, aquaculture and as a water source for NSEZ. According to the analyzed data of Yen My lake waters by the monitoring center and the EP in 2010, the water quality of the lake has a DO, COD, BOD₅, NH₄⁺, NO₂⁻, NO₃⁻ are within limits permitted under VNS 08:2008 / MONRE column B1-national technical regulations on the quality of surface water used for irrigation purposes. For the purpose of use as clean water by applying an appropriate treatment technology under column A2, VNS 08:2008 / MONRE, the water has exceeded, in the 2nd monitoring during May / 2010, the BOD₅ limit.

Figure 8. DO content at the monitoring period of March, May, August and November 2010

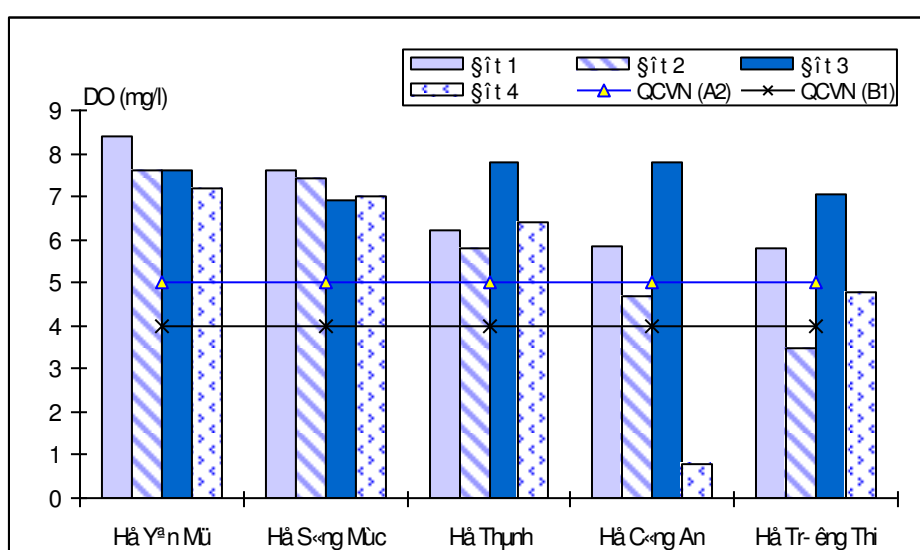
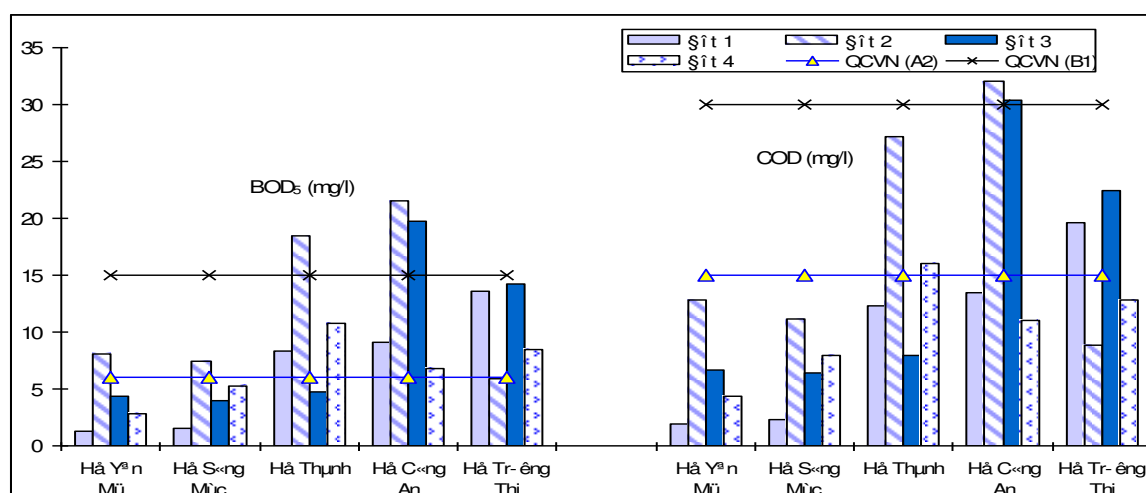


Figure 9. COD and BOD₅ content at the monitoring period of March, May, August and November 2010



Source: the monitoring centre and EP in 2010

138. Consultants also conducted water sampling from Yen My lake in May 2011. Analysis results are presented in the following table:

Table 20. Analysis results of Yen My lake's water quality

No	Indicators	Unit	W1	W2	W3	W4	QCVN 08:2008/BTNMT
1	pH	-	6,08	6,16	6,27	6,30	6-8,5
2	Temperature	°C	28,1	28,3	28,3	28,3	
3	Turbidity	NTU	158	155	22	20	
4	Conductivity	µS/cm	170	168	175	174	
5	DO	mg/l O ₂	6,52	6,55	6,89	6,84	≥5
6	COD	mg/l O ₂	1,6	1,4	1,2	1,3	15
7	BOD ₅	mg/l O ₂	<1	<1	<1	<1	6
8	TSS	mg/l	70	64	9	10	30
9	TDS	mg/l	78,2	75,5	79,3	78,7	
10	NO ₂ ⁻	mg/l	0,01	0,01	0,29	0,32	0,02(mg/l N)
11	NO ₃ ⁻	mg/l	49,7	47,8	39,9	37,5	5 (mg/l N)
12	NH ₄ ⁺	mg/l	0,08	0,07	0,09	0,09	0,2 (mg/l N)
13	PO ₄ ³⁻	mg/l	1,7	1,6	1,5	1,5	0,2 (mg/l P)
14	Fe	mg/l	0,21	0,19	0,09	0,10	1,0
15	Cl ⁻	mg/l	7,09	7,13	5,32	5,28	400
16	Zn	mg/l	0,042	0,040	0,038	0,040	1,0
17	Pb	mg/l	0,005	0,004	0,004	0,003	0,02
18	Oil and grease	mg/l	<0,001	<0,001	<0,001	<0,001	0,02
19	Pesticide	µg/l	ND	ND	ND	ND	
20	Coliform	MPN/100ml	7000	7200	6800	6700	5000

ND: Not Detected

Notes: w1 - Water in Yen My Lake (PSs construction site)
w2 - Water in Yen My Lake (50m far from w1)
w3 - Water in Yen My Lake (location to receive water from water pipelines from Nam canal Muc River)
w4 - Water in Yen My Lake (Sample at 50 m from w3)

139. The analysis results show that water sample from Yen My lake at the PSs construction site (sample 1,2) with analysis indicators TSS, PO₄³⁻, NO₃⁻ exceeded surface water quality standards for daily activities in case of applying treatment measures of VNS 08:2008 / MONRE column A2 from 2.1 to 2.3 times. Yen My lake water samples at the intake structure from Nam canal Muc river (estimated) have NO₂⁻, PO₄³⁻ exceeding VNS 08:2008 / MONRE column A2 about 13 - 14 times.

140. Note that the turbidity of W1 and W2 shows a high level of turbidity which indicates a great level of particles in the water. Although this helps the flocculation, the level of sludge will be much higher than with a cleaner water.

ii. Water from Dong Chua lake

141. Water samples (7 and 8) with a high level of NO₃⁻, PO₄³⁻ fail to follow VNS 08:2008/ MONRE column A2. Note that the turbidity of W7 and W8 shows a high level of turbidity which

indicates a great level of particles in the water. Although this helps the flocculation, the level of sludge will be much higher than with a cleaner water.

Table 21. Analysis results of the lake water

No	Indicators	Units	W5	W6	W7	W8	QCVN 08:2008/BTNMT
1	pH	-	7,00	7,12	6,93	7,03	6-8,5
2	temperature	°C	28,3	28,2	28,5	28,2	
3	Turbidity	NTU	13	15	189	192	
4	Conductivity	µS/cm	134	132	130	130	
5	DO	mg/l O ₂	6,43	6,35	6,13	6,15	≥5
6	COD	mg/l O ₂	1,2	1,4	1,2	1,3	15
7	BOD ₅	mg/l O ₂	<1	<1	<1	<1	6
8	TSS	mg/l	10	10	72	68	30
9	TDS	mg/l	80,4	79,2	90,0	90,3	
10	NO ₂ ⁻	mg/l	0,07	0,06	0,03	0,05	0,02(mg/l N)
11	NO ₃ ⁻	mg/l	39,5	38,7	77,0	76,5	5 (mg/l N)
12	NH ₄ ⁺	mg/l	0,09	0,08	0,14	0,12	0,2 (mg/l N)
13	PO ₄ ³⁻	mg/l	1,25	1,21	1,01	1,13	0,2 (mg/l P)
14	Fe	mg/l	0,11	0,09	0,19	0,16	1,0
15	Cl ⁻	mg/l	5,31	5,43	7,09	7,15	400
16	Zn	mg/l	0,01	0,01	0,01	0,01	1,0
17	Pb	mg/l	0,004	0,003	0,003	0,002	0,02
18	Oil and grease	mg/l	<0,001	<0,001	<0,001	<0,001	0,02
19	Pesticide	µg/l	KPH	KPH	KPH	KPH	
20	Coliform	MPN/100ml	6000	5700	4000	4500	5000

Notes: w5 - water from Nam canal, Muc River (location in Thang Tho commune)
w6 - water from Nam canal, Muc River (100m far from W5 towards the high source)
w7 - water from Dong Chua Lake
w8 - water from Dong Chua Lake (50m from w7)

iii. **Nam canal, Muc river**

142. According to the results of monitoring in 2010 of Thanh Hoa DoNRE, indicators DO, COD, BOD₅, NH₄⁺, NO₂⁻, NO₃⁻ are all within the limits allowed by VNS 08:2008/MONRE column A2-water quality for living purposes under treatment measures. The water from Muc River has indicators BOD₅ in the 2nd monitoring period in 2010 exceeding VNS 08:2008 / MONRE column A2. (Figure 6)

143. According to the analysis results in May / 2011 by the Consultants, the water from Nam canal- Muc river has PO₄³⁻ fail to follow VNS 08:2008 / MONRE column A2.

d. **Groundwater quality**

144. Groundwater wells in the survey area are all drilled at a depth of 10-15 m near Khoa Truong Mountain, located near the water treatment plant construction area. Population in this

area use groundwater for daily purposes. In general, in the area there are just a few factors affecting groundwater quality.

145. Groundwater of the study area has two aquifers :

+ The complex reservoir Q distributes in most of the area, including two layers containing water: water in the middle-grained, fine-grained sand is mainly from rainwater with the depth within 0-15m, flow ranges from 90.012 to 1.08 l / s. The layer contains water, gravel depth of 50 - 60m, flows ranged from 3.2 to 12.6 l / sm. Both these two are odorless, tasteless and non-toxic and ensure supply for living activities.

+ The system contains water of Triassic system on - Jura system under Pasture floor systems. According to the survey results of the mining and geology team - the industrial provinces of Thanh Hoa, this aquifer with good quality can provide water for people, but it is very difficult to look for water there to provide for industrial use.

146. Generally, groundwater quality is good but from the analysis results of Thanh Hoa Science Department in 2002-2003, wells water at some points in Hai Thuong and Hai Yen is the main supply but the poor awareness of people living here in the preservation of water resulted in microbial infection even many times higher than the acceptable standards due to infiltration of outside wastewater or osmosis.

Table 22. Status of groundwater quality shallow aquifer

TT	Area	pH	EC (mg/cm)	NO ₃ ⁻ (mg/l)	SO ₄ ²⁻ (mg/l)	P ₂ O ₅ (mg/l)	COD (mgO ₂ /l)	BOD (mgO ₂ /l)	Coliform MPN/ 100ml
1	Wells water in Chua neighborhood, Nam Son village	4.90 8.29	1.823 1.307	5.103 0.760	7.5	0.050	5.6 3.2	3.6 5.4	1100 1200
2	Wells water from the HH of Mr. Dong Phuc, Hai Ha commune	7.48 7.08	1.893 0.407	1.637 0	14.6	1.043 0.040	21.0 10.3	11.5 19.3	460 510
3	Wells water from the household of Mr. Le Thanh Du, Hai Duong commune	6.67 6.84	1.270 0.044	30.73 8 0.500	8.9	0.024 0.110	7.2 1.1	4.6 1.8	1100 1000
4	Wells water from the household of Mr. Le Van Dan, Mai Lam commune	7.30 5.85	0.489 0.268	1.363 0	11.9	1.192 0.060	1.6 4.3	1.0 7.9	1100 1200
5	Wells water from the household of Mr. Nguyen Ba Thuy, Hai yen commune	7.69 7.38	1.101 0.243	0.979 0.550	11.3	0.437 0.090	1.6 1.3	1.1 2.4	120 140
6	Wells water from the household of Mr. Le Trong Ky, Tinh Hai commune	5.23	0.098	2.931			1.6	0.9	23
7	Wells water from the household of Ms. Ho Thi Ngoi	8.27 7.67	2.470 0.408	23.36 5 0	16.5	0.110	1.6 1.2	0.9 1.9	23 25

TT	Area	pH	EC (mg/cm)	NO ₃ ⁻ (mg/l)	SO ₄ ²⁻ (mg/l)	P ₂ O ₅ (mg/l)	COD (mgO ₂ /l)	BOD (mgO ₂ /l)	Coliform MPN/ 100ml
8	Wells water from the household of Ms. Ho Thi Ngoi	8.28 7.67	2.470 0.408	23.36 5 0	16.5	0.060	9.5 5.8	6.1 9.2	23 60
9	Wells water from the household of Mr Do Van Hoat	6.49 7.09	0.749 3.670	0.870 1.980	14.5	0.030	6.4 4.4	4.1 4.4	150 130
10	Wells water from the household of Mr Pham Van Thuc	6.33 6.44	0.135 43.100	0.804 0	14.5	0.120	5.6 3.8	3.6 5.0	48 41
QCVN 09:2008/BTNMT		5,5- 8,5		15	400		4		3

Source: Thanh Hoa Science and Technology department- Sep. /2003.

Notes: The results after two rounds of sampling 12/2002
The first analysis result (T12/2002) recorded in the line above.
The second analysis result (T5/2003) recorded in the line below.

147. Consultants also conducted groundwater sampling in the project area in May / 2011.
Analysis results are presented in the following table:

Table 23. Results analysis of groundwater quality in the project area (the sample taken in May / 2011)

STT	Indicators	Units	S1	S2	S3	S4	S5	QCVN 09:2008
1	pH	-	5,97	5,90	5,94	5,86	5,93	5,5-8,5
2	Colours	TCU	4,7	6,6	4,5	4,3	4,6	
3	TDS	mg/l	119	233	124	127	120	
4	Solidity	mg/l CaCO ₃	55	85	58	62	53	500
5	Cl ⁻	mg/l	33,7	46,1	34,2	36,1	34,0	250
6	SO ₄ ²⁻	mg/l	0,09	22,4	0,12	3,4	3,7	400
7	NO ₃ ⁻	mg/l	128	194	130	125	132	15 mg/lN
8	Mn	mg/l	0,01	0,06	0,01	0,04	0,02	0,5
9	As	mg/l	<0,001	<0,001	<0,001	<0,001	<0,001	0,05
10	Fe	mg/l	0,06	0,15	0,06	0,11	0,10	5
11	Cr	mg/l	0,02	0,03	0,01	0,02	0,01	0,05
12	Zn	mg/l	0,012	0,014	0,011	0,015	0,010	3,0
13	Pb	mg/l	0,003	0,002	0,002	0,003	0,002	0,01
14	Hg	mg/l	<0,0002	<0,0002	<0,0002	<0,0002	<0,0002	0,001
15	Cu	mg/l	0,029	0,032	0,024	0,025	0,027	1,0
16	Cd	mg/l	<0,0001	<0,0001	<0,0001	<0,0001	<0,0001	0,005
17	Se	mg/l	0,0012	0,0010	0,0011	0,0010	0,0010	0,01
18	F	mg/l	0,013	0,011	0,011	0,012	0,012	1,0
19	Phenol	mg/l	0,0001	0,0001	0,0001	0,0001	0,0001	0,001
20	CN	mg/l	<0,005	<0,005	<0,005	<0,005	<0,005	0,01
21	Coliform	MPN/100ml	400	600	450	500	460	3

S1 - Well- water of the HH Mr. Nguyen Huu Ha- Son Tra- Truc Lam- Tinh Gia-Thanh Hoa

- S2 - Well- water of the household Mr. Lê Văn Rõ - Truc Lam- Tinh Gia-Thanh Hoa
- S3 - Well- water of the household Mr. Phạm Văn Lâm - Truc Lam- Tinh Gia-Thanh Hoa
- S4 - Well- water of the household Mr. Lê Văn Công - Truc Lam- Tinh Gia-Thanh Hoa
- S5 - Well- water of the household Mr. Nguyễn Đình Chiên - Truc Lam- Tinh Gia-Thanh Hoa

148. From the result of analysis, it can be seen that the quality of underground water in the area is highly polluted by Coliform, NO₃. Besides that, others analysis criteria meet the underground quality standard under QCVN 09:2008/ BTNMT.

e. Land use

149. **The overall land use in Tinh Gia District.** As planning official states, the land involved in Nghi Son new urban construction has total area of 3,600 ha. In which:

- + Industrial land, storehouses, ports occupy 1.280ha
- + Urban residential land occupy 1.170ha
- + Others occupy 1.150ha

(Excluding *land of mineral exploitation* 300- 500ha)

Land in Tinh Gia District and Nghi Son area includes types of gray land, red-brown land (distributed in the mountainous areas), alluvial soils and sea bank land.

Alluvial soils content of nutrients is suitable for growing rice and farm produce. Mountainous land with medium thick mixed shallow stones suitable for forestry development in some crops such as eucalyptus and pine that helps restore soil stability and gaining economic profit.

Sea-bank land has light chemical composition poor in organic matter but rich in calcium, no cohesive and well drained suitable for many crops, especially short-term industrial crops such as peanuts, beans, etc.

150. **The quality of land in the project's area.** Consultants have taken some soil in the area in May 2011. The result of analysis shown that quality of land in the project area was quite good. The analysis's indicators were within the limits by national technical standards of heavy metal concentration in soils for agricultural land under QCVN 03:2008/BTNMT.

Table 24. The results of land quality analysis

No.	Analysis parameter	Results					Testing methods	QCVN 03:2008/BTNMT, Agricultural land
	Samples symbol	Đ1	Đ2	Đ3	Đ4	Đ5		
	Sampling location coordinates	19°33'18"N 05°39'15"E	19°22'33"N 105°41'45"E	19°22'30"N 105°41'44"E	19°23'10"N 105°44'33"E	19°23'11"N 105°44'32"E		
1	Cu (mg/kg)	2,8	2,4	2,1	1,9	2,0	TCVN 6496:1999 and EPA 1311	70
2	Pb (mg/kg)	1,3	0,5	0,8	1,0	1,0		120
3	Zn (mg/kg)	4,6	3,8	2,7	3,5	3,9	TCVN 6496:1999 and TCVN 6193:1996	200
4	Cd (mg/kg)	0,3	0,1	0,1	0,2	0,2	TCVN 6496:1999 and EPA 1311	2
5	As (mg/kg)	0,630	0,951	0,985	0,741	0,792	TCVN 6496:1999 and TCVN 6626:2000	12

Note: Đ1- Soil sample in the field near Cong Lien PS

Đ2- Soil sample in the field 4km far from Bau Da slope toward the No.1 National Road

Đ3- Soil sample in the field 5km far from Bau Da toward No.1 National Road

Đ4, 5- Soil sample in the field of WTP area

D. Social-economic conditions**a. The overall social-economic conditions of Tinh Gia district**

151. As a result of performing social-economic development task, Tinh Gia district achieved significant results in 2011: Economic growth rate reached 29,1%; economic structure continued transferring to increase the proportion of industry- construction and services; Agricultural, forestry, fisheries reached 6,4%; industry- construction reached 84,3%; services reached 9,3%; social-cultural activities had many positive changes; people life is stabilized; political and security situation as well as social order are assured, the tasks of management, control of administration and administrative levels are gradually improved.

b. Population and labor

152. The total of population of four communes including Hai Binh, Tinh Hai, Xuan Lam, and Truc Lam (these 4 communes will be supplied in the first phase) is 33,530 people. Basically, the persons living in these communes mainly are Kinh people. According to data report, 100% of population at Hai Binh commune is Kinh people. At Tan Truong commune, 5% of the population is Thai and Muong people.

153. Statistics has shown that the number of working-age population in the commune is relatively high and accounts for more than 1/3 total population of commune. Especially, at Truc Lam commune, the working-age people accounts for the highest rate with 50% of total population. As statistics, the number of students takes from 1/8 to 1/6 of total population in the commune. With the care and education for school-aged students are concerned by communes' administrative, the data shown that young demography percentage in the project's area is not high. The feature of labor forces in Thanh Hoa is that most of them are young with education level of secondary and high schools compulsory education with inability of acquiring science-technology and training for high skilled jobs. At the present time, tens of thousands of Thanh Hoa students are studying at many nationwide and international universities; tens of thousands others are studying at vocational schools around the country; these are potential labor forces that are ready to come back to Nghi Son for developing their native region.

Table 25. Population- Labor in the invested economic zone in the first phase

Site	Commune	Total population	Male	Female	Working-age population	Education (Number of students)
1	Hai Binh	11948	5914	6034	5370	2217
2	Tinh Hai	6705	3240	3265	2215	1005
3	Xuan Lam	8866	3236	3630	3449	964
4	Truc Lam	6011	3035	2967	3065	987

Source: Social- Economic Investigation Report of the project

154. According to characteristics of each commune, under the general plan, the estimated population of communes in 2020 is as follow:

Table 26. Demographic forecast in 2020 and 2030

Calculating Unit: People

Site	Commune	2020	2030	Population growth rate
1	Hai Binh	18859	26991	5,7
2	Tinh Hai	10103	14459	5,7
3	Xuan Lam	10837	15510	5,7
4	Truc Lam	9488	13579	5,7

Source: Social-Economic Investigation Report of the project

155. As estimation in general, it can be clearly seen that the population growth rate of the communes in Nghi Son economic zone is high. And as the above table, this is also the commune with the highest population density in the project's area. Population pressure will be increased in four communes in all aspects, including water supply and drainage.

156. Of all communes, Truc Lam is the largest area, and the smallest area is Tinh Hai commune with only 647, 92 hectares. In the 4 communes in the table above, we can see that the population distribution is uneven. The number of population in the largest and the smallest commune is not significant. At Tinh Hai commune, population density is 1.034 people/ ha and 378 people/ ha at Truc Lam commune. With the uneven population density as above, the design and maintenance of water supply system in the area will certainly impacted positively the well-being of the residents.

Table 27. Summary table of natural land area, population and demographics of communes

Stt	Area	Surface area (ha)	Number of households	Number of people
1	Hai Binh Commune	956,84	2.730	11.948
2	Tinh Hai Commune	647,92	1.354	6.705
3	XuanLam Commune	986,39	1.502	8.866
4	Truc Lam Commune	1.589,92	1.367	6.011

Source: Social- Economic Investigation Report of the project.

c. Occupation and income

157. According to overview report of communes, these low income households account for a relatively high number in the project's area. However, there is a huge difference among communes. Reported data shown that the poverty rate in Hai Binh is just 1, 06%, meanwhile, in Xuan Lam and Truc Lam, these numbers are 3, 49% and 4, 27%. The economic structure in the area is almost the same.

Table 28. Income and economic structure

Stt	Area	Average income of each household/ per year	Low income households (%)	Economic structure (%)		
				Industry	Agricultural	Service
1	Hai Binh Commune	13.000.000	1,06	30	30	40
2	Tinh Hai Commune	KCSL	4,0	15	70	15
3	Xuan Lam Commune	9.500.000	3,49	10	70	20
4	Truc Lam Commune	7.500.000	4,27	25	56	19

Source: Social- Economic Investigation Report of the project

158. The data above shows that, the economic structure rate at Hai Binh among 3 sectors is quite balanced, but for the remaining, economy mainly relies on agriculture. Looking at the table, it can be seen a high correlation between poor households rate and economic structure. In the present period, undiversified economic structure mainly depends on agricultural which will pose the huge challenges in the economic development in the future, especially with the pressure of population at Nghi Son economic zone.

159. Apart from Hai Binh commune, the income of the households at these communes greatly stems from agriculture with 2 main sources: rice growing and cattle breeding. Many households

has combined growing rice and farm produce together, however, income from farm produce is not really high. The average income of each household is approximately 1, 5 million. Cattle breeding still remain the relative benefits for the households. Most of the households raise chickens, ducks or pigs, cows, etc. The average income from cattle breeding is about 3 million to 4 million.

160. Besides farming work, some households along the way conduct retailing services. The result of investigation shown that over 100 households are involved in services and trade which account for 10%.of total households. These families have small grocery for meeting the demand of people. The lowest income is over 1 million/ year and the highest is 10 million/ year. This means that over 100 thousands to 1 million per month. In fact, it is not high revenue.

E. Medical and health

161. In general, medical facilities are generally scarce. On the district scale, 34 communes have medical aid station and one district medical center. Although staff are developed both in quantity and quality, it still doesn't meet the people's demand of examination and treatment. Therefore, it is considered as one important factor affecting prevention, examination and treatment of people. Hence, in the recent years, the training of more staff with professional qualification receives adequate attention. Up to now, the medical aid stations at communes and districts have gradually met the medical demand: implemented through national health program, blindness prevention and school health propagation, malaria control and food safety together with other programs which has promptly prevented people from getting serious epidemic diseases such as leprosy prevention, 100% children are properly vaccinated. As well as that, this action partly contribute to help people raise their awareness and understanding in the prevention and health care. However, the limited infrastructure and investment capital as well as inadequate staff in expertise also pose huge toll on quality of the services.

162. Public health is a concern. In 2011 a total of 250,965 examination and treatment was meeting an increase of 2% compared with 2010. Private medicine and pharmacy is managed closely. Standby medical activity is done regularly and effectively. 98,3% children under 1 year-old are fully immunized vaccine, meeting 101% of plan; 98,4% children under 5 years-old are comprehensively cared and treated. Natural population growth rate reached 0, 88%.

F. Education

163. In term of education, training and education needs for new urban areas are greatly necessary. During the past years, together with social and economic development, this field is gradually enhanced in terms of quantity, quality and human resources. Many schools and classes have expanded to the remote areas, but there are preschool classes in some communes turning to enrollment rates for pre-school ages, this number is still under 50%. Until now, the entire area has met the standard for primary compulsory and secondary compulsory has been implementing. Quality of average students has increased, and the quality of good students is strengthened. Percentage of graduated students at primary level is 99%, secondary level: 95% and continuation school 95%. Teaching staff is steady increased over the years in both quantity and quality, but some drawbacks still exist as follows: lack of foreign language, music, and art teachers, limited investment infrastructure, shortage and slow solidification speed in comparison with minimum requirements for learning and teaching,etc. Therefore, in the first stage, education system in the place needs reinforcing;100% of rooms in the urban area will be consolidated in 2010; quality and intellectual level are promoted gradually

164. Education and training continued to be upgraded. The quality of teaching and learning are enhanced in all educational levels, regulation and discipline of schools have improved. Compulsory education implementation at right ages gained high rate, in which: primary schools with 99, 8%, secondary schools with 100%, high schools with 100%. Percentage of graduates from high schools in 2010-2011 was 98, 82% and the rate of students entering to universities and colleges in the whole district gained 25%.

G. Cultural and historical conditions

165. Cultural-historical monuments and architecture are invaluable possession of each nation. They present tangible cultural and intangible cultural senses. This is material and spiritual value of each locality in particular and the nation in general.

166. At present, Nghi Son area still remains many cultural-historical monuments with specific value as following :

- Tinh Hai fortress on Nghi Son Island is a large military base. There is still an old wall, known as Ong Ninh wall. At Tay Son age, the Germans built a defence line and trained navy.
- Tho, Son wall (belonging to Nguyen Binh commune) named Bao Tho Son at Nguyen age. It is built by brick, and the fourth Minh Menh king age set up the capital here.
- Bui Thi Xuan church of Bui tontine at Hai Thanh commune.
- Provision Old Station include Cung town(Tan Dan commune); Hien palace (Hai Linh commune), and Thanh Khoa station (Khoa Truong) in addition

167. Clusters of Lach Bang historical landscape has ranked by Ministry of Culture including Quang Trung temple, Cua Lach temple adoring Hong Nuong general, Dot Tien pagoda(adoring Buddha), artistic stone monument architecture adoring Cong Le Dinh Chau, ancient stone church at Ba Lang. The frequent replenishment and care of ranked historical monuments not only attract the international investment but also play an important role in protecting results and preserving national identity inherent.

iv. Unexploded Ordnance (UXO)

168. More than 35 years after the war ended, Vietnam is still contaminated with hundreds of thousands of tons of UXOs scattered all over the country. During earth work and especially for the pipeline excavation corridor, survey for UXOs prior to construction work has to be conducted by a specialized agency.

VII. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

A. Area of Influence of the Project

169. The area of influence of the project includes the water intake area including, the downstream users, the area along the raw water pipe and around the WTP and the area served by the new pipe network. It includes the following communes in Nhu Thanh District : Cong Chinh, Cong Liem, Cong Binh, Yen My, Thang Tho and in Tinh Gia District: Phu Son, Phu Lam, Trung Lam, Truc Lam, Xuan Lam, Hai Binh, Hai Yen and Tinh Hai.

B. Design and Location Consideration

170. Locations of the PS & WTP have been chosen due to their low impacts on human activities (unused land and low agriculture production). The areas are also not subject to flooding and the risk of seismicity is low.

171. Climate change impacts will be considered during detailed design. If necessary, proposed adaptation measures will be identified and included in the detailed design (i.e.. increase of road elevation, increase of drainage pipe diameter to accommodate more extreme flooding; etc.).

C. Impacts assessment

172. The project of water-supply system in Nghi Son economic zone will bring significant benefits and will help to meet the following goals.

- Meeting the water demand for new urban clusters, resettlement areas located in Nghi Son economic zone with approximately 160.000 beneficiaries in period 2015-2020 and the water demand of economic zone.
- Fighting diseases, enhancing the living standard for residents.
- Contributing to protect environment and natural landscape.
- Encouraging the economic development.

173. Some major impacts when implementing projects as follow:

Table 29. Identifying the types of environmental impacts of the project

Portfolio	Mainly environmental impacts	
	Phase of construction	Phase of operation
Water treatment station		
Air environment	- Dust caused by construction, transport -Noise and vibration caused by transport, working vehicles on construction site and digging activities -Emission exhausted from transportation	-Odor from treatment station: little affected -Noise, vibration: little affected
Soil environment	-Affected by waste, domestic wastes of the worker living on the construction site. -Spoil, waste building -Domestic waste from workers	-Not affected -Sludge from treatment station
Water environment	-Little affected -Flooding caused rainwater on the site -Spoil, waste building -Domestic waste from workers	-Drain water from treatment station, wash-filter water. -Little affected
Potential risk	-Traffic accident -Accident at work -Affecting to the movement of people -Damaged roads	-The break-down when operating treatment station: power outages, chemical leaks

Society	-Affecting to farmland and crops of people -Conflict between workers and local people	-Providing clean water for people
Contraction of pipelines and pump house		
Air environment	-Dust caused by digging sewers process, material transportation, waste transportation - Noise, vibration caused by digging sewers activities	-Not affected
Water environment	-Increasing the turbidity in construction site of pump house in Yen My lake, area putting pipeline in Yen My lake and water-intake in South canal of Muc river	-Water leaks from joints, pipe -Break-down with broken pipelines
Soil environment	-Excavated soil, construction waste -Solid-domestic waste of workers	-In case having break-down, the pipe need to be fixed to dig -Mud and dregs stick to pipeline
Society	- Conflict between workers and local people -May disorder the agricultural activities of people	-Improving infrastructure - Creating jobs for local people -Raising the awareness of using hygienic water. -Meeting the demand of using water of economic zone
Traffic	-Affecting the internal traffic in the villages	-Not affected
Potential risk	-Accident at work -Traffic accident	- Power outage in pump house

D. Positive impacts of the project

174. The effectiveness of the project has brought to society many following benefits:

- Creating jobs for blue-collar workers during the implementation time of project
- Creating more changes for people, especially poor people to use clean water, reducing labour time from self-exploitation daily of water and so that having more time to relax
- Creating stable jobs for nearly 60 labours directly managing the operation of water-supply system
- Minimizing diseases due to use unhygienic water, controlling the spread of diseases through water, so that reducing the cost of public health
- Enhancing the sense of responsibility of everyone in commune in using clean water
- Increasing local budget through taxes and developing industrial production in economic zone
- Ensuring the necessary and sufficient demand for investors investing in Nghi Son economic zone.

175. This is a technical infrastructure; its products directly serve for people and industrial production. So creating good conditions for investment, increasing manufacturing facility will create more jobs for blue-collar workers as well as increase income for society. The project also contributes to improve living environment of society, is precondition for long-term and sustainable growth about environmental sanitation.

176. During the operation phase, the project will contribute to solve the problem of not having clean water and using unhygienic water. Thus, the people health is ensured. Besides, the project also plays important role in repelling diseases as well as serve better for the demands of productive labour, cultural activities and trade activities of economic zone

177. Therefore, the construction of water-supply system in Nghi Son economic zone in Thanh Hoa province and the construction of other infrastructures are very essential and have enormous economic efficiency.

E. The environment impacts in preparation phase

a. The social-environment impacts

178. In this period, the most important and main impact is the problem of people's land requisition. As follow:

- With the area constructing water treatment plant: because of lying on rice-field of people, it needs to recover nearly 1,5ha of farmland. This area is near Khoa Truong mountain of Truc Lam commune, is permanently affected by project so they need to have adequate compensation for people in here.
- With the construction of water pipe: water pipelines from Yen My lake to treatment station locate along National Road No1 and Provincial Road 505 running through Phu Son, Tan Truong, Truc Lam commune; water pipelines from south canal of Muc river to Yen My lake locate along Provincial Road 505 belonging to Thang Tho, Cong Liem, Cong Chinh, Cong Binh, Yen My commune; water pipelines to Dong Chua lake running through Hai Yen, Hai Thuong commune. Most of water pipelines run through rice-field of people. Technical project is to put pipe under field about 70cm deep; once completed the land will be re-allowed to people to cultivate. Although people will be handed over land to cultivate, in case it necessarily needs to repair in operation process, operational management units will be entitled to use without having to compensate crops and land on this land.
- With the distribution of water pipelines: the water pipeline's location of clean water distribution system will be given priority for the solution of installing on the side of road. With the pipelines lie on the road not having sidewalk or having narrow sidewalk will have to go under the road, avoiding maximum the effect to existing legal structures.

179. According to the design, the project will recover permanently 49.013 m² agricultural land including land allocating to households, land managed by commune People's committee and farm land having allocated to households to cultivate, withdraw 1.920 m² housing area (garden, pond), reclaim temporarily 216.543 m² land of agricultural production and 6.311 m² land of rural transportation to construct work items of project.

180. The statistics about the level of effect of project show that there have total of 358 households affected because of recovering permanently land in communes in the project area including 345 households affected because of reclaim agricultural land, 13 households affected because of withdraw housing area. There have 6 organizations being recovered permanently including Thang Tho, Cong Liem, Cong Chinh, Cong Binh, Yen My People's committee and Yen My farm. Of the 345 households being recovered agricultural land, there have 25 households will be severely affected with over 10% land of their agricultural land acquired and 320 slightly affected (below 10% land of loss of agriculture land). The project has not impact on cultural structures (temples, shrines) of people and historically-rated vestige. No ethnic minority communities be affected by project

181. A Resettlement Plan has been prepared for the Project and is presented in a separate document.

Table 30. The total of affected households

No	Work items	Total HH	Number of HH whose housing area is affected			Number of HH whose agricultural land is affected		
			Total	Partly affected HH	Displaced HH	Total	Affected <10%	Affected ≥10%
1	Raw water pipelines running from south canal of Muc river to Yen My lake	282	13	13	-	269	269	0
2	Raw pumping-water station in Cong Lien commune	11				11	11	0
3	Raw pumping-water station in Yen My commune	2	-	-	-	2	2	-
4	Raw water-boosting pump station in Bau Da slope in Phu Son commune	2	-	-	-	2	2	
5	Water treatment plant and the road to the plant	61	-	-	-	61	36	25
6	Transmission pipeline and clean-water distribution	-	-	-	-	-	-	
	Total	358	13	13		345	320	25

Table 31. Statistics of the impacts on land, works

STT	Items	Area of permanent-recovered land (m ²)			Area of temporary-recovered land (m ²)	
		Agricultural land	Housing area	State land	Agricultural land	Land for traffic
1	Raw water pipelines running from south canal of Muc river to Yen My lake	27752	1920		11543	6311
2	Water treatment plant and the road to the plant	15899	-		-	-
3	Raw pumping-water station in Cong Lien commune	3,862	-		-	-
4	Raw pumping-water station in Yen My commune	300	-	150	-	-
5	Raw water-boosting pump station in Bau Da slope in Phu Son commune	-	-	600	-	-
6	Transmission pipeline and clean-water distribution	-	-		205000	-
	Total	49013	1920	750	216543	6311

b. The impacts on natural environment

182. The construction area is separated from residential areas and the construction plan has less solid projects such as dismantled house or cut trees so that in this period the impact of noise, dust affecting to air environment is not noticeable. The main impacts on soil environment are recovered land serving for the project. Effects on natural environment are not significant.

c. UXO

183. Vietnam has experienced two wars against France and American, and Thanh Hoa was also a fierce theater of war. Therefore, the risk of remained UXO is quite high. Before carrying out land clearance, excavation and construction activities we need to clear UXO or will result in

explosion causing serious damages to people and property. Hence, to ensure the safe for people as well as the project, it is very essential to clear dynamite in construction area

F. The impacts on environment during construction phase

a. The impacts on environment when constructing water treatment plant

i. The effects on air environment

184. The impacts on environment during building water treatment stations mainly result from scraping to the ground activates, transporting raw material to the treatment station. These activities will arise pollution as follow:

- Dust arising from the activities of excavation, digging, terracing foundation, transporting and gathering materials. Dust swept up from the road by means of the wind blowing through construction material such as cement, soil, sand.
- Dust, noise resulting from activities of constructing pipe branches from households to joints.
- Emission from vehicles, machines, asphalt burning... hold dust and harmful gases such as SO₂, CO₂, CO, NO₂, HC.
- Noise and vibration from construction activities, transportation, machines and vehicles.

185. However, the generation of pollution will mostly affect workers on construction site because they have to directly work, regularly touch with sources of pollution in working process. Therefore, they need to be equipped with fully protective equipment on construction site to limit the impact on health. About households, because the construction area is lying in the centre of rice-field in Huu Loc village, Truc Lam commune, without HH around so the generation of air pollution will not affect residents.

186. Households in Truc Lam, Hai Binh, Xuan Lam, and Tinh Hai will be affected by dust, noise resulting in construction activities such as digging yard, digging trenches. These impacts are however temporary during the construction period.

187. Road transportation of raw material and solid waste, construction waste run through residential area at the foot of Khoa Truong Mountain. Such transportation will arise dust and emission as well as noise affecting to people living here. Through field investigation, this road transportation is so small and connects to National Road No1, running across residential area about 300m, located closely with house's residents. Therefore, noise, emission and dust can affect residents. However, these effects are temporary.

188. The level of noise pollution is forecasted as follows:

The spread of noise is calculated by the following formula:

$$L_{eq} = E.L + 10\log(U.E) - 20 \log(D/D_1) - 10 G \log(D/D_1) \quad [1]$$

In that : Leq: Noise in D distance

E.L: Noise in measured position (D₁ distance from source of waste)

G: Terrain coefficients

D: Calculated distance

D₁: Distance measuring source position

U.F: useful coefficients of engine.

189. Since most of engines are used in maximum, the coefficient $U.F=1$, and in this case, supposing that there are no obstacles so coefficient $G=0$. Hence, the spread of noise is calculated by following formula:

$$L_{eq} = E.L - 20 \log (D/D_1)$$

Table 32. The level of noise pollution from construction and transport vehicles

No	Engine ,device's names	Noise in 15,24 m*	Noise transmission (dB)					
			50 m	80 m	100 m	120 m	150 m	200 m
1	Crane	88	77,68	73,60	71,65	70,08	68,14	65,64
2	Grader	85	74,68	70,60	68,66	67,08	65,14	62,64
3	Elevator	85	74,68	70,60	68,66	67,08	65,14	62,64
4	Pile stuffed	98	87,68	83,60	81,66	80,08	78,14	75,64
5	Earth mover	83	72,68	68,59	66,66	65,08	63,14	60,64
6	Roller	74	63,68	59,59	57,66	56,08	54,14	51,64
7	Lorry	88	77,68	73,60	71,65	70,08	68,14	65,64
8	Cutter	93	82,68	78,60	76,66	75,08	73,14	70,64
QCVN 26– 2010/BTNMT								
6h – 21h		70	70	70	70	70	70	70
21h – 6h		55	55	55	55	55	55	55

Source: * The US Federal Transit Administration (FTA). Transit Noise and Vibration Impact Assessment 2006

190. According to calculations, the use of trucks transporting raw material will arise noise exceeding standards in QCVN 26-2010/BTNMT, especially according to the standard of noise. In particular, in accordance with the standards of the permitted noise level for residential areas, almost the use of construction machinery during the period of 9p.m – 6a.m makes noise beyond the 200m scale standard. Therefore, during construction, the contractor should minimize the execution time; especially not let the trucks run through the residential areas at night.

191. The calculation figure above also shows that workers on the site will be constantly exposed to high-intensity noises. According to calculations, the intensity noises in the 15m range are all above 85dB. The noise threshold will make people tired or uncomfortable if expose continuously. If the intensity of noise is too high above 90dB, it will affect people hearing. For this reason, the workers on the site need to avoid to be exposed to big noises for long period, to limit the use of machinery on site and to follow labor safety rules.

192. According to the technical report, the earthwork volume as follows: With an area of about 1.5 ha and foundation up to about 4.5 m, the soil volume should be about 68000 m³. The amount of soil can be purchased from soil mines in Tinh Gia district areas such as soil mine in Hai Yen – Hai Thuong (with a capacity of 800,000 m³/year) or soil mine in Tung Lam commune (with a capacity of 640 000 m³/year). This will reduce the distance transporting soil to the treatment station and reduce the impact of dust during transportation (distance from soil mines to the treatment station is only about 3-5 km). Soil density is about 1.4 T/m³. So to bank up the treatment station area, about 95000 tons are needed. If using the 15 ton – truck, 6333 trips are needed. According to the technical documentation, truck consumes about 0.0025 to 0.003 tons of oil every 10 km. Accordingly, the volume of oil consumption is about 15, 8 - 19 tons.

193. Currently, Vietnam has no standardized data on the source of pollutant emitted by vehicles. Therefore, we have based on the documents of the World Health Organization (WHO) using the method quick determine emission sources under the "air pollution coefficient" to calculate the amount of air pollution substances due to material and waste transportation. Preliminary estimate as follows:

Table 33. Calculation of emission mass

Pollutants	Pollution coefficient (gas emission kilos/use oil tons)	Emission mass (kg)
Dust	4,3	68 -81,7
SO ₂	20S	316S-380S
NOx	55	869-1045
CO	28	442,4-532
VOC	12	189,6-228

S: percentage of sulfur in the fuel (about 0.2-0.4%)

194. In general, the amount of waste will be limited during the construction period. On the other hand, it only almost appears during the leveling treatment station process. However, the area has relatively good air quality without having a lot of construction activities so that the activities partially affect the daily life of residents. Furthermore, the amount of dust and emission gases generated can affect people's crop plants. Therefore, the contractors and construction units have to strictly implement minimizing measures such as regular watering on shipping routes through residential areas, packing up solid waste such as soil, sand to minimize the amount of dust arising from the movement.

ii. Impact on surface water environment - flooding of construction area

195. Treatment station is located next to Khe Sanh Lake. The natural reservoir with an area of about 3.5 km² is used for irrigation, agricultural irrigation in the dry season. When the water level of lake rises, it will overflow a spillway to the stream which is close to the treatment station area. The constructing activities of treatment station will not impact on lake's water and spillway because of far away from constructing area (about 300m and out of shipping route). The stream runs across the treatment station has small output of only lake's flowing water. Therefore, it is no need counting to the impact of soil, waste on site overflowing to the stream when it rains.

196. Due to the water overflow from dam to stream, there is no chance for flooding the constructing treatment station area when lake's water overflows. But if the execution time in the rainy season (from June to October) with the rainfall of up to 866.7 mm, it can cause flooding in the whole constructing area, make it difficult for construction. Thus, the contractor should consider the backup solution such as preparing pumps for water absorbent or taking advantage of stream flow for drainage to avoid flooding.

iii. Solid waste and hazardous wastes

197. In the process of leveling, constructing the systems of water treatment station generates a large amount of construction waste such as sand, soil, macadam, cement, concrete debris etc. It is difficult to reckon up the amount of waste. Without a good management, it will be a source of unsanitary environment affecting the people's living and production area.

198. Besides, the process also generates a large amount of solid waste from labor workers who directly working on the site. It is estimated that each person releases about 0.5 kg waste per day. The amount of solid wastes greatly depends on the number of workers on the site. If

the solid waste is not collected and treated, it will cause unsanitary problem or diseases, affect workers' health and residents' around rice fields.

199. It can be estimated that the amount of emission waste as follows: There are about 30 workers on the site, each of them discharges about 0.5kg waste. So the amount of waste will be 15 kg/30 workers. The contractor prepare 500l tank for collecting waste or may be able to hire environmental sanitation services or environment co-operative to collect the type of waste.

200. For the treatment station, the construction will raise the reinforcement up to 4.5m which needs 68000 m3 backing up soil as estimation. If the execution time lasts until the planting season, it will generate a source of solid waste directly affecting people's rice and farm produce. Hence the contractor has to have a suitable construction plan on non-crop period. As constructing, a fence is needed to minimize soil scatter in surrounding area.

201. Hazardous wastes on the construction site are mainly disposal lubricant, leaking oil in the process of substitution. For machinery on work site, it is estimated that each change will dispose of about 30l lubricant and about once a three-month. Around five machines are mobilized on work site. Thus the amount of discarded oil is around 150l/3 months. The oil will be collected in 150l-container which is put in maintenance area for repairing machinery or recycling by functional units or coating sticky-proof. The oil need to be well managed, avoid uncontrolled leaving litter of workers because the surrounding areas are the residents' agriculture land.

iv. Impact on religious works

202. General, it is a work of Vietnamese's faith, manners and customs so the damages can lead to complicated responses of people here. Therefore, all of activities in the constructing process affecting the graves should be avoided. Making fence around the constructing, putting the machines generating vibration far from the tombs, reminding the workers of non-making tomb fissure or depression are the measures done. Leveling and raising reinforcement processes are the most affected the graves so that the contractors as well as undertaking units have to implement seriously to ensure safety.

v. Impact on the social environment inside and outside the area

203. The focus of workforce during the construction process increases the risks of public order, social evils, diseases and other complex social issues. Therefore, the contractors and undertaking units should coordinate closely with local authorities to manage the workforce on site.

204. In addition, there is a risk of traffic accident during transportation in residential areas due to the shipping route in internal narrow village community roads. Because the infrastructure system such as roads is weak, the transportation can cause damages for roads or residents' building like fences. In such case, the contractor should reach agreements on compensation and repair for the buildings of residents.

205. The construction of branch pipe leading from the connectors to the households and in the opposite direction such as digging yards and alleys, breaking the fences, paths will affect partially houses, land or dismantling for construction clearance. It will cause effects on environment like dust, noise and disturb the daily life of people in area of constructing water supply pipeline. However, the impacts are temporary during the construction period and its scale limited. At the end of the construction process, roads will be rebuilt as before. In the scope of project, treated water from treatment station is pumped to four communes Truc Lam, Hai

Binh, Xuan Lam, Tinh Hai with the estimated connecting households up to 5000 (according to technical report). They are the main affected objects in constructing time, however, as mention above the effects are only temporary. On the other hand, residents will benefit when the system will be in operation.

vi. Labor safety during the construction

206. There is a railway on the material shipping route running across the residential area. In theory, the risk of rail accidents may occur during the transportation. Therefore traffic safety issues to avoid the unfortunate loss of life and property should also be noted. This problem can completely prevent by the transport vehicle users' senses.

207. On the other hand, because of the narrow internal roads in the village, the contractor and the undertaking unit have to take notice of the risk of having accidents during the transportation using mechanical vehicle. For the activities related to the use of trucks, it is necessary to have traffic-operators, work site signs and limit the speed as well as turn on the night light as running through the residential area.

208. The construction of the treatment station is not so complex thanks to a large constructing premise located in an uninhabited area. So the possibility of accidents is not high. However, when a large number of employees will be at the work site, the risk of suffering from infection can occur. Thus need to prepare the first aid, the labor safety equipment for workers working on site as well as remind them of following sanitation rules and propagandize healthy lifestyle for them as well.

vii. Other problems

209. Although the construction area is quite large, the approach direction is not advantageous due to the internal narrow village roads. Regard of the problem, some residents in Truc Lam commune make comments on. The solution of the undertaking unit is making a temporary road to transfer sand and soil to treatment station. The route will coincide with the way to the future treatment station.

b. *The environmental impacts during the construction of pipelines and PSs*

i. Impacts on air environment

Sources of impact:

210. Sources of dust, gas emissions, and noises are caused by activities of transporting and gathering materials (pipes, bricks, cement, steel and other construction materials), digging for installation of pipelines and works. The actions release dust affecting the air quality. During the transportation, materials can scatter making environmental pollution and losing the landscape.

211. The emissions of SO_x, NO_x and CO from raw material trucks cause environmental pollution affecting the health of people living around the construction site. However, the impact level depends on many factors such as the number of trips, truck quality and material volume.

212. Besides the impact of transportation is the impact of mobilized machinery. They only cause light and local effects because of the small number.

213. There are many sources of noise pollution during construction of traffic work such as: noise from material transport vehicles, from diggers, excavators, piling, concrete mixer... Different types of engines have different levels of noises

214. The increase of a flow of trucks makes impact on not only the construction area, but also along the material transporting route of Highway 1, the provincial highway 505 and 502.

Level of impact:

215. The impacts are generally only local; the main affected people are workers at the work site; the work sites are on fields and away from residential areas. The constructing area of a PS with the capacity of 90,000 m³ in Yen My Lake and another one with the capacity of 60,000 m³ in Cong Liem commune has no impacts on residents because it is away from residential area.

216. According to design, the length of the raw water pipeline as follows:

- Self-flow raw water pipeline DN1200mm - L = 3,378 km transfers self-flow raw from Nam canal of Muc river irrigation system to Cong Liem commune, Nong Cong district;
- Pressure pipeline DN800 - L = 8,315 km from Cong Liem raw water PS pumps water to Yen My water reservoir.
- Raw water pipeline DN1000 - L = 11,262 km, DN800 - L = 3,918 km, DN600 - L = 8,748 km, DN500 - L = 3,334 km transfer water to 20,000 m³/day-night treatment plant (expected to be located in the region near Khoa Truong mountain-resettlement area) and raw water to Dong Chua lake.

217. The estimated volume of excavated soil on the whole route is 127000 m³, of which a portion will be reimbursed for premise. The redundant soil volume is about 23000 m³. However, the soil is mainly agricultural land because most of drains go through people's fields. Therefore, in order not to mobilize a large number of transportation vehicles (2150 trips will be needed if use 15 ton-truck). The soil should be taken advantage of for leveling in the construction area (can be used for treatment station), avoid focusing the soil uncontrollably on roads. The oil consumption volume is about 5.38 – 6.45 tons for transporting redundant soil. The gas emissions are estimated as follows:

Table 34. Calculation of gas emission

Pollutants	Polluted coefficient (kilos of gas emission/used tons of oil)	Volume of emission (kg)
Dust	4,3	23,13-27,34
SO ₂	20S	107,6S-129S
NO _x	55	295,9-354,75
CO	28	150,64-180,6
VOC	12	64,56-77,4

218. The estimated number of wasted soil transporting vehicles is quite large. However, because the constructing scale is extremely large with the route length up to 39 km and rolling style construction in the period of 2011-2015, truck density will only increase slightly in the region. Accordingly, the volume of dust and exhaust from the activities will not focus on a time or one region but spread over the whole route. Thus the level of pollution will also be decreased significantly. As well-implemented protection measures as well as not overloading transportation, it is possible to reduce the volume of dust, exhaust.

ii. Impacts on transportation system

219. The increase of vehicles output due to activities of transporting material, gathering construction materials and wasted ones is the main reason for obstruction. The affected objects are highway 1A, provincial highway 505, 502 which serve for constructing the raw water pipeline, PS in Bau Da slope. However, the impact is just temporary as mobilizing vehicles.

220. Internal traffic on the way to the commune will be affected as transport vehicles are gathered. The gathering of materials also affects the movement of people. In addition, the system of internal roads in the village is not completed so they can be damaged when the number of heavy transport vehicles and machinery increase.

221. The effects are generally controllable and the contractors will implement some measures such as managing, separating traffic lane, using the speed limit signs, warning signs to minimize the possible risks related to traffic issues

iii. Impacts on the water environment

222. At the work site of Yen My PS, the amount of soil and sand scatter during the installation of raw water pipeline in Nam canal, Muc lake to Yen My lake, pipeline in Dong Chua lake will be swept away as it rains which leads to the turbidity and suspended sediment into the lakes and canals affecting the surface water quality. If the construction of the works is implemented in dry season with slight rainfall, the impacts on surface water environment will reduce.

223. In addition, if the construction materials, activities waste and construction waste are not collected every day, gathered as rules or protected carefully, they will be swept away when it rains making increase of sediment content. The received sources of the surface water running through the work site are Yen My lake, Nam canal of Muc river, Dong Chua lake at the pipeline installation positions.

224. Besides, the amount of solid waste and waste water generated from the operation of direct labor workers on the construction site is also likely to cause pollution of surface water. The amount of waste depends on the number of workers mobilized on work site. Most of project workers, however, are seasonal workers who are local residents. They come back home after work. As a result, the impact of workers' wasted water and solid waste is not much. The impact can be rejected by managing measures, enhancing the environmental sanitation awareness for workers, arranging the temporary sanitation works and collecting solid waste every day.

225. Some noteworthy matters of constructing PS in Yen My lake and installing the water pipeline in Nam canal, Muc river:

- There is available PS with the capacity of 30000 m³ /day-night in Yen My lake which transfer water from Yen My to Nghi Son. The construction activities near the PS will increase the pollution possibility in term of turbidity, solid waste to lake water. They also affect the first water quality into PS. For the reasons above, the contractors and undertaking units have to control closely the source of waste water into lake, arrange materials and waste far away lake area, especially do not leave waste into lake.
- Nam canal, Muc river area is the agriculture irrigation route. So avoid overflowing the construction waste and gravelly soil into canal, which obstruct the water flow, increase the turbidity affecting the quality of water for irrigation. Moreover, contractors have to closely managed the hazardous waste like lubricant, not make it enter the canal.

iv. Impacts on soil environment

226. Excavated soil from the field for installation of water pipelines will be used to fill the premises after finishing pipelines placement so that the actual redundant soil will be significantly reduced. Under estimation, the amount of soil is about 127000 m³. The soil is utilized for filling in excavated drain.

227. Because the pipeline was installed on farmland which will be returned to residents in the future, the impact on soil environment is temporary in the construction time. On the other hand,

the contractor can use the redundant soil for leveling premises at the drain system, banking the fixing drain area as a protection barrier for water pipeline area.

v. Solid waste and hazardous waste

228. A large amount of solid waste generated in the process of construction is gravelly soil, cement, iron and steel scrap. Generally, it is difficult to calculate the amount of solid waste. It needs a suitable management, however, to avoid the waste dispersing in surrounding environment.

229. **Waste:** It is estimated that there is 15-20 workers on site per day. On average, each worker releases 0.5 kg of waste. Thus the amount of daily waste is about 7.5-10kg. Project owners can hire sanitation services or local environment co-operative to collect the waste.

230. **Hazardous waste:** Hazardous wastes in the construction process are mainly oil, lubricant from engines, machinery, trucks transporting construction materials. According to the technical documentation, the average lubricant emission from construction machinery is about 30 liters every change in the period of 3 - 4 months. Although the volume of work is large, the number of construction equipment is not much due to the rolling style construction leading to the reduction of lubricant waste on site. But in the construction process, still need closely managed measures to limit the lubricant waste on site; should avoid changing lubricant, maintaining vehicle and equipment on site.

vi. Social security and labor safety

231. The focus of the work force in construction area increases the risks arising public order, social evils and diseases issues; arising job conflicts among employees, conflicts between workers and local people. In addition, some types of unhealthy services, social evils can also appear. Therefore the implementation of managing workers needs to be strict to avoid disorder in the area.

232. During construction, valuable equipment, raw materials will increase the risk of theft, robbery or vandalism. Therefore, the management has to be closed, the guard force has to be strong enough and need to cooperate with the local authorities and residents to minimize the unfortunate loss.

233. Industrial accidents in the construction phase may occur due to the following reasons:

- Not train labor safety for commanders and workers;
- Not equip well of labor protection facilities for workers;
- Not comply with labor safety measures;
- Lack of supervision of the commander in the process of construction;
- Not follow the right technical process.

234. During the construction, contractors need to well implement the labor safety to minimize the occurrence of unfortunate accidents.

G. The impacts on environmental during the operation phase

a. The environmental impacts of the water treatment station

i. The impact of noise and odors

235. When the system goes into operation, treated water is pumped through the first level at the plant, through the hierarchy and distribution piping system then to the network supplying for

each household. Meanwhile, in order to meet the supply capacity, at the turning points have treated water PSs supporting for transportation of water in the pipeline. Normally, the noise level of pump is in range of 75 – 80bBA. Residential areas are away from the pump. Usually, the pump stations are underground so the impact of them on surrounding residential areas is negligible.

236. The exhausts are mainly produced in the treatment station operating process because of the decomposition of organic substances, suspended mud in the water of mud tank. The gases include: CO₂, CH₄, H₂S...The exhausts will spread in the air causing reek and air pollution. When the air polluted, it will affect workers. The reek also makes surrounding residents of treatment station uncomfortable but not much because the residential area is far from treatment station. Moreover, according to the analysis result of consultant and observation result of Resources and Environment Department, the content of organic substances of the in-flow water in treatment station is very low. The norms need treating including suspended sediment and pasteurization. Thus the smell of organic substance decomposition is negligible.

ii. Impacts of sludge

237. Wasted sludge in treatment station arises at sediment tank, filter process, wasted water reservoir and filter water. In the periodical filtering process, the solid waste and filter water will be led into a wasted water reservoir. In the sediment tank, sediment in treating process will be periodically given out. The amount of waste sludge and sediment of the filtering process are all gathered in the deposit section of wasted water reservoir and need removing to the solid waste area as regulation of Thanh Hoa province. The cycle of filtering is one day. Sludge is cleaned once per 6 months. The estimated amount of sludge arising at treatment station as follows::

Table 35. Calculation the amount of wasted sludge

Sediment content into tank	$C_{vsl} = C_2$	=	80	mg/l
Accumulation coefficient	E_{sl}	=	85	%
Sediment content out in tank	$C_{rsl} = C_{vsl}(100 - E_{sl})/100$	=	10,5	mg/l
Amount of sediment	$W_{cla} = 24 * Q * (C_{vsl} - C_{rsl})/1000$	=	1360	Kg/day
Among them:	Sludge volume		4,6	m ³
Q- output into tank	$Q = Q_h / N_{la}$	=	833	m ³ /h

238. Because of using chemical PACN in treatment process, sludge will have the content of metal Al. The amount of sediment sludge is transferred into filter water tank for separating water and sludge will accumulate in the bottom of lake. The filter water tank includes two sections. Periodically, about 6 months to one year, one section will pause and the other will operate. The purpose of doing this is let water out of one section, dry the sediment sludge. Then, it will be transported to the fixing ground. To avoid sludge scatter while transporting, the transporting vehicles need protecting carefully, and not overloading. It can be hired the Thanh Hoa environmental and urban project limited liability MTV company to dredge and transport to the fixing ground in Con Quan – Thanh Hoa province.

iii. Treatment technology

239. The Lamell elutriating tank can be used when the residue density and elutriating effectiveness are high. The important thing is that it can be semi-automatically combined in the management process in order to facilitate workers in operating when they discharged sludge out of the bottom of the tank. Meanwhile using Lamell elutriating tank can increase contact surface area, decrease water flowing time, therefore the tank size can be reduced and the construction is much easier. Flocculating agent PACN-95 interfusing in water will create a cell of grain gel which joins with dirty residue (inorganic or active slurry in the tank) and becomes big residue blanket self-elutriating with high speed so elutriating tank's size can be reduced significantly. However, this equipment also has a weakness. If the equipment is not well-managed, it will be full of residue and hard to maintain the soft layer. Consequently, there must be an often checking and calculating the suitable time to discharge residue and wash filter in operating period.

240. Waste water of treatment station and washing filter water in waste water sump will be moved to two compartment: the first compartment purposes to elutriate residue and contain slurry periodically discharged from elutriating tank, the second one aims to keep water after elutriating which then flows to the planning trench in the North side. This amount of water will be recirculated in order to decrease the amount of waste water, floating residue concentration penetrating into fresh water and save water. Hence, it can limit the pollution level of surrounding environment caused by waste water.

iv. Chemical leakage incident

241. In operating the treatment station, some chemicals will be used in these processes:

- Put alum in the reactive tank.
- Put chlorine in the storage pond

242. Chlorine is also a toxic chemical to the environment because it causes harmful effect to animals and smell pollution to the area when it leaks. On the other hand, chlorine put in the storage pond helps disinfect water. However, Chlorine concentration will cause smell in the water. Hence, there must be a regular checking the chemical storage in order to avoid Chlorine leakage to the environment as well as accurate quantum of Chlorine concentration put into storage pond.

b. *The environmental impacts during operation of pipelines and PSs*

i. Dust, emissions, noise and vibration pollution

243. In operation, there is almost no air effect because the pipelines lied in the deep soil and surrounding air environment's quality is disaffected by other indirect factors. Moreover, water PS is far from the resident area, therefore, noise, vibration and unpleasant smell in operation will not affect the surrounding people.

ii. Soil, surface water and solid waste environment

244. Water in culvert network of water-supply system commonly has no effect on the natural environment, except for the situation that water leaking from joint and solder point will bring polluted materials, infuse to soil and affect the underground water source. Besides, the pipelines face to a hazard of being stuck by calcium sediment sticking on the pipelines side which prevents the water flow. In addition, pressure on flowmeter of water-supply lines needs

checking regularly in order to watch water-supply volume, immediately prevent and solve leaking as well as pipeline breaking incidents

245. Consequently, in order that the water-treatment station works effectively and filtered water's quality meets the standards for domestic water supply, the input water's quality and volume also need to be fit with designed capacity

246. In order to ensure the input water's quality, the water-treatment station needs to set up clear regulations about sucking raw water at PS and checking the water volume. The role of it is to ensure to supply real water amount which consists of water leaking amount on the pipelines. At present, the economics is on the rise but the but the infrastructures didn't cope with the socio-economic development. Meanwhile, an amount of untreated pollutants are able to penetrate into the raw water source supplying the treatment station, therefore increase the amount of pollutants in the raw water, decrease the effectiveness of the station, not meet the requirement of fresh water and then supply low quality water to the resident area. Hence, there must be clear regulations about discharging some water sources, deciding the kind of waste water which can flows to the general culvert system, processing waste water from other sources and business manufacturing establishments before joining the domestic waste water system which is moved to treatment station and then the environment. The cooperation among relevant industries and Department of Natural Resources and Environment is vital in this situation.

247. In addition to ensure the raw input water's quality, water volume needs checking before flowing to the fresh water treatment station in order to avoid the situation that people care more about profit than quality of water. If the treatment station works well, there will be no problem, however, if some incidents happen which makes the station stops working, untreated raw material maybe be pumped into supply system and flow to fresh water distribution network. Therefore, waiting capacity of some important parts such as pump station, storage pond and automatic locking valve needs designing carefully

248. There must be a detailed plan for supervision of treated water quality at raw water collecting construction and water in disinfection tank, therefore, solution will be applied in time for some incidents.

249. According to analysis, water source from the south of Muc River and water in Yen My Lake at collecting station both have relatively similar analysing figures and both meet the standard about surface water's quality for domestic usage but they still needs applying suitable treatment remedies following QCVN 08:2008/BTNMT decision at column A2 (apart from the criteria PO43- of both Muc River and Yen My Lake's water sample which are ungraded). The amount of water taken from the south of Muc Lake is extremely small in comparison with the water's storing capacity of Yen My Lake (about 0.07%). Moreover, pumping water from the south of Muc Lake into Yen My Lake is regulated, only when Yen My Lake is depleted and unable to supply enough water, is water pumped so the lake's water quality is actually unchanged which hardly ever affects the lake's hydrology

250. The water quality of sample from Yen My Lake flowing to Dong Chua Lake and water sample of Dong Chua Lake have similar analysing criteria. On the other hand, Dong Chua Lake's water can provide the increasing production demand of Nghi Son economic zone, therefore, the supply-water amount only aims to supplement the economic zone's water demand. With the same water quality, the supplementing causes less effect on the lake's hydrology.

iii. Corrosive aggressiveness on pipelines

251. The corrosive aggressiveness is measured and limited in the process of choosing materials for project. As designed, the pipelines use steel, cast iron, u.PVC and HDPE in order to reduce corrosive aggressiveness on pipelines. Besides, in operation, technical officials regularly check to find some incidents on the pipelines and have suitable solution.

iv. Water volume balance

252. The technical parameters of Yen My Lake, Muc River and the south of Muc River is as follow:

Table 36. Technical parameters of Yen My Lake

N ^o	Parameters	Unit	Value
Catchment basin and water flow features			
1	Area of catchment basin	Km ²	137
2	Length of main river	Km	22,2
3	Average rainfall amount over years	mm	1737
4	Average catchment basin over years	m ³ /s	3,47
5	Average flow's depth over years	mm	799
6	Annual flow's modulus	L/skm ²	25,3
7	Average total amount over years	10 ⁶ m ³	109,45
8	Annual catchment basin P= 75%	m ³ /s	2,53
9	Annual total amount P=75%	10 ⁶ m ³	79,8
10	Designed flood's catchment basin P=1%	m ³ /s	1700
11	Designed flood's total amount	10 ⁶ m ³	90
12	Designed overflow discharging's catchment basin	m ³ /s	465
13	Irrigation area	ha	5840
14	Required water amount of irrigation and industry supplying	10 ⁶ m ³	85
Storage pond's parameter			
15	Normal water-rising level	m	20,36
16	Stable water level	m	8,5
17	Designed flood's water level P=1%	m	23,03
18	Total Volume	10 ⁶ m ³	84,4
19	Effective Volume	10 ⁶ m ³	81,5
20	Ineffective volume	10 ⁶ m ³	2,9
21	Lake's surface area corresponding with normal water-rising level	ha	1390
22	Lake's surface area corresponding with stable water level	ha	92

N ^o	Parameters	Unit	Value
23	Capacity coefficient β		0,7
24	Flow coefficient α		0,46
25	Regulatory regime	years	

Source: Song Chu One Member Ltd. Company

253. The lake's water volume is about 84.4 million m³ and is supplied annually with copious precipitations in its watershed. The annual rainfall amount is up to 1737mm. Therefore, besides supplying water for agriculture, the lake's water source only aims to ensure the supplying of 30000 m³/day. Yen My Lake will be added water from south channel of Muc River which is about 60000 m³ (approximately 21,9 million m³/year) in order to provide water with capacity of 90000 m³/day for Nghi Son economic zone (According to technological designing profile of upgrading project to ensure the safety of Yen My Lake licensed by Ministry of Agriculture and Rural Development following decision 5284/QĐ-BNN-QLN 30October 2002)

Table 37. Muc River's parameters

N ^o	Parameters	Unit	Value
Catchment basin and water flow features			
1	Area of catchment basin	Km ²	236
2	Length of main river	Km	26,2
3	Average rainfall amount over years	mm	1718
4	Average catchment basin over years	m ³ /s	5,72
5	Average flow's depth over years	mm	764
6	Annual flow's modulus	L/skm ²	24,2
7	Average total amount over years	10 ⁶ m ³	180,3
8	Annual catchment basin P= 75%	m ³ /s	4,14
9	Annual total amount P=75%	10 ⁶ m ³	130,6
10	Designed flood's catchment basin P=1%	m ³ /s	2660
11	Designed flood's total amount 0,5%	10 ⁶ m ³	159
12	Designed overflow discharging 's catchment basin	m ³ /s	267
13	Irrigation area	ha	11344
14	Required water amount of irrigation and industry supplying	10 ⁶ m ³	168
Storage pond's parameter			
15	Normal water-rising level	m	33,00
16	Stable water level	m	18,00
17	Designed flood's water level P=1%	m	37,70
18	Total Volume	10 ⁶ m ³	200
19	Effective Volume	10 ⁶ m ³	187

N ^o	Parameters	Unit	Value
20	Ineffective volume	10 ⁶ m ³	13
21	Lake's surface area corresponding with normal water-rising level	ha	2535
22	Lake's surface area corresponding with stable water level	ha	375
23	Capacity coefficient β		1,0
24	Flow coefficient α		0,44
25	Regulatory regime	years	

Source: Song Chu One Member Ltd. Company

Table 38. The south of Muc River channel's parameter

Constructio n name	Position	Aperture			Height (m)		Water level		Area (ha)	Q (m³/s)
		n	B(m)	H(m)	wall	yard	upstream (m)	down stream (m)		
South channel										
Fist channel culvert	K ₀₊₀₀	1	2,0	2,2	12,16	9,18	11,78	11,3	7000	12
Culvert N2	K ₇₊₅₄₁	Φ0,85		8,38	6,53	8,02				

Source: Song Chu One Member Ltd. Company

254. Muc River has a water volume of about 200 million m³, F catchment basin = 236 km². The south channel of Muc river has Q= 12m³ /s, width 10m, depth 2m. Water is used mainly for agricultural purposes. Muc River is will total at 21.9 million m³/ year, the equivalent of 10% water volume of Muc river. On the other hand, with very huge catchment basin area, the river's water amount is regularly added. Therefore, the water source is enough to provide the pipelines construction leading to Yen My Lake with capacity of 60.000 m³ /day (about 0, 64 m³/s) and it will not affect the agricultural irrigation. However, because a small part of the water amount on channel will be moved to Yen My lake, water volume need increasing (adding 0.7 m³/s) to well provide the agricultural irrigating demand. According to the project which aims to supply water for production and domestic use of Tinh Gia district and Nghi Son economic zone, Muc river lake will supply 28,3 million m³/ year in 2015 and 50 million m³ /year in 2025.

255. Yen My Lake is under the management of Song Chu one-member limited liability Company. About storage capacity, the company annually observed and calculated the storage and supply capacity compatible with hydraulic purpose as well as managing the lake's capacity. The water-pumping from the south channel of Muc River into Yen My Lake starts when Yen My Lake's water amount decreases (in dry season) and cannot ensure the supplying capacity. On the other hand, when the water amount is abundant (in rainy season), the water pumping is unnecessary. Besides, Cua Dat Lake, the biggest storage lake of the province, is used to supply enough water for irrigation. Therefore, the water supplying capacity is absolutely feasible and has no influence on the dam's load capacity.

256. In conclusion, having abundant water amount, good and stable water quality, The water source of Yen My lake and Muc River lake is able to meet demand for domestic water supply, manufacturing, agriculture, for people as well as the Nghi Son economic zone.

v. Competition for water resource

257. The competition for the water resource has a low potential of creating conflicts and does not appear to be of any concern. There is a certain risk regarding the regulation of the reservoir and the minimal flow that must be kept in the rivers and canal. If a long drought would occur to the extent that the reservoir managers would need to lower the level so the river would still have a flow, the intakes could be in danger. As such, the depth of the intakes will be set so the flow of raw water becomes unaffected.

258. The water source of Yen My lake is a controlled body of water. At the lowest level of the reservoir, the mean intake will be of 1.04 m³ per second (90,000 m³ per day) when the body of water will still be at 13M m³. Therefore, the risk that the WTP and raw water extraction operations, at their full capacity, creates a shortage to the other users and the environment for the upstream, downstream and on site populations of any sort is nil. Also, along with aggravated drought period a precipitation increase is foreseen in the upcoming years due to climate change. Therefore, management of the reservoir level will be eased by gain of this increase and the intakes will gain in security.

H. Measures for the prevention and reduction of negative impacts on the environment

a. Measures for the prevention and reduction of negative impacts on the environment during the construction phase

i. Measures for the prevention and the reduction of environmental impacts during the clearance

Land acquisition

259. The main problem in this phase is the compensation for people' loss of land, income, property in the project implementation. During project preparation, a "Resettlement Plan - RP" was prepared. The RP will analyse thoroughly the impact of land acquisition, clearance, relocation and compensation mechanisms, supporting people affected, in order to minimize the social impact made by the project. The project will ensure the compensation policies, full support for land, constructions and assets affected.

260. There are some steps in compensation for property damage of affected households:

- Extensive information to people about economic development and compensation policy of the project. Propaganda about people responsibility as well as legal rights and obligations of the state.
- Public compensation rates (details of each asset's kind compensated) to the affected people.
- Public and accurately inform compensation amount of each family
- Support poor families and policy- families

Construction sites clearance of UXO

261. Since excavation related to infrastructure development is one of the main causes of accidental detonation of UXO in Vietnam, and given the proximity of the excavation work sites to populated areas, care must be taken to ensure that the pipeline route is surveyed for presence of UXO prior to construction. If such UXOs are detected and verified, clearing work

will need to be commissioned, following established procedures under the National Mines Regulatory Authority, prior to undertaking any civil works. It should be noted that areas required for the project have seen some development and modifications over the years. Road buildings, ditch excavation and construction that have covered a lot of the project area. Nonetheless, UXO have been moved before without a deflagration and so being, although the risk is low, the whole excavation and building areas should be revisited by specialists.

b. Measures to prevent and minimize impacts in building water treatment station

i. Prevention and minimization of dust, air, noise and vibration pollution

- In hot sunny days, water needs to be sprayed on transportation routes (3 times / day, morning and afternoon) and in construction areas in order to minimize the dust, sand that may arise and spread by the wind.
- The cover of the truck's tank needs to be strictly closed. Means of transportation and machines must be regularly cleaned daily after using.
- The truck used on transporting purpose must have registration certificate meeting the technical and environmental standards. Shipping amount must be suitable with the weight of the truck and follow the defined routine.
- The collecting area of construction materials and waste in operation needs to be carefully shielded
- Regularly clean transportation routes, construction area and collect waste.
- Limit the construction from 9 p.m. to 6 a.m. in order not to affect surrounding resident area and along the transportation routines.
- Never do construction and transportation in harsh conditions (heavy rain, or high winds) in order to reduce emissions of pollutants
- Isolate the sensitive, dangerous areas having flammable materials by making a barrier. Design enough light for area where requires night work and for safety.
- When transporting through resident areas, means of transportation must not accelerate the speed and minimize honking.
- Provide training courses for truck drivers and construction workers operating machine about safety and environmental protection.
- Well manage and observe the construction area.
- Conduct environmental monitoring of air, noise and vibration environment for additional adjustment and appropriate measures during the construction process

ii. Pollution control of worker's house-waste

- Develop a suitable plan to well-organize labor force in the construction phase.
- Not extend the construction time in each area.
- Ask the workers not to throw rubbish disorderly into the environment after the meal
- All house-waste from workers' temporary houses need to be collected into containers with a capacity of 500-1000 liters. Investors will hire sanitation services or local environmental cooperation to collect garbage every day.
- Remind workers not to throw garbage on the construction area
- Using local labor force will limit the number of workers staying on site, which reduces the amount of waste on construction area.

- During the construction phase, wastewater of officials and employees will be collected and treated by building the 3-compartment septic tank or automatically in the camp area, (each site has 1 toilet). 3-compartment septic tank has two functions: elutriating and decomposing of sediment. A part of sediment in the tank forms gas and the rest forms dissolved inorganic substances under the influence of anaerobic microorganisms, decomposed organic materials.

iii. Drainage and flooding reduction

- Build construction drainage system and prepare spare pumps to ensure thorough drainage, avoid flooding during construction. Rainwater is collected in the drainage ditch; there are manholes along the grooves (distance 100m/hole) to trap sediment and be cleaned regularly.
- Ensure timely implementation of construction.

iv. Construction waste and leaked oil:

- Construction waste materials mainly are damaged waste, which will be gathered and categorized into groups to be handled. The waste, trash boxes, iron, wood, steel shell protecting the outside equipment are collected and sold to scrap collectors. Other types of waste such as paper bags (cement bags), plastic container, and plastic wire are separated to sell to recycling place.
- In construction, strictly calculating, monitoring and controlling the preparation of steel to minimize the amount of steel waste generating in order to save materials, money and reduce emissions released into the environment.
- Oil waste of machine is put into separate boxes, not released to the environment. Boxes having capacity of 150 liter are located in the machinery maintenance and repair site to keep the waste from construction machinery. The construction company is responsible for collecting, transporting and processing according to circular 12/2011/QĐ-BTNMT on waste management by the Ministry of Natural Resources and environment. Waste oil can be sold to recycling companies.
- Workers should be educated on the consciousness of preserving and protecting the environment, regulations about environmental protection should be proposed so that workers can carry on waste dumping in proper place, the building site area must be tidied up after construction stage

v. Work safety in construction stage

- The facilities to serve constructing workers such as dining- room, rest room, bathroom, healthcare service, toilet etc. must be reliable.
- Types of flameproof equipment must be carefully prepared in order to cope with unexpected events.
- Combustible waste must not be accumulated and need frequently be taken outside the building site.
- Lighting system must be well designed for working at nights.
- Fire alarm, signal light and information system must be well equipped
- Workers must be trained about work safety.
- The regulations and warning signs must be hung on the building site.
- All the safety equipment and their operating mode must be regularly inspected.

- Emergency aids must be available at the building site.
- Workers who directly construct or operate machineries must be trained and have chance of practicing the correct actions when there are problems. Besides, they must always be in their positions and do the correct operating actions on proper technique.
- The measures to ensure occupational safety for workers are indispensable. Consequently, workers will be equipped with necessary clothing that can ensure safety and limit harms to them. The outfit consists of work wear clothing, hats, gloves, eyes protection glasses, boots...
- The instruments as well as the contact addresses needed when there are problems will be clearly marked such as medicine cabinets and eyewash equipment, address and telephone number of hospital
- Workers working on the construction site need a health check every six months to determine their health status so that they will be appointed to proper positions.
- Warning signs on the construction site must be enough

vi. Preventing and reducing social problems

- Announcing construction progress and schedule of constructing and supplying materials at the building site.
- Coordinating closely with the local authority and the concerned authorities to organize programs such as education, propaganda of civic consciousness for the construction workers of the project, introducing to the migrant workers the customs and practices of local people so that workers can avoid unexpected misunderstandings between them and local people.
- All the workers must have their own cards to enter and exit the areas of the project to facilitate the controlling people.
- Coordinating closely with the local authorities which are concerned to the management of migrant workers coming to live and work in the area so that the project can be conducted and the two sides will coordinate to prevent thieves, robbers from stealing raw materials, construction devices and other assets

vii. Chance find protocol

- Working in an urban environment and along roads increases greatly the risk of digging through unrevealed and unknown potential historic and/or religious artefact or remains. However, the sites foreseen for the trenches and the construction sites have, for most of them, been worked on before or are in low potential value for historical finds. Nonetheless, chance find could still be possible because the depth of the work to be done is lower than the previous work done. Therefore, if it does happen, work should be stopped at first sight, a specialist should be contacted, and an assessment should be done before work could be restarted.

viii. Protection of burial grounds

- Setting up the fence around the water supply construction area.
- Remind the worker not to do any harm to the tombs area.
- Set up the machinery with a high degree of vibration far from the tombs area.

c. To the construction of sewer line and pump station

i. Measures to prevent and minimize dust pollution, emissions and noise and vibration

- The same as for construction of water processing station (section 4.2.1.2,i)

ii. Measures to preventing and reducing water pollution

- The temporary tents and workers' accommodation cannot be put beside Yen My Lake in any ways.
- In order to limit the junk and constructing wastage dropping into the lake, the material gathering area, concrete tempering station and spoil area cannot be arranged next to Yen My Lake area. Moreover, constructing site must also be surrounded by fences.
- Gathering and tidying up the constructing site every day.
- The rain flowing through the site might bring along various kinds of soil, sand and redundant mortar during the constructing progress, which can have effects on the water's quality by making surface water dirty with high level of sediment...he rain, can sweep along other waste. Therefore, for minimizing surface water pollution, these polluted sources must be excluded during constructing progress.
- Using specialized vehicles to transport building materials as well as mud wasted in the construction process to avoid mud from leaking or spilling on the roads.
- The construction should be conducted in dry season to facilitate the construction work and easily control mud spilling into the surface water.
- It is possible to build temporary ditches in the construction site to promote draining in the place, limit local congestion that may affect construction work and workers' health.
- The progress of construction should be accelerated, not be delayed to avoid ceasing the work and the construction site is abandoned for a long time.
- Types of oil released from vehicles must be collected and disposed according to regulations. It is essential to have plans of maintenance and repairing construction machineries, and to avoid oil from spilling in the surface water.

iii. Measures to revert the roads

- In the construction process, when the pipelines are completely installed, the roads where the pipelines are laid will be reverted to the initial state and returned to traffic use. The fill-up to revert will be conducted immediately when every single pipeline is installed completely so that it will ensure the traffic flow. In term of reverting the surface of the roads, it depends on the types of surface: The surface, which is tiled sidewalk, will be reverted to the initial state right after the pipeline underground is installed. The surface which is covered by asphalt concrete will be reverted when the installation of pipelines reaches the length of 50 to 100 meters

iv. Controlling pollution from household and construction wastes – Measures to ensure occupational safety and security in the areas

- Same measures as for the construction of water supply station (sections 5.1.2.2, 5.1.2.4, 5.1.2.5, 5.1.2.6) will apply.
- To use up redundant soil, it is possible to use it for levelling the ground in processing station to revert the roads.

v. Impacts on ecosystem

- Well perform measures to control solid waste, housing waste and constructing waste like mentioned above to avoid waste's overflowing into Yen My Lake and Southern Muc lake Canal causing water pollution.
- Raise people's awareness about protecting natural resources and environment for the forces working at the building site

vi. About traffic safety

- Organizing and managing traffic stream separation, placing warning signs of traffic stream separation, speed limit and danger, especially in the area near Highway 1 or provincial roads No. 502, 505. It is necessary to place warning signs and fence with strings to isolate the construction site. There must be people appointed to be on duty frequently in the construction site to guide pedestrians
- There must be a sheet of regulations of activities stuck on the material transport vehicles. Its content must include regulations of routes to move, covering and cleaning up vehicles before moving from the area receiving and storing materials.
- Coordinating with local authority and traffic police to control traffic in the areas.
- Propagandizing and training drivers on strictly complying traffic laws and requirements of the contractor during transport.
- Collecting rocks scattering on the roads and on the construction site every day. In the whole time of construction, the contractor must ensure that roads and road curbs within Highway route are always maintained in circulation. There must be no obstructions affecting the safety and smoothness of traffic. The contractor must coordinate with local authority to carry out this responsibility
- Gathering materials neatly, not in Highway 1 and provincial roads no.505, 502.
- Ensuring the schedule and duration of construction
- Establishing barriers around the construction site.
- Setting up rules of working time the construction site.

vii. About soil environment

- Since most of the pipe lines go through the people's fields and after the construction they must be returned back for cultivation, thus the management of solid and toxic waste need to be implemented seriously. The lubricant capacity must be limited at the highest point. These wastage need to be gathered and held in junk lubricant tanks at the constructing site.

d. Measures to prevent and reduce negative environmental impacts during phase of operation and maintenance

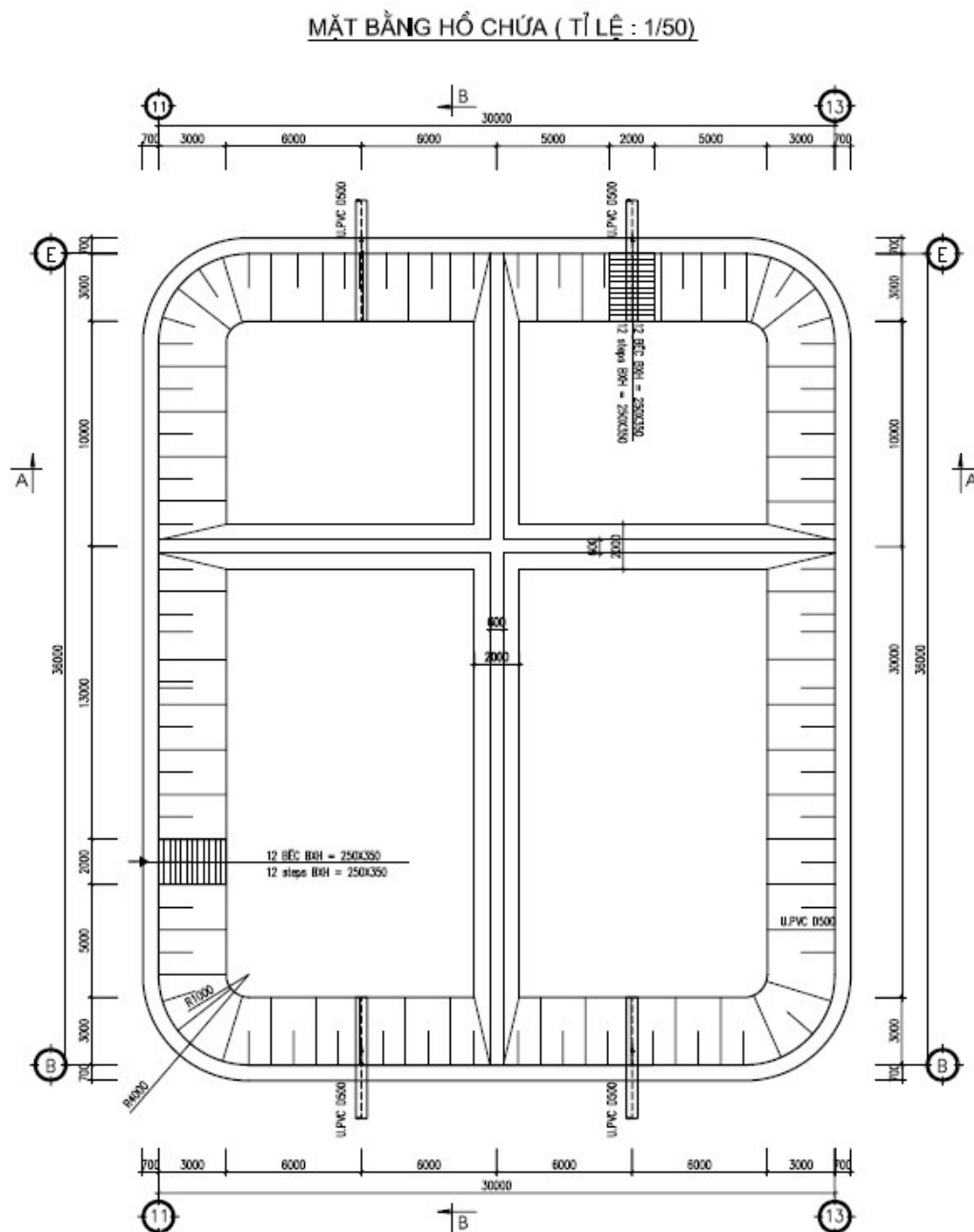
262. When purified water treatment plant and water pipes system as well as pump station goes into operation, it is necessary to implement the following measures to ensure that the system works well and minimize the impacts to the environment:

- In the area of processing station, there are places to plant trees. Trees in this area include the trees line isolating the processing station and surrounding area, and the ornamental trees in the area. Trees will be planted after finishing leveling process and building fence gate. Ornamental trees are grown alternately among planting works when the construction of processing works and installing technical pipeline are done

- Alum dregs, polymer dregs, electrolytic salt etc. need to be gathered and excluded regularly and properly.
- Domestic sewage and solid waste in treating station are generated by operating workers in pump station and gathered in detritus tank. After that, sewage was processed anaerobically and flows into irrigation canal in the North of treatment plan. (This irrigation canal was newly built located behind the treatment plan and cemetery)
- Cleaning and scouring the purified water pipes regularly according to proper technical rules.
- Regularly inspecting and keeping a check on the occurrence of leaking or cracking water pipes and other construction of purified water treatment plans such as pump station and containers to get over timely and avoid the leak as well as the invasion of pollutants taken along by water causing soil pollution.
- It is essential to set up protecting corridor along the water pipes lines. Buried pipes are supposed to have signs to protect them from destructive effects.
- All the waste separated from trash rack, sludge from sedimentation tank and raw water collector, sewage from treatment plan and refining process are required to appropriately processed. It is vital to eliminate sludge in the proper place or regularly transfer to disposal area of the province. In addition, there must be roof covering over the places to gather dry mud and mud drying grounds to avoid weather effects.
- Apart from above measures to restrain pollution, people also implement some other methods to the purified water pipe lines with the aims of minimizing effects of pollution factors on workers, including:
 - Adhering thoroughly to the terms of hygiene and safety for workers and employees, avoiding direct contact with the waste from the trash rack and sediment;
 - Carrying out program to check the implementation of the working safety in the area of production (labor protective clothing, insurance, etc.);
 - Periodically check and monitor the health of staff members, timely detecting occupational diseases;
 - Educating consciousness of environmental sanitation and working safety for staff and workers. Raising worker's awareness of environmental protection through media programs (panels, posters ...)
 - Send specialized staff to training programs about environmental and combustion protection
 - Building regulations on environmental protection for the operators including:
 - o Regulation on the rights of the environmental management staff to perform their duties;
 - o Regulation on the reward of collective and individual initiatives to reduce water losses and improve water supply for the system;
 - o Regulation on levels of warning, disciplining toward irresponsible behavior leading to environmental incidents, fires and explosions;
 - o Timely encouraging technical initiatives, research projects that help to increase productivity, save materials and contribute to environmental protection and production costs reduction.

263. Waste from water treatment plant including sewage water, filtered washing water and sediment from the tank will be processed as follows: Sewage as well as filtered washing water will be transfer to the sump of size 30 * 36 (m) which is divided into two tanks and helps deposit sediment from sewage. Sludge of treatment plant is also concentrated in this tank. Regularly, after a period from 6 months to a year, 1 part will be stopped working and the other still work. This aims at removing the water in one tank and drying deposited mud. Water after depositing will be circulated to the treatment plant for processing, a part of which will be discharged to the planned ditch in the North. Sludge (including alum sludge, polymer dregs) will be transferred by specialized truck to dump in disposal area by laws of Thanh Hoa province. Project owners can hire Thanh Hoa Environment and Urban Construction Ltd. Company periodically transports to solid waste landfills (Con Quan landfill- Thanh Hoa city).

Figure 10. Ponds containing sewage from treatment plan (sump)



e. Measures to prevent and reduce detonating combustion and electric fire risks:

- The project owner must agree to the installation of lightning rod system, which includes lighting rods and grounding system.
- Preparing fire protection equipment, fire extinguishers and fire ban signs.
- Training and propagating to improve people's awareness to ensure safety and avoid detonating combustion for workers and officers.
- Operating machineries with proper technical process

f. Measures to prevent and reduce chemicals leak

- Installing quantitative equipment in the places burning chemicals
- Supervising and examining regularly warehouses storing chemicals so that unexpected chemicals leaks can be detected timely

g. Comments on the details and reliability of the assessments

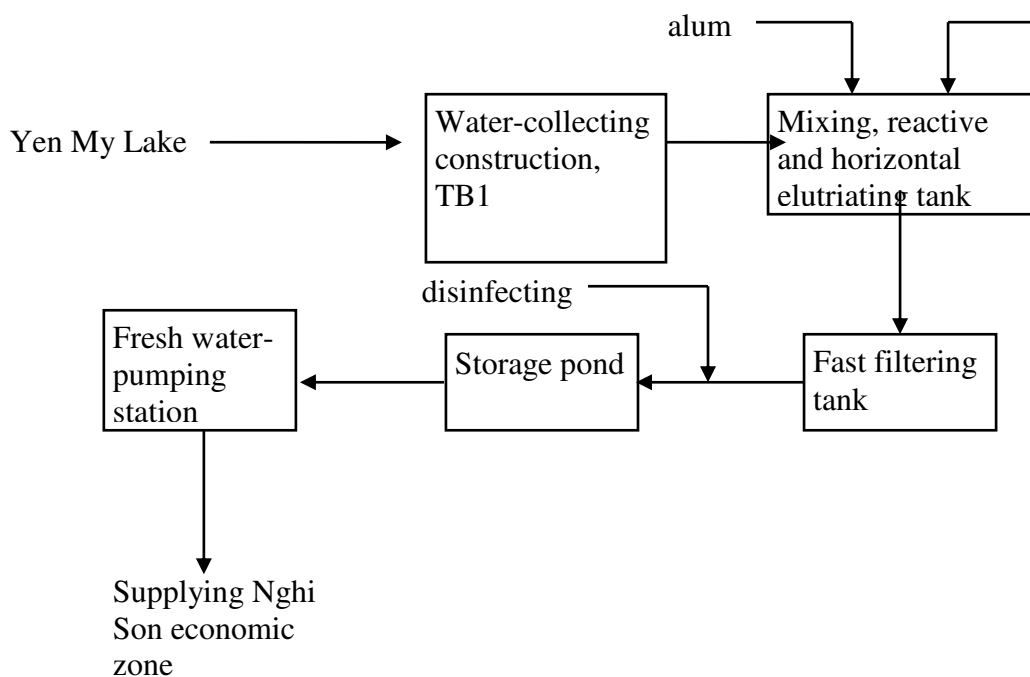
264. The IEE Report is made scientifically with details and updated data. Also, the IÊ uses measures that are suitable with the report and those which are compiled by the environmental experts who have extensive experience in the fields of water supply, environment, and sanitation. During the assessment along with the Study on the Feasibility, there may be limitations due to the lack of information and data. However, all the assessments in the report can be used as the basis for proposing, and implementing measures for environmental protection during the implementation of the project. An IÊ report of high quality contains accurate assessment, detailed forecast of impacts, and other measures for environmental protection that are appropriate with the process of the project implementation.

VIII. ANALYSIS OF PROJECT'S ALTERNATIVES

265. There are 2 choices of treatment technology

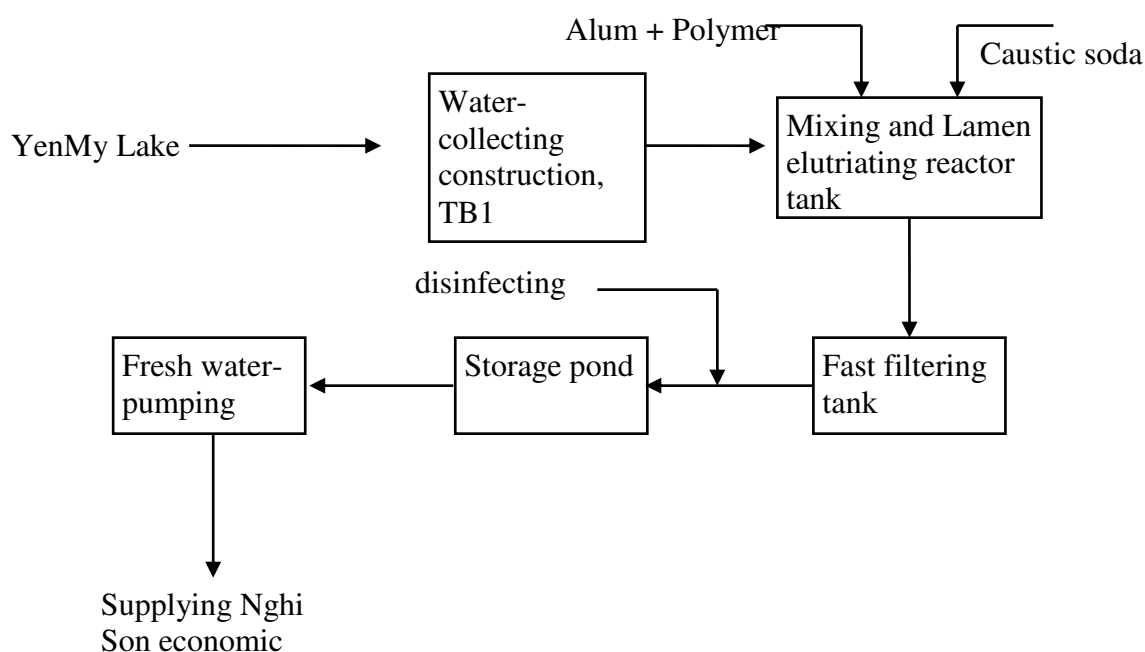
The treatment chain using horizontal elutriating and fast filtering tank:

Figure 11. Water-treatment chain using horizontal elutriating tank



Treatment chain using Lamella settling tank:

Figure 12. The diagram of water-treatment technology chain



Operating process of water-treatment technology chain

266. Generally, in spite of the difference in using horizontal elutriating and Lamell elutriating tank, these two water-treatment chains are relatively similar in operating process. Firstly, water from Yen My Lake is pumped to treatment station. In the treatment station, water is mixed with PACN alum by mechanically mixing equipment and then led to reactive compartment before coming to elutriating tank (horizontal or Lamell elutriating tank). In this tank, the residue with big size and density will be retained. A small part of residue and water after elutriating are moved to fast filtering tank which uses quartz as filtering material. The remained residue is kept in the tank. After that, water is disinfected by active chlorine and flows to the storage pond. From that, water is moved to the household storage pond through fresh water PS.

267. According to national technological regulations QCVN 01:2009/BYT about fresh water quality, Yen My Lake's water is polluted by floating residue, turbidity and microbiological factors, therefore, this technology is absolutely suitable with water treatment work for domestic water-supply purpose. Actually, the technology using horizontal elutriating tank will require huge initial construction cost and large surface area. On the other hand, Lamell technology will increase contact surface area and water flowing speed, therefore, the surface area required is smaller. Moreover, this technology can control secondary pollution about smell and works effectively even when water quality changes or the residue concentration in water increases. The Lamell elutriating treatment technology is the best suggestion to be chosen.

268. The Lamell elutriating tank can be used when the residue density and elutriating effectiveness are high. The important thing is that it can be semi-automatically combined in the management process in order to facilitate workers in operating when they discharged sludge out of the bottom of the tank. Meanwhile using Lamell elutriating tank can increase contact surface area, decrease water flowing time, therefore the tank size can be reduced and the construction is much easier. Flocculating agent PACN-95 interfusing in water will create a cell of grain gel which joins with dirty residue (inorganic or active slurry in the tank) and becomes big residue blanket self-elutriating with high speed so elutriating tank's size can be reduced significantly. However, this equipment also has a weakness. If the equipment is not well-managed, it will be full of residue and hard to maintain the soft layer. Consequently, there must be an often checking and calculating the suitable time to discharge residue and wash filter in operating period.

IX. INFORMATION DISCLOSURE AND PUBLIC CONSULTATION

269. During the implementation process of environmental impacts assessments, the activities of disseminating the information and consulting about environment aim at ensuring the participation of the local authorities, related organizations and the community in project's area. The community's participation is one of the basic conditions guarantying the support of community with the project, operating plan sustainability and conveniently. In addition, consulting the project's environmental issues in community and ensuring their active participations will help to reduce the abilities of arising the adverse effects and the problems that the operating environment impacts assessment group has not recognized. The reality shows that if the earlier of joining in the preparation process of community, the easier in building the close relationship between project and local people, from which community can contribute the valuable recommendations to the project.

270. The activities of consulting the opinions from community in the process of preparing the environmental impacts assessment report aim to:

- Meet the requirements specified at clause 8, article 20 of Law on Environment Protection number 52/2005/QH11 on 29/11/2005
- Meet the requirements listed in the circulation number 26/2011/TT-BTNMT on 18/07/2011 issued by of the Minister of Natural Resources and Environment.
- The decree number 29/2011/NĐ-CP that specifies the regulations on the strategic environmental assessment, environmental impacts assessment, and environmental protection commitment.

271. The purposes of community's consultant are listed below:

- Sharing all the information about the project's categories and scheduled operation with the community in project's area and other related partners.
- Gathering the contributed opinions, the interests about local unique, and the sensitive environmental issues in project area from the local people and authorities; especially the issues that the operating environment impacts assessment group have not identified. Based on such consultation, the community's interests can be proposed to be reasonable resolved during the process of selecting the project's design solutions.
- Collecting the community's ideas on the project's tasks in the work of creating the environmental impacts assessment report, which will ensure the most accurately and completely in measuring the environmental impacts and give out some recommendations to minimize the negative environmental impacts in the most effective and feasible way.

272. In this project, the contractor, Chu River Irrigation Exploitation Single Limited Company – Thanh Hoa, sent the Official Dispatch number 346/KTCTTLSC on 18/5/2011 to the People's Committees and the Fatherland Front Committees of the communes in project area about contributing ideas on the project's environmental impacts. In close relations among the Board of project management, local authorities and the community in the area affected by project, the environmental assessment consultants have had two consultations with the community affected by project.

273. **The first community consultation:** Being implemented at all the communes in project area including of Cong Chinh, Cong Liem, Cong Binh, Thang Tho, Yen My, Phu Son, Xuan Lam, Truc Lam, Tinh Hai, Hai Binh.

274. The contents made in this consultation meeting were:

- Disseminating the information about the project: distributing the summary documents about the project's contents, the construction items in each commune, and the construction area map.
- Disseminating the implementation plan of studying the environmental impacts assessment.
- Consulting the opinions of local leaders and people on the environmental issues: discussing at the meetings.

Table 39. Time, location, and the participants of the first community consultation

Day	Location	Participants
19/5/2011	Công Chính commune	<ul style="list-style-type: none">○ The representatives of the board of project management○ The representatives of local authorities;○ The representative of local mass organizations;○ The households in project area;○ The representatives of consultancy unit.
19/5/2011	Công Liêm commune	
19/5/2011	Công Bình commune	
20/05/2011	Yên Mỹ commune	
20/5/2011	Thăng Thọ commune	
20/5/2011	Xuân Lâm commune	
21/5/2011	Tĩnh Hải commune	
21/5/2011	Hải Bình commune	
21/5/2011	Trúc Lâm commune	

275. **The second community** consultation was held from 9/6/2011 to 11/6/2011, after the consultancy units had finished basically the process of environmental impacts assessment, recommended the solutions to minimize the negative impacts on environment, and proposed the plans of managing, monitoring, observing environment in the implementation periods of project. The consultants group collected the opinions of local leaders, mass organizations, and the representatives of people living in the areas affected by the project (including of the communes Cong Chinh, Cong Liem, Cong Binh, Thang Tho, Yen My, Phu Son, Xuan Lam, Truc Lam, Tinh Hai, Hai Binh) about the contents in the draft of the environmental impacts assessment report. The contents presented at the consultant meeting were:

- Presenting the investment items of project;
- Presenting the positive and negative impacts on environment when implementing the process;
- Presenting the proposed mitigation measures to minimize the negative impacts on natural and social environment;
- Discussing and consulting the participants' opinions on the environmental impacts and recommend some solutions to reduce these impacts.

Table 40. Time, location, and the participants of the second community consultation

Day	Location	Participants
9/6/2011	Công Chính commune	<ul style="list-style-type: none"> ○ The representatives of the board of project management ○ The representatives of local authorities; ○ The representative of local mass organizations; ○ The households in project area; ○ The representatives of consultancy unit.
9/6/2011	Công Liêm commune	
9/6/2011	Công Bình commune	
10/6/2011	Yên Mỹ commune	
10/6/2011	Thăng Thọ commune	
10/6/2011	Xuân Lâm commune	
11/6/2011	Tĩnh Hải commune	
11/6/2011	Hải Bình commune	
11/6/2011	Trúc Lâm commune	

A. The opinions from the commune people's committee

276. The results of two consultations are aggregated in the following table. The pictures about the consultation, the meetings records, and the consulting ballots are shown in Annex 2.

Table 41. Aggregating the local authorities' opinions

No	The opinions of local communes people's authorities and residents	The acceptance of the board of project management and the consultants group
I	The opinions of people's committee and the fatherland front committees	
	Phu Son commune <ul style="list-style-type: none"> ○ During the process of constructing water system, there were not many negative impacts ○ Proposing the board of project management to implement well the solutions of minimizing the impacts on environment ○ Enhancing, well carrying out the site clearance activities 	<ul style="list-style-type: none"> ○ The board of project management agreed, accepted the opinions of people's committee and the fatherland front committees
	Yen My commune <ul style="list-style-type: none"> ○ In the implementation period, the construction process had affected to the villages' roads because of digging roads which affected to the environment, the people's activities of travelling, earning, and living ○ Proposing the consultant department to consider about the effects in construction process in order to give suitable remedial costs 	<ul style="list-style-type: none"> ○ The board of project management agreed, accepted the opinions of people's committee and the fatherland front committees
	Cong Binh commune <ul style="list-style-type: none"> ○ Dust and noise when constructing affected to local people's production ○ Proposing the construction units to implement the environmental protection measures 	<ul style="list-style-type: none"> ○ The board of project management agreed, accepted the opinions of people's committee and the fatherland front committees
	Truc Lam commune <ul style="list-style-type: none"> ○ In the process of project implementation, it will be possible to have some effects on surrounding water resources, soil properties, and the arable lands of people living near the project construction area ○ The households whose lands have been recovered to serve the project will be lost their capital goods, and have difficulties in 	<ul style="list-style-type: none"> ○ The board of project management agreed, accepted the opinions of people's committee and the fatherland front committees ○ Considering the suitable compensation and support policies which follow the

No	The opinions of local communes people's authorities and residents	The acceptance of the board of project management and the consultants group
	<p>households' economy</p> <ul style="list-style-type: none"> ○ Must have the measures to ensure that the construction will not affect to the surrounding environment and local people's crops ○ Performing rightly and enough policies, the rights regime in compensation for site clearance ○ Proceeding to implement the project synchronously, ensure progress and avoid prolonged ○ The households whose lands have been recovered need to have policies for changing career, creating jobs, raising income ○ Recommending the contractors to study and consider the support for recovered lands' households 	<p>Vietnam government regulations and ADB's requests</p>
	<p>Thang Tho commune</p> <ul style="list-style-type: none"> ○ In the construction period, the contractors need to have plans to prevent the construction waste from affecting on local people's irrigation water and crops ○ Machinery and materials included in the construction must not affect the works that local people have built 	<ul style="list-style-type: none"> ○ The board of project management agreed, accepted the opinions of people's committee and the fatherland front committees
	<p>Xuan Lam commune</p> <ul style="list-style-type: none"> ○ Agreeing with the implementation of water supplying system serving the development in Nghi Son economics zone and ensuring the clean water resource for local people's daily life ○ Should implement the project in the shortest time, during the construction process, ensuring the measures to avoid the effects on surrounding environment, promoting the maximum effectiveness of project ○ Demanding in protecting the water resource and system efficiently ○ Investing in modern facilities to ensure the sustainability ○ Planning project to associate with the real demand 	<ul style="list-style-type: none"> ○ The board of project management agreed, accepted the opinions of people's committee and the fatherland front committees
	<p>Cong Chinh commune</p> <ul style="list-style-type: none"> ○ Agreeing to support the project ○ Proposing to well perform the environmental protection policies 	<ul style="list-style-type: none"> ○ The board of project management agreed, accepted the opinions of people's committee and the fatherland front committees
	<p>Cong Liem</p> <ul style="list-style-type: none"> ○ Agreeing, supporting to implement the project ○ Project implementation must ensure the compensation and no effects on local people's daily life ○ Ensuring the environmental activities ○ Appropriating with ensuring to provide domestic water for Nghi Son economics zone. Proposing to study on ensuring the parallel development between agriculture and industry, designing the water pipelines crossing Cong Liem commune with locks or valves to provide water for agriculture production because of the difficulties of irrigation and drainage in this commune 	<ul style="list-style-type: none"> ○ The board of project management agreed, accepted the opinions of people's committee and the fatherland front committees ○ Studying to design the pipelines not to affect to the agriculture irrigation and drainage of local people
	<p>Hai Binh commune</p> <ul style="list-style-type: none"> ○ Ensuring the transportation issues during the construction process 	<ul style="list-style-type: none"> ○ The board of project management agreed, accepted the opinions of people's committee and the

No	The opinions of local communes people's authorities and residents	The acceptance of the board of project management and the consultants group
	<ul style="list-style-type: none"> Ensuring the environmental activities Ensuring the activities of compensation for site clearance 	fatherland front committees
	<p>Tinh Hai commune</p> <ul style="list-style-type: none"> Agreeing to support project In the building period, it will arise dust, air emissions, and noise in the operation area; arise some issues on order and security and social security With the air environment, proposing the contractors to have the shielding trucks measures, no overload transportation, plans to water regularly the roads in dry season, no too old construction vehicles Requesting the contractors to follow the Vietnamese regulations on environment, combine with the commune's authorities and polices to ensure the securities in the construction area 	<ul style="list-style-type: none"> The board of project management agreed, accepted the opinions of people's committee and the fatherland front committees

B. The opinions from the representative of residential community

277. The opinions of people living in the project area are shown in the following table.

Table 42. Aggregating the residents' opinions

I	The result of the first community consultation	
	<ul style="list-style-type: none"> Local people agreed to support project Hoping that the project could be carried out soon, and the project implementation plan could be publicised Local people have had the demand of using clean water because at some villages, water from the wells is affected by acidity, and it is difficult to have water in dry seasons Having the satisfactory compensation for local people Requesting the contractors to follow the environmental protection methods in the period of implementation The project's implementation process have affected on their production The effects of dust, noise and transportation 	<ul style="list-style-type: none"> The board of project management and the consultants group agreed, accepted the opinions of local people about the environmental issues
II	The result of the second community consultation	
	<ul style="list-style-type: none"> Local people have had the demand of using clean water Agreeing with the draft of environmental impacts assessment and the minimizing methods of consultants group In the construction area, it is difficult for travelling, so the contractors need to build the specific roads to transport sand and soil In the implementing period, the damage of public building like streets needs to be repaired The construction process create dust covering the local people's crops Affecting in the social securities in project area Being necessary to have the methods to protect the environment such as watering the roads, ensuring that there will not be the affects on local people's trees and houses 	<ul style="list-style-type: none"> The board of project management agreed, accepted the opinions of people's committee Considering the local people's aspirations and accepting their ideas on environment Considering to detailed evaluate the locations/ areas which are sensitive to the environment issues and having the measures to preventing and minimizing the impacts in a

	<ul style="list-style-type: none">o Having responsibilities for cleaning the construction siteo Managing well the waste on the siteo Proposing to be facilitated to provide jobs for local people who have been lost their production land	<ul style="list-style-type: none">o scientific and feasible way, and associating with the local specific conditions.o The roles of community and local authorities in environmental monitoring in project's phases have been added in the approaching diagram of Environmental Management Plan (EMP)
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C. The feedback opinions, and commitments of the contractors with the proposals, recommendations, and requests of consulted organizations

278. At the consulting meeting, with the contributed opinions from local authorities and people about the environmental issues in the project area, the board of project management and the consultants group agreed, accepted the opinions, desires of people on environmental issues. Considering to detailed evaluate the locations/ areas which are sensitive to the environment issues and having the measures to preventing and minimizing the impacts in a scientific and feasible way, and associating with the local specific conditions.

D. Consultation with downstream communities

279. The Government approval process for raw water intake will include public survey of downstream users. Results of the surveys will be documented and sent to ADB during detailed design.

E. Disclosure of information

280. IEE and Environmental Management Plan will be translated in Vietnamese and will be made available at the office of the People's Committees (PC) of the following communes in Nhu Thanh District : Cong Chinh, Cong Liem, Cong Binh, Yen My, Thang Tho and in Tinh Gia District: Phu Son, Phu Lam, Trung Lam, Truc Lam, Xuan Lam, Hai Binh, Hai Yen and Tinh Hai.

X. GRIEVANCE REDRESS MECHANISM

281. During project operation, Song Chu co. shall comply with the provisions of the law on environmental protection, limit the negative impacts on environment and protect community health. The company should be proactive to reserve sufficient water source in the raw water sedimentation pond to ensure that water is still produced during prolonged drought condition. Coordination with local authorities and other agencies in the water resources management in the Yen My Lake regarding reserves and quality is also required.

282. The grievance redress mechanism (GRM) described below follows the procedure adopted also for raising and resolving grievance in the resettlement and the social development report. As a guiding principle, grievances related to any aspect of the Project will be handled through negotiation aimed at achieving consensus. Complaints and grievances will pass through three levels of entities, which have the potential to resolve the situation, before they can be elevated to a court of law as a last resort. Song Chu Co. will support all administrative and legal fees that might be incurred in the resolution of such grievances and complaints.

283. The first stage venue for raising and resolving complaints and grievances is the Commune People's Committee (CPC). An aggrieved party may bring its complaint or petition before any member of the Commune People's Committee, either through the village chief or directly to the CPC, in writing or verbally. Grievances may also be raised during follow-up consultations and interviews with local residents during construction. It is incumbent upon said member of CPC or the village chief to notify the CPC about the complaint. The CPC will then meet personally with the complainant and will have 15 days after the lodging of the complaint to resolve the complaint. The committee may obtain the assistance of the Nghe An Environmental Protection Agency in evaluating the technical basis of complaints related to environmental impacts. The CPC secretariat will be responsible for documenting and keeping a record of all complaints that are lodged with the committee.

284. If not resolved in the first stage above, the second venue for grievances is the District People's Committee (DPC). That is, if after 15 days the aggrieved party or complainant does not hear from the CPC, or if the complainant is not satisfied with the decision taken on the complaint, the affected party may bring the case, either in writing or verbally, to any member of the DPC or the District CRC. The DPC in turn will have 15 days following the lodging of the complaint to resolve the case. The DPC secretariat is responsible for documenting and keeping a record of all complaints that are lodged with the district committee.

285. The third stage is the Provincial People's Committee (PPC). If after 15 days the aggrieved and affected party does not hear from the District People's Committee, or if the complainant is not satisfied with the decision taken with regard to the complaint, the case may then be brought, either in writing or verbally, to any member of the PPC or the Provincial CRC. The PPC has 15 days within which to resolve the complaint to the satisfaction of the concerned parties. The PPC secretariat is responsible for documenting and keeping a record of all complaints lodged with the committee.

286. In the event that the grievance remains unresolved even after being raised at the level of the Provincial People's Committee, the final resort is the Court of Law Arbitrates. Specifically, if after 15 days following the lodging of the complaint with the PPC, the aggrieved party does not hear from the Provincial CRC, or if the complainant is not satisfied with the decision taken on the complaint, the case may then be brought to a court of law for adjudication.

XI. ENVIRONMENTAL MANAGEMENT PLAN

A. Subproject components

- a. Construction raw water intake, three pumping stations and a raw water transmission pipeline D500-D1200 over 39 km.
- b. Construction new water treatment plant capacity 20,000 m³/day.
- c. Construction 13.9 km distribution network with pipe diameter D100-D600 and 62.4 km of service pipeline with pipe diameter D20-D90.
- d. Installation of 5,000 household connections with meters
- e. Support for the implementation and operation of the project.

B. Institutional Arrangement and Responsibilities

a. The units involved

287. The implementation of Environmental Management Plan (EMP) for the project of “Investment of building Water Supply System in Nghi Son Economic Zone” needs to be in compliance with Vietnam’s regulations and ADB. The units involved in the project are:

i. The Project Management Unit (PMU)

288. The PMU is the head that connects with other related organizations at State level, provincial level and at local communities, and with units that are responsible for implementing and monitoring the EMP. To complete the tasks the PMU needs to hire 2 specialized officials. The PMU officially points skilled members as environmental officials who will monitor environment during the implementation of the project to ensure good completion of environmental plan given in the approved Environmental Impact Assessment.

289. The PMU needs to cooperate with public organizations to encourage people to take part in planning, managing, operating and monitoring the project. The residents will be aware of their roles in organizing environmental cleaning programs as well as monitoring the environment. They also need to comply with management plans and environmental protection plans during the implementation of the project. The PMU also needs to cooperate closely with the environmental officials of the DONRE, of the office of Natural Resources and Environment at districts and communes during management, operation and monitoring of the project

290. Key duties of the PMU are summarized as follows::

- Review and update the EMP during detailed design and engineering phase to ensure EMP meets detailed subproject designs;
- As part of the EMP update, ensure that public consultations that continue through subproject implementation document concerns of stakeholders situated downstream of intake points or in-stream construction sites;
- Ensure safeguard requirements of the final EMP are adequately described in the bidding documents (instruction to bidders) so that contractors can prepare their respective site-specific CEMP² based on the final EMP, and ensure criteria for evaluating contractor bids and awarding construction packages include relevant safeguard requirements of the final EMP;
- Ensure construction contractors successfully implement impact mitigation measures of EMP as part of their CEMPs

² Contractors Environmental Management Plan

- Implement the monitoring of indicators related to environmental issues of the project;
- Unannounced inspection in order to ensure the contractors are implementing measures for minimizing as given in the installation and construction contract;
- Periodically review reports of the construction management consultants (DDSC) to ensure the compliance with mitigation measures;
- Review reports of the DDSC on overall impacts of the project;
- Basing on reports of the DDSC, the PMU will submit reports to ADB and the DONRE on the compliance with environmental protection of the sub - project, This is a part of responsibilities of 6-month progress report of ADB;
- The PMU also needs to cooperate closely with related units being in charge of providing water and sanitation, collecting rubbish, etc.

291. Because there is a lot of work and it is required expertise when implementing the EMP, the PMU is not able to implement the job independently. During the project implementation, the PMU must hire environmental officials from an organization to support the EMP. The Environmental Management Consultants will be responsible for: (1) enhancing the capacity of construction management consultants to check the implementation of the EMP of the contractors; (2) encouraging communities to participate in the EMP; (3) monitoring environmental parameters to assess general impacts of the project; (4) establishing training courses on environment

ii. The Environmental Monitoring Agency (EMA)

292. The Environmental Monitoring Agency (EMA) is responsible for designing a detailed environmental monitoring program in accordance with regulations and procedures of Vietnam Government and ADB. After the environmental monitoring program is reviewed and approved by the PMU and ADB, the environmental management consultants will be responsible for monitoring the entire activities of the project to ensure that environmental safety policies of Vietnam Government and ADB are applied and supervised during the project implementation. The responsibilities of the environmental management consultants include:

- Ensure that the EMP approved and the deals of borrowing capitals related to environmental safety will be applied during the project implementation;
- Ensure that measures for minimizing environmental impacts are established as required in parts of the project
- Assess the effectiveness of minimizing measures that the contractors and the DDSC apply during the implementation, and propose the PMU on necessary improvement of safety and security;
- Periodically report in details to the PMU on situations of implementing the EMP during the project. In case of necessity, there can be studies on more detailed assessments and/or consulting the communities about hidden impacts and relevant minimizing measures;
- Establish standards, methods and forms to support the PMU and the DDSC to assess the progress of the contractors on implementing measures for minimizing environmental impacts;
- Support the PMU and the environmental officials to review and check detailed design and related important parts in the contract to ensure all of them are matched with the environmental policies and the requirements on monitoring and minimizing the impacts;

- Define and establish necessary environmental databases and plans to encourage communities to participate in Environment Management Plan monitoring process. Co-operate with The Department of Natural Resources and Environment (DONRE) and representatives of communities to support for monitoring the performance indicators of the agreed project;
- Establish and maintain the co-ordination with The Construction Management Consulting (DDSC) to ensure the obedience of related environment regulations, to practice monitoring methods and to reduce bad impacts on environment according to the instructions of the Project Management Unit. Methods and reporting procedures must be understood clearly and be disclosed with the working plan of the DDSC. These procedures also include recommendations of appropriate sanctions and proposed procedures to suspend building work once the contractors do not obey requirements of environmental protection and safety in construction;
- Hold discussions and contact periodically (once a quarter) with involved people and organizations (the Project Management Unit, the Contractors, the representatives of communities and other authorities) to collect feedback for construction and to adjust plans and environmental monitoring strategies to overall environment management.
- Implement measuring and sampling programs and monitor environmental criteria periodically (once in three months) during the contract performance of environment management.
- Develop training materials including contents specialising in environmental management and environmental monitoring for training the contractors, the construction supervisors, the construction consultants and related staff of the project management unit (environment officials and coordinators of the package) to perform their tasks.
- Conduct discussions under the instructions of the Project Management Unit with involved people and organizations (if necessary) to look for appropriate solutions for problems generating from sanitation issues.
- Support Construction Management Consultants (DDSC) to prepare and apply urgent plans if necessary for environmental damages or problems encountered during construction.
- Cooperate with the Project Management Unit and the Construction Management Consultants to provide environment management and instructions on reducing necessary impacts for the contractors.
- Support the Project Management Unit to establish and maintain the organizational structure of environmental management system, to monitor and report in collaboration with related local environmental management agencies.
- Provide support and assistance for training programs on environment and capacity building as required.
- Provide general guidance on the environment required by the Project Management to strengthen the overall effectiveness of the project

iii. Detailed Design and Supervision Consultant (DDSC)

293. The main task of the Detailed Design and Supervision Consultant (DDSC) is to monitor the order and basic procedures for construction including the compliance with the EMP, and to supervise the contractors' implementation of minimizing environmental impacts described in the Environmental Impact Assessment (EIA). The tasks will be specified in the Clauses of reference

of the DDSC and in the contract between the DDSC and the Project Management Unit (PMU), and must be reviewed by ADB with no objection. Under the guidance of the Project Management Unit (PMU), the main tasks of the DDSC in monitoring environment are

- Support and cooperate with the Environmental management consultants in establishing, collecting, and providing information of necessary environmental criteria and of work performance.
- Ensure that the construction process is conducted in full compliance with the EMP, with related criteria, and with the standard operation of the contract on monitoring and minimizing environmental impacts.
- Monitor the implementation of the mitigation measures of the contractor, promptly propose and implement interventions to improve mitigation measures to meet safety requirements on environmental management of the project.
- Prepare action plans/emergency plans to deal with environmental problems, emergencies and the damages that may occur during construction.
- Require the Project Management Unit to suspend a part or all of the construction work if they do not meet the requirements of labor safety and environmental protection agreed and specified in the contract.
- Regularly organize meetings with involved people and organizations to provide information of the plans and necessary programs of the project to raise awareness of environmental protection during the construction

iv. The contractors

294. The contractors are responsible for implementing measures to minimize the environmental impacts and to comply with the Environment Management Plan (EMP) approved during the construction and installation of the bidding packages of the project. When they prepare the technical dossier, the contractors approach and study the EIA report approved by the Project Unit. They also have to propose an environmental management plan including measures for protecting the environment and minimizing environmental impacts in accordance with the EIA report approved by the Project Unit.

295. The environmental management plan of the contractor will be submitted to the Project Management Unit and the Construction Management Consultants to review the changes (if any) related to legal issues (laws, decrees, circulars, and other regulations) and the possibility as well as the need for adjustment in each particular case in the field. The contractors will be subject to close supervision of the Project Management Unit (PMU), the Construction Management Consultants (DDSC), the environmental management consultants, of the environmental management agencies and the local communities about the compliance with the Environmental Management Plan (EMP) during the construction.

v. Thanh Hoa DONRE

296. The Thanh Hoa Environmental Protection Agency (under DONRE) will conduct random environmental monitoring and inspection before, during, and after construction, as well as in the event of emergencies. It will also review the monitoring reports of the EMA. If abnormalities are found, the DoNRE may impose fines and issue a notice of rectification with a specific deadline to the responsible entities. If complaints are formally received from the public through the People's Committee, The Thanh Hoa Environmental Protection Agency will carry out verification inspections, as described in the GRM.

297. Within three months after the construction completion or no later than one year, an environmental acceptance monitoring and audit report on the completion of the project components will be prepared by a qualified environmental institute, e.g., Technical Resources and Environment Co., Ltd One Member. The report will be reviewed and approved by the DoNRE and submitted to ADB.

298. The environmental monitoring, including the environmental benefit monitoring, will be incorporated into the project performance management system (PPMS) indicators for the project. Assisted by a local environment specialist, the PMU will be responsible for analysing and consolidating the data via their management information system. The PPMS will be designed to allow adequate flexibility to adopt remedial actions regarding the project design, schedules, activities, and development impact. At the start of the project, the PMB and consultants will develop comprehensive PPMS procedures for systematically generating the data on inputs and outputs of the project components, and agree on the environmental and related socioeconomic indicators to be used to measure the project impacts. The PMB will refine the PPMS framework, confirm the achievable goals, firm up the monitoring and recording arrangements, and establish the systems and procedures no later than 6 months after the loan takes effect.

b. Diagram approach in the management and environmental monitoring

299. The diagram of management and environmental monitoring and its role and responsibility are presented in figures and tables below.

Figure 13. Diagram approach to managing and monitoring environment.

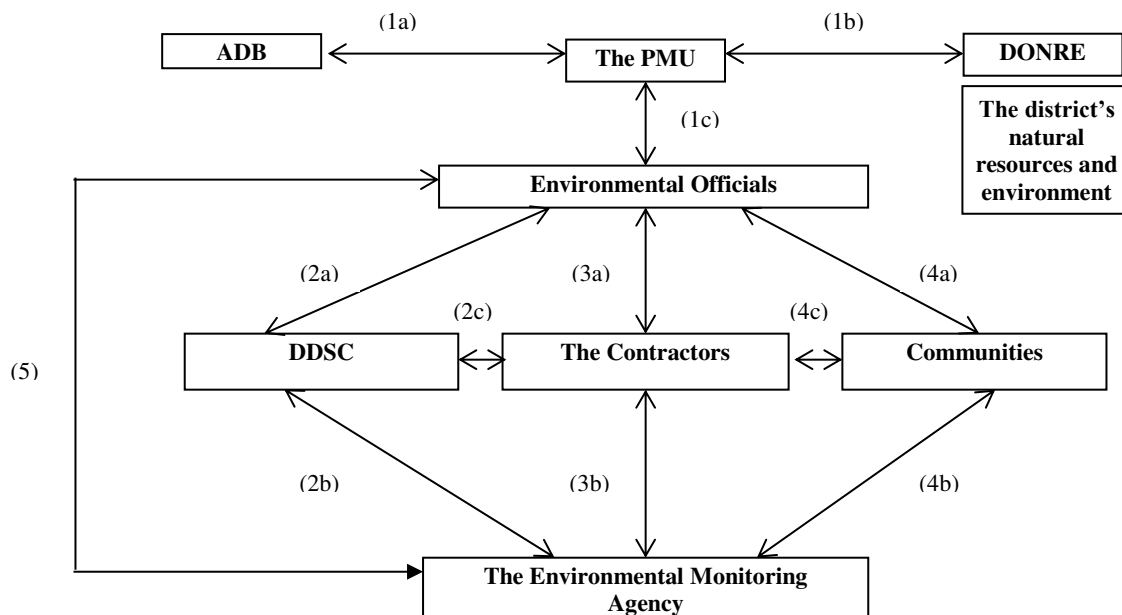


Table 43. Detailed explanation of the approach routes to the management plan and environmental monitoring

No	Route approach	Line diagram/responsibilities
1	(1a) (1b)	Basing on the report submitted quarterly by the Environmental Management Consultants, the Project Management Unit will be responsible for making periodic reports to submit ADB and the DONRE.
	(1c)	The Project Management Unit (PMU) not only arranges environmental officials to be specialised in supervising, managing, and implementing related tasks, but also directs the environmental management consultants to implement monitoring programs; provides hot line of environmental officials to meet the need of reflecting, proposing, and suggesting from the participants in environmental monitoring.
2	(2a)	The DDSC submit monthly the report on the Contractor's implementation of the measures for minimizing environmental impacts to the PMU; propose the PMU to suspend one part or all of the construction work if it does not meet the requirements on labor safety and environmental protection agreed and specified in the contract. In case of problems, call the hot line. The PMU reviews the periodic reports to ensure the compliance with minimizing measures.
	(2b)	The DDSC: support, and cooperate with the environmental management consultants to establish, collect, and provide information of necessary environmental criteria in the scene and the information of construction implementation. The Environmental Management Consultants: instruct the DDSC to supervise and make reports on scenic environmental management plan (SEMP); Strengthen the DDSC through a training program on environmental monitoring and a database of environmental monitoring results.
3	(3a)	The Contractors: Before starting the construction they need to prepare environmental management plans to manage environmental issues during constructing process of the Project, then submit the plans to the PMU for reviewing; During the construction, the contractors have to record daily diary that will be carried continuously until the end of the project. In case of problems, call the hot line. The PMU reviews the measures for minimizing the impacts of the contractors if there is any legal change or adjusts to each specific case in the scene, at the same time inspecting the contractors' diary to ensure the compliance with the measures for minimizing the impacts during the construction.
	(3b)	The Contractors: implement the environmental management plan during construction or operate their categories that they are in charge of; as well as recording daily diary until the end of the project. The Environmental management consultants: strengthen the contractors through a training program on environmental monitoring and a database of environmental monitoring results; suddenly inspecting the compliance with the measures for minimizing the impacts of the contractors including their recording daily diaries.
4	(4a)	Communities: are encouraged to take part in environmental management and to reflect factors polluting the environment during the construction. In case of problems: call the hot line. The Project Management Unit: encourages, supports and assists local communities to participate in environmental management in which the construction is implemented; reviews opinions and proposals of the communities to ensure the compliance with the measures for minimizing environmental impacts.
	(4b)	The communities: support and cooperate with the environmental management consultants to establish, collect, and provide information on necessary environmental criteria in the scene.

No	Route approach	Line diagram/responsibilities
		The environmental management consultants: strengthen the local communities and involved organizations through a document on environmental monitoring and a database of environmental monitoring results.
5	(5)	The environmental management consultants support the PMU to monitor the environmental management plan according to regulations and current procedures of Vietnam's policies; set up particular programs on monitoring environmental impacts of projects and on the implementation at identified location in detailed design file Basing on the reports submitted quarterly by the environmental management consultants, the PMU will be responsible for making periodic reports to submit ADB and DONRE.

C. Summary of Potential Impacts

300. The monitoring specifications described in Table 43 focuses on the potentially adverse environment-related impacts, based on the assessment presented in Chapter 4. Benefits associated with providing adequate and safe water supply will be monitored within the project's overall design framework (i.e., the project logical framework).

Table 44. Summary of key Potential Impacts from IEE

Construction Phase	
1)	Excavation work for the pipeline trenches will produce spoil; heaps of excavated soil beside the trench could obstruct community access, and erosion from spoil storage areas could silt up nearby streams and drains. Dry heaps could cause dust nuisance.
2)	Obstruction to traffic flow during raw water pipeline construction, exacerbated by the narrow road and work spaces: <ul style="list-style-type: none"> - Local residents could be cut off from the road due to the trench-building - Increased traffic of dump trucks carrying spoils to and from storage areas - Air pollution from excavation and transport equipment - Traffic hazard to pedestrians, especially school children and elderly
3)	Nuisance and public safety hazards caused by pipeline excavation and pipe-laying activities in urban areas and specifically for the tombs surrounding the WTP site.
4)	Accidental Detonation of unexploded ordnance (UXO) during pipeline excavations
Operation Phase	
1)	Hazard posed by water treatment process chemicals during operation, of which Chlorine is the most hazardous
2)	Disposal of water treatment sludge and wastes from WTP operation
3)	Increase in the volume of municipal wastewater generated.

301. The compensation for land clearance will be charged to the project management unit, under the supervision of the independent supervising and consulting unit. Funding for land clearance compensation is estimated at 24.89 billion VND.

Table 45. Environmental management plan

Project Activity	Potential Impact	Proposed Mitigation Measure	Location	Timing	Reporting	Estimated Cost (USD)	Responsibility	
							Supervision	Implementation
Pre-construction Detailed Design Phase								
Confirmation of required resettlement and temporary relocations	No community impacts	1. Affected persons well informed well ahead of project implementation.	At intake at Yen My Lake and Nam Canal, at WTP, at all treated water and raw pipeline, at BPS & along distribution network	Before subproject implemented	See resettlement plan	See resettlement plan	SONG CHU / PMU ³	Resettlement committees
Disclosure, & engagement of community	No community impacts	2. Implement information disclosure and activate grievance redress mechanism (see IEE)	At all construction sites.	Beginning of subproject	Quarterly	No marginal cost ⁴	SONG CHU	PMU
GoV approvals	No negative impact	3. Notify DoNRE of project initiation to ensure GoV EIA requirements approved, and obtain required project permits and certificates.	Entire subproject	Before construction	As required	No marginal cost	PPC & DDSC ⁵	PMU
Detailed designs	Minimize	4. Complete detailed designs of: 1) raw water intake and reservoir from Yen My Lake and Nam Canal to Huu Loc WTP; 2) new Huu Loc WTP; and 3) treated distribution network and raw distribution network that incorporate the following: a) updated review of raw water sources at Yen My Lake and Nam Canal to ensure that <u>sufficient and sustainable</u> supplies of <u>treatable</u> raw water will be available to water supply systems long after commissioning stage; b) re- confirm assertion of IEE that no critical habitat, rare or endangered flora or fauna, or cultural property or values will be affected by	(a-e), Entire subproject area: 1) raw water intake and PS; 2) Huu Loc WTP; 3) pipeline corridor 4) BPS and Treated and raw water distribution network	Before construction initiated	Once with detailed designs documents	No marginal cost		

³ Project Management Unit under SONG CHU; identified as Project Management Board (PMB) in IEE

⁴ No marginal cost indicates that costs to implement mitigation are to be built into cost estimates of bids of contractors

⁵ Detailed Design & Supervision Consultant

Project Activity	Potential Impact	Proposed Mitigation Measure	Location	Timing	Reporting	Estimated Cost (USD)	Responsibility	
							Supervision	Implementation
	negative environmental impacts	any component of the water supply systems; c) minimal acquisition of agricultural land d) no or minimal disruption to water supply, utilities, and electricity with contingency plans for unavoidable disruptions;					SONG CHU / DDSC	PMU
EMP	Minimize negative environmental impacts	5. Include all mitigation measures and monitoring requirements of EMP where necessary to meet detailed designs. 6. Identify all potential impacts of project and include in EMP. 7. Submit EMP with all potential impacts to ADB to review. 8. For the three components of subproject develop individual environmental management sub-plans for: a) Securing GoV approvals; b) UXO survey & removal; c) Forest clearing, tree/vegetation removal, & site restoration; d) Civil works; e) Cultural chance finds; f) Contaminated spoil identification & disposal; g) Construction materials acquisition, transport, & storage including borrow pit management; h) Erosion & river sedimentation control; i) Construction site drainage; j) Noise, dust & NOx, SOx, CO, CO ₂ emissions; k) Worker camp operation; l) Solid and liquid waste disposal; m) Hazardous chemical & waste management; n) Construction & urban traffic (especially along raw water pipeline); o) Utility and Power Disruption; p) Worker and public Safety (especially along raw water pipeline); q) Raw water quantity & quality sustainability; r) Training & capacity development plan; s) WTP chemicals & sludge management; and t) Treated water quality management.	Entire subproject	In parallel with completion of detailed designs	Once, as part of detailed design phase	No marginal cost	SONG CHU / DDSC	PMU

Project Activity	Potential Impact	Proposed Mitigation Measure	Location	Timing	Reporting	Estimated Cost (USD)	Responsibility	
							Supervision	Implementation
Develop bid documents	No negative environmental impact	<p>9. Ensure the EMP is included in contractor tender documents to enable contractors to develop their CEMP⁶, and that tender documents specify that implementation of CEMP must be included in cost estimates.</p> <p>10. The environmental management sub-plans identified in 11) above should be identified in the appropriate contractor tender documents, for the contractor to detail into CEMPs for their bidding documents.</p> <p>11. Specify in bid documents that contractor must have experience with implementing EMPs, and/or provide staff with EMP experience.</p>	All project areas	Before construction begins	Once for all tenders	No marginal cost	SONG CHU / DDSC	PMU / DDSC
UXO survey	Injured worker or public	12. Ensure military is consulted and clears areas where necessary.	All construction sites.	Before any clearing or excavation	Once	See Monitoring Plan below	PPC & military	military
Training & capacity development	No negative environmental impact	<p>13. Develop and schedule training plan for SONG CHU / PMU staff to be able to fully implement EMP, and manage implementation of mitigation measures by contractors.</p> <p>14. Create awareness and training plan for later delivery to contractors whom will implement mitigation measures.</p>	For all project areas	Before construction begins	After each training session	No marginal cost	DDSC	DDSC / SONG CHU
Procurement of Contractor(s)	No negative environmental impact	15. Ensure winning contractor bid(s) include a CEMP that addresses items 8 – 11 of the EMP ⁶ section above.	All project areas	Before contracts signed	Once	No marginal cost	SONG CHU / DDSC	SONG CHU / DDSC
Recruitment of workers	Community mischief, & sexually transmitted disease	16. Use local workers as much as possible, reducing #s of migrant worker	For all work locations	Throughout construction phase	After worker hiring stages	No marginal cost	SONG CHU / DDSC	Contractor's bid documents

⁶ Contractors Environmental Management Plan

Project Activity	Potential Impact	Proposed Mitigation Measure	Location	Timing	Reporting	Estimated Cost (USD)	Responsibility	
							Supervision	Implementation
Construction Phase – General Mitigations for all Components of Subproject								
Initiate EMP & sub-plans,	Prevent or minimize impacts	17. Initiate the EMP including individual management sub-plans for the different types of potential impacts identified in pre-construction phase. See sub-plan implementation guidance below.	For all construction sites	Beginning of construction	Once	No marginal cost	SONG CHU / DDSC	PMU & contractors
Obtain & activate construction permits and licenses	Prevent or minimize impacts	18. Contractors to comply with all statutory requirements set out by DoNRE for use of construction equipment, hazardous waste & chemicals management, and operation of construction plants, e.g., concrete batching.	For all construction sites	Beginning of construction	Once	No marginal cost	SONG CHU / DDSC	PMU & contractors
Worker camp operation	Pollution and social problems	19. Locate worker camps away from human settlements. 20. Ensure adequate housing and waste disposal facilities including pit latrines, garbage cans and recycling bins if services are available. 21. Exceeding prepared food should be offered to local charity (shelters/orphanage/food bank, temple). 22. A solid waste collection program must be established and implemented that maintains a clean worker camps 23. Locate separate pit latrines for male and female workers away from worker living and eating areas. 24. A clean-out or infill schedule for pit latrines must be established and implemented to ensure working latrines are available at all times. 25. Worker camps must have adequate drainage. 26. Local food should be provided to worker camps. Guns and weapons not allowed in camps. 27. Transient workers should not be allowed to interact with the local community. HIV Aids	All worker camps	Throughout construction phase	Monthly	No marginal cost	DDSC & PMU	contractor

Project Activity	Potential Impact	Proposed Mitigation Measure	Location	Timing	Reporting	Estimated Cost (USD)	Responsibility	
							Supervision	Implementation
		education should be given to workers. 28. Preservatives should be provided if such practice does not interfere with local belief or customs. 29. Camp areas must be restored to original condition after construction completed.						
Training & capacity	Prevention of impacts through education	30. Implement training and awareness plan for SONG CHU / PMU (Environmental staff) and contractors.	PMU offices, construction sites	Beginning of construction	After each event	No marginal cost	DDSC	DDSC & PMU
Tree and vegetation removal, and site restoration sub-plan	Damage or loss of trees, vegetation, and erosion of landscape	31. Restrict tree and vegetation removal to within designated RoWs. 32. Within RoWs minimize removals, and install protective physical barriers around trees that do not need to be removed. 33. All RoWs to be re-vegetated and landscaped after construction completed. Consult forestry department to determine the most successful restoration strategy and techniques. 34. Recuparate tree logs and make them available for local use.	All construction sites.	Beginning and end of project	Monthly	No marginal cost	DDSC / PMU	contractor
Civil works	Degradation of terrestrial resources	35. All construction sites should be located away forested, plantation, & agricultural areas as much as possible. 36. No unnecessary cutting of trees. 37. All construction fluids such as oils, and fuels should be stored and handled well away from forested and plantation areas. 38. No waste of any kind is to be discarded on land or in forests/plantations.	All construction sites	Throughout construction phase	Monthly	No marginal cost	DDSC & PMU	contractor
Civil works	Degradation of water quality & aquatic resources	39. Minimize earthworks & final area of foundation for intake in Yen My Lake and Nam Canal. 40. Yen My Lake and Nam Canal intake structures placement works should be done during dry season. 41. Excavation spoils and reprofiling activities of the banks at Yen My Lake and Nam Canal	All construction sites	Throughout construction phase	Monthly	No marginal cost	DDSC & PMU	contractor

Project Activity	Potential Impact	Proposed Mitigation Measure	Location	Timing	Reporting	Estimated Cost (USD)	Responsibility	
							Supervision	Implementation
		<p>should be done so the excess water does no disperse back into the river.</p> <p>42. Erosion channels must be built around aggregate stockpile areas to contain rain-induced erosion.</p> <p>43. Plastic tarps should be used to cover piles to avoid drying and erosion of the piles.</p> <p>44. Earthworks should be conducted during dry periods.</p> <p>45. All construction fluids such as oils, and fuels should be stored and handled well away from surface waters.</p> <p>46. No waste of any kind is to be thrown in surface waters.</p> <p>47. No washing or repair of machinery near surface waters.</p> <p>48. Pit latrines, preferably portable toilets, to be located well away from all surface waters.</p> <p>49. No unnecessary earthworks in or adjacent to all water courses.</p> <p>50. No aggregate mining from Yen My Lake and Nam Canal, or from nearby lakes.</p> <p>51. All existing irrigation ditches, canals and channels to be protected the same way as rivers and lakes.</p>						
Cultural chance finds	Damage to cultural property or values & chance finds	<p>52. As per detailed designs all civil works should be located away from all tombs, cultural property and values including cemeteries and pagodas.</p> <p>53. Tombs at WTP should be identified by a visible flag so they are seen by machinery operators.</p> <p>54. Chance finds of valued relics and cultural values should be anticipated by contractors. Site supervisors should be on the watch for finds.</p> <p>55. Upon a chance find all work stops immediately, find left untouched, and PMU and CPC notified.</p>	All construction sites	At the start , and throughout construction phase	Monthly	No marginal cost	DDSC & PMU	contractor

Project Activity	Potential Impact	Proposed Mitigation Measure	Location	Timing	Reporting	Estimated Cost (USD)	Responsibility	
							Supervision	Implementation
		<p>If find deemed valuable, provincial cultural authorities must be notified.</p> <p>56. Work at find site will remain stopped until authorities allow work to continue.</p>						
Construction materials acquisition, transport, and storage sub-plan	Pollution, injury, increased traffic, disrupted access	<p>57. All borrow pits and quarries should be approved by DoNRE.</p> <p>58. Select pits and quarries in areas with low gradient and as close as possible to construction sites.</p> <p>59. Required aggregate volumes must be carefully calculated prior to extraction to prevent wastage.</p> <p>60. Pits and quarries should not be located near surface waters, forested areas, critical habitat for wildlife, or cultural property or values.</p> <p>61. Although it should be avoided at all costs, if aggregate mining from fluvial environments is required small streams and rivers should be used, and dry alluvial plains preferred.</p> <p>62. All topsoil and overburden removed should be stockpiled for later restoration.</p> <p>63. All borrow pits and quarries should have a fence perimeter with signage to keep public away.</p> <p>64. After use pits and quarries should be dewatered and permanent fences installed with signage to keep public out, and restored as much as possible using original non-organic overburden excavation spoils.⁷</p> <p>65. Unstable slope conditions in/adjacent to the quarry or pit caused by the extractions should be rectified with tree planting.</p> <p>66. Define & schedule how materials are extracted from borrow pits and rock quarries, transported,</p>	For all construction areas.	Throughout construction phase	Monthly	No marginal cost	DDSC / PMU	Contractor(s)

⁷ Note : Organic matter buried at a certain depth preventing oxygen to infiltrate the soil will degrade while emitting methane which is 21 times stronger than carbon dioxide as a greenhouse gas

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Project Activity	Potential Impact	Proposed Mitigation Measure	Location	Timing	Reporting	Estimated Cost (USD)	Responsibility	
							Supervision	Implementation
		79. Install temporary storm drains or ditches for construction sites. 80. Ensure existing road & street drains do not become plugged with construction waste ⁸ . 81. Protect surface waters from silt and eroded soil.						
Solid and liquid construction waste sub-plan	Contamination of land and surface waters from construction waste	82. Management of general solid and liquid residual matter of construction will follow GoV regulations, and will cover, collection, handling, transport, recycling, and disposal of waste created from construction activities and worker force. 83. Areas of disposal of solid and liquid residual matter to be determined by DoNRE. 84. Disposed of residual matter should be catalogued for type, estimated weigh, and source. 85. Construction sites should have large garbage bins. 86. A schedule of solid and liquid residual matter pickup and disposal must be established and followed that ensures construction sites are as clean as possible. 87. Solid residual matters should be separated and recyclables sold to buyers in community. <u>Hazardous Waste</u> 88. Collection, storage, transport, and disposal of hazardous waste such as used oils, gasoline, paint, and other toxics must follow GoV regulations. 89. Wastes should be separated (e.g., hydrocarbons, batteries, paints, organic solvents) 90. Wastes must be stored above ground in closed, well labeled, ventilated plastic bins in good	All construction sites and worker camps	Throughout construction phase	Monthly	No marginal cost	DDSC, PMU, & DoNRE	contractor

⁸ Waste: A WASTE is the end product which can't be recycled, reused or transformed and needs to be sent to a landfill or a furnace. The term RESIDUAL MATTER fits best where recycling material are either collected separately from the wastes or when they are gathered with the actual wastes.

Project Activity	Potential Impact	Proposed Mitigation Measure	Location	Timing	Reporting	Estimated Cost (USD)	Responsibility	
							Supervision	Implementation
		<p>condition well away from construction activity areas, all surface water, water supplies, and cultural and ecological sensitive receptors.</p> <p>91. All spills must be cleaned up completely with all contaminated soil removed and handled with by contaminated spoil sub-plan.</p> <p>92. During construction, a prevention kit consisting of heavy weight oil only absorbent and / or cat litter should be available to prevent infiltrations much as possible.</p>						
Noise and dust sub-plan	Dust Noise	<p>93. Regularly apply wetting agents to exposed soil and construction roads especially in high density areas.</p> <p>94. Cover or keep moist all stockpiles of construction aggregates, and all truckloads of aggregates.</p> <p>95. Minimize time that excavations and exposed soil are left open/exposed. Backfill ASAP.</p> <p>96. As much as possible restrict working time between 07:00 and 17:00. In particular are activities such as pile driving.</p> <p>97. Maintain equipment in proper working order</p> <p>98. Replace unnecessarily noisy vehicles and machinery.</p> <p>99. Vehicles and machinery to be turned off when not in use.</p> <p>100. Construct temporary noise barriers around excessively noisy activity areas where possible and if the impacts of constructing such a barrier is lesser then the noise impact itself.</p>	All construction sites.	Fulltime	Monthly	No marginal cost	DDSC & PMU	contractor
Utility and power disruption sub-plan	Loss or disruption of utilities and services such as water supply	<p>101. Develop carefully a plan of days and locations where outages in utilities and services will occur, or are expected.</p> <p>102. Contact local utilities and services with schedule, and identify possible contingency back-up plans for outages.</p> <p>103. Contact affected community to inform them of</p>	All construction sites.	Fulltime	Monthly	No marginal cost	DDSC, PMU & Utility company	contractor

Project Activity	Potential Impact	Proposed Mitigation Measure	Location	Timing	Reporting	Estimated Cost (USD)	Responsibility	
							Supervision	Implementation
	and electricity	planned outages. 104. Try to schedule all outages during low use time such between 24:00 and 06:00.						
Erosion sub-plan	Land erosion	105. Berms, and plastic sheet fencing should be placed around all excavations and earthwork areas. 106. Earthworks should be conducted during dry periods. 107. Maintain a stockpile of topsoil for immediate site restoration following backfilling. 108. Protect exposed or cut slopes with planted vegetation, and have a slope stabilization protocol ready. 109. Re-vegetate all soil exposure areas ASAP.	All construction sites	Throughout construction phase	Monthly	No marginal cost	DDSC & PMU	contractor
Worker and public safety sub-plan	Public and worker injury, and health	110. Proper fencing, protective barriers, and buffer zones should be provided around all construction sites. 111. Sufficient signage and information disclosure, and site supervisors and night guards should be placed at all sites. 112. Worker and public safety guidelines published by MoLISA should be followed. 113. Population near blast areas should be notified 24 hrs ahead, and evacuated well before operation. Accepted GoV blast procedures and safety measures implemented. 114. Speed limits should be imposed on all roads used by construction vehicles. 115. Standing water suitable for disease vector breeding should be filled in. 116. Worker education and awareness seminars for construction hazards should be given. A construction site safety program should be developed and distributed to workers. 117. Appropriate safety clothing and footwear should be mandatory for all construction	All construction sites.	Fulltime	Monthly	No marginal cost	DDSC & PMU	contractor

Project Activity	Potential Impact	Proposed Mitigation Measure	Location	Timing	Reporting	Estimated Cost (USD)	Responsibility	
							Supervision	Implementation
		workers. 118. Adequate medical services must be on site or nearby all construction sites. 119. Drinking water must be provided at all construction sites. 120. Sufficient lighting be used during necessary night work. 121. All construction sites should be examined daily to ensure unsafe conditions are removed.						
Construction and local vehicle traffic sub-plan	Traffic disruption, traffic block, accidents, public injury	122. Schedule construction vehicle activity during light traffic periods. Create adequate traffic detours, and sufficient signage & warning lights at all construction locations. 123. Post speed limits, and create dedicated construction vehicle roads or lanes. 124. Inform community of location of construction traffic areas, and provide them with directions on how to best co-exist with construction vehicles on their roads. 125. Increase the number of pedestrian crossings away from construction areas. 126. Increase road and walkway lighting. 127. Organize the dump trucks travelling to avoid as much as possible the circulation of empty loads on the roads. 128. Provide alternate routes and / or work planned locations to help emergency response units to plan their alternate routes	All construction sites	Fulltime	Monthly Weekly	No marginal cost	DDSC & PMU	contractor
Specific Mitigations of intake and Huu Loc WTP construction								
Construction of WTP	Minimal negative environmental impacts	129. Mitigation measures to address potential impacts of WTP all addressed by the general subproject mitigations listed above. 130. Specific respect measures must be applied for the management of tombs and burial grounds.	Land around WTP site	During construction	Monthly	No marginal cost	DDSC / PMU	contractor
Excavation and	Minimal	Specific attention to be given to the protection of the following values:	Reservoir at WTP	During	Monthly	No marginal	DDSC / PMU	contractor

Project Activity	Potential Impact	Proposed Mitigation Measure	Location	Timing	Reporting	Estimated Cost (USD)	Responsibility	
							Supervision	Implementation
refitting of the reservoirs	negative environmental impacts	131. a) erosion and spillage of spoils through Yen My Lake and Nam Canal intake installation & water quality of Yen My Lake and Nam Canals; b) public & worker safety.		construction		cost		
Specific Mitigations for Construction of Treated and Raw Water Supply Pipelines								
Construction of pipeline	Minimal negative environmental impacts	132. Special attention to be given to sub-plans identified item #8 and 107 to 109. Specific attention to be given to the protection of the following values: a) public & worker safety; and b) traffic and community/commercial disruption along to Booster Pumping Station.	Pipeline corridor	During construction	Monthly	No marginal cost	DDSC / PMU	contractor
Specific Mitigations for Construction of Booster Pumping Station, Office and Treated Water distribution network								
Construction of Booster Pumping station	Minimal negative environmental impacts	Mitigation measures to address potential impacts of BPS are the same as the WTP construction and found in the general subproject listed above.	BPS sites.	During construction	Monthly	No marginal cost	DDSC / PMU	contractor
Construction of treated water supply distribution system	Minimal negative environmental impacts	133. Mitigation measures to address potential impacts of distribution network are addressed by the mitigations identified for the treated water pipeline above.	End user property, roads, and public area	During construction	Monthly	No marginal cost	DDSC / PMU	contractor
Post-construction Operation of Water Supply System								
Treated water supply	Unsustainable quantity or quality of treated water	134. Develop and implement O&M manual for all equipment and operations of WS system which includes regular maintenance of treatment system components, and materials supply to ensure treated water production (m ³ /day) always meets WTP design specifications. Incorporate contingency and back-up plans for planned and unplanned system shutdowns. 135. Establish a regular treated water quality monitoring program to ensure the quality of treated water meets original WTP design specifications. Incorporate contingency and response plans to address episodes of	Entire WS system At WTP outlet and at select locations along distribution	Quarterly, and as needed	As needed	No marginal cost	SONG CHU / DDSC	SONG CHU

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Project Activity	Potential Impact	Proposed Mitigation Measure	Location	Timing	Reporting	Estimated Cost (USD)	Responsibility	
							Supervision	Implementation
		decreased treated water quality, including public notification. (See Environmental Monitoring Plan below). 136. As part of #131 coordinate with Dept of Health for them to periodically monitor treated water quality to ensure it meets potable quality standards	network					EPRC / DoH
Operation of raw & treated water pipelines	Local flooding from ruptures	137. As part of implementation of O&M manual for entire WS system instate a regular inspection program of all pipeline networks starting at intake at Yen My Lake and Nam Canal to PS, to BPS, than to WTP and then entire distribution network with focus on junctions and end-user connections.	At all pipeline locations	Quarterly, and as needed	As needed	No marginal cost	SONG CHU / DDSC	SONG CHU
Operation of WTP	Chemical spills, and pollution from solid and domestic waste	138. As part of O&M manual provide clear methods and procedures for safe handling and storage of planned treatment chemicals defined by poly-aluminum chloride (PAC), soda, and chlorine in designated chemical house and chlorine house on WTP property, including spills action plan. 139. With O&M manual define and implement a formal solid and domestic waste collection and disposal protocol for all WTP activities.	At WTP	Continuously	As needed	No marginal cost	SONG CHU	SONG CHU
Production of WTP sludge	Contamination of environment	140. Review and clarify with DN DoNRE the appropriate landfill location to dispose of the planned dried sludge produced at the WTP. 141. Ensure planned sludge management system at WTP is maintained in good order, and can than accommodate more production capacity of WTP. 142. Ensure sludge is covered when transported to designated landfill. 143. Never dump or temporarily store sludge on lands outside landfill site, WTP property, or near water courses. 144. Develop and implement regular sludge quality	At WTP	Continuously	As needed	No marginal cost	SONG CHU / DoNRE	SONG CHU

Document : Initial Environmental Examination Report

MFF0054-VIE: PFR3 – Nghi Son Subproject – Nghi Son Economic Zone, Thanh Hoa province

Project Activity	Potential Impact	Proposed Mitigation Measure	Location	Timing	Reporting	Estimated Cost (USD)	Responsibility	
							Supervision	Implementation
		monitoring to document sludge quality (See Environmental Monitoring Plan)						
Production of treated water	Wastewater production too much for city wastewater discharge areas	145. Review and clarify wastewater loads generated from treated water from Nghi Son economic zone and Huu Loc WTP can be handled by planned future capacity wastewater collection and treatment systems for Nghi Son economic zone.	At WTP	Periodically	As needed	No marginal cost	SONG CHU / DoNRE	SONG CHU
Operation of entire WS system,	Worker and public injury	146. Educate workers in workplace safety of WS system operation according to MoLISA regulations. Prevent public access to SP and WTP property, Yen My Lake and Nam Canal intake area, and all pipeline areas with fencing and appropriate signage. 147. Enforce WTP truck drivers to follow speed limits on roads and highways. Provide adequate signage informing public of WTP truck traffic routes, and pipelines service routes. 148. Ensure all WS system vehicles in good working order.	WTP and all pipeline property WTP area & road to landfill site All facilities	Continuously	As needed	No marginal cost	SONG CHU	SONG CHU

XII. ENVIRONMENT MONITORING PROGRAM

A. Environment monitoring program

302. The environmental monitoring requirements identified in the IEE were carried forward and expanded with more detail into a comprehensive monitoring plan (Table 44) that addresses both environmental effects and performance monitoring (Table 45). The monitoring plan focuses on all three phases (pre-construction, construction, post-construction operation) of the project and provides environmental indicators, the sampling locations & frequency, method of data collection, responsible parties, and the estimated costs.

303. The purpose of the monitoring plan is to determine the effectiveness of the impact mitigations, and to document any unexpected positive or negative environmental impacts of the subproject. The PMU will be required to oversee the implementation of environmental monitoring plan by the EMA. Similar to the mitigation plan, the monitoring plan will need to be updated at the detailed design stage to ensure it meets the monitoring needs of the detailed designs of the subproject

304. The monitoring budget below covers: (a) follow-up perception surveys and consultations with local residents to be commissioned by the PMU, preferably with the firm that conducted the baseline environment/site survey and facilitated the public consultations for the IEE; (b) surface water, groundwater and air quality monitoring during construction; (c) survey of the pipeline trench route to check that there are no UXO that might endanger construction workers; (d) a local environment specialist to provide intermittent support to the PMU (in preparing survey TORs, assessment of water and air quality sampling results, drafting of safeguard provisions to be incorporated in construction tender documents and contracts, preparing reports to the Thanh Hoa PC and DoNRE); and (e) cost of orientation-training for PMB staff and community leaders on managing environmental impacts of pipeline construction and related safeguards (to be facilitated by the environment specialist).

305. During the operation of the new water treatment plant, water quality monitoring of drinking water taps at various locations in the new or expanded Song Chu service areas will be done routinely by the Environmental Protection Agency of the DoNRE in compliance with Vietnam regulations (with reference to quality standards for drinking water under TCXDVN 33:2008/BXD) and using the agency's own budget.

B. Compliance Monitoring & Reporting

306. Regular reporting on the implementation of mitigation measures and on monitoring activities during construction phase of the project is required as indicated in Table 50.

307. Construction contractors are required to submit brief monthly reports on environmental issues and mitigation activities to the PMU. The PMU must prepare quarterly reports on the EMP to the EA which include input from regular meetings with public stakeholders. The EA must prepare biannual reports on activity and effectiveness of EMP to ADB.

308. Environmental monitoring reports will be prepared in parallel quarterly for the PMU/EA by the monitoring agency. The reports will table all indicators measured from the monitoring plan of EMP, and will include relevant GoV environmental quality standards (i.e., QCVN & TCVN).

309. A template for monitoring process is presented in Annex 3.

Table 46. Environment monitoring contents of the project (places and a number of samples according to progress of each project package)

Environmental Indicators	Location	Means of Monitoring	Frequency	Reporting	Responsibility		Estimated ⁹ Cost (USD)
					Supervision	Responsibility	
Pre-construction Phase – Update Baseline Conditions							
Update baseline on presence of rare & endangered fauna & flora, and critical habitat that will be affected by raw water pipeline construction and operation. Include aquatic resources of affected reaches of Yen My Lake and Nam Canal.	Yen My Lake and Nam Canal intake and pipeline corridor in non-developed areas.	Review of existing data and information supplemented by original surveys as required.	Once	Once	DDSC & Song Chu	EMA	TBD. (for new survey)
A) Noise: Leq, L50, Lmax B) Air quality: dust, CO, NOx, SOx, HC,noise, wind, and vibration levels to supplement baseline air quality data collected during PPTA and reported in IEE C) Surface water quality: TSS, heavy metals (As, Cd, Pb,) oil and grease, total & E. coliform, pH, DO, COD, BOD ₅ , temperature, NH ₃ , and other nutrient forms of N & P. sampled at Yen My lake and Nam Canal station during PPTA & reported in IEE.	Representative sites of heavy civil & earthwork including along truck routes At raw water intake at Yen My lake and Nam Canal	Using field and analytical methods described in QCVN and TCVN standards for ambient air and surface water quality sampling & analysis.	(B-C) five locations, one day one location in one day, 3 measurements in an hour	One baseline supplement report before construction phase starts	DDSC & PMU	EMA	A) \$14 + collection. B) \$286 + collection. C) \$180 + collection.
Inventory of present and past land uses that could cause contaminated soil.	At all excavation sites, including borrow pits	Survey methods described in QCVN and TCVN standards for land use.	Once	Once	DDSC & PMU	EMA	TBD
Analysis of soil quality if required from above (heavy metals (As, Cd, Pb, oil & grease, hydrocarbons).	Possible contaminated lands all sites	Use field and analytical methods described in QCVN and TCVN standards for soil quality sampling & analysis.	D): Once if needed	Once	DDSC & PMU	EMA	TBD
Presence of UXO	Potentially located throughout project area	Military to survey and sweep affected areas of UXO	Once	Once	Song Chu	military	TBD.

⁹ Estimated costs to be updated at detailed design stage .

Environmental Indicators	Location	Means of Monitoring	Frequency	Reporting	Responsibility		Estimated ⁹ Cost (USD)
					Supervision	Responsibility	
Updated community stakeholder comments & concerns of subproject	Public consultation sites with same stakeholders consulted during IEE	Same format used in IEE for obtaining stakeholder input to subproject	At least once & in conjunction with Grievance Redress Mechanism	For each event	PPC / Song Chu	PMU	TBD.
Construction of both Intakes, Raw Water Pipelines, Huu Loa WTP, and Treated Water Distribution Network							
A) Noise: Leq, L50, Lmax B) Air quality: dust, CO, NOx, SOx, HC,noise, wind, and vibration levels C) Surface water quality: TSS, heavy metals (As, Cd, Pb,) oil and grease, total & E. coliform, pH, DO, COD, BOD ₅ , temperature, NH ₃ , and other nutrient forms of N & P. D) Survey and Analysis of soil quality (heavy metals (As, Cd, Pb, Hg, Mn), hydrocarbons. E) Ground water quality monitoring: Implementation of suspected and / or in case of problems or complaints F) Domestic and construction solid waste inside & outside construction sites G) Public comments and complaints H) Incidence of worker or public accident or injury	A) For Project items under construction during monitoring time, at the baseline environmental monitoring locations; and other environmentally sensitive points as proposed by EMA B-C The location of monitoring the environment (map the environmental sampling) for the construction and operation of sensitive positions at the time of the DDSC's proposed) D-H): along all component of the project	A – C : Using field and analytical methods described in QCVN and TCVN standards for ambient air and surface water quality monitoring. Include visual observations of dust and noise from contractor & public reports. D-F) Visual observation G) Information transferred by telephone hotline number H) regular reporting by contractors/PMU	A) Quarterly. 1 location/day. 3 times/h. Measure noise only one hour per day B): Quarterly at five locations C): Quarterly at four locations D-E) Once before start of excavation F) Monthly G) Continuous public input H) Continuous	A) Quarterly B-C)Twice per year D-H) Quarterly	(A - F):		A) \$56 /yr + collection B)\$1140 /yr + collection C) \$576. /yr + collection D) With A-C (no marginal cost) E) TBD F-G-H) No marginal cost
					DDSC / PMU	EMA	
					E & F) & daily observations:		
					PPC / Song Chu	PMU / DDSC	
Operation of WTP & Pipeline Networks							
Air quality: dust, noise and vibration levels	At WTP	Using field and analytical methods described in QCVN & TCVN standards for ambient air quality monitoring.	Quarterly for 1 years	Biannual	Song Chu		\$1297 / yr + collection
Worker & public injury associated with WTP & pipeline network	On property of WTP, pipelines, and pump stations	Regular record keeping	Continuously	For each event	Song Chu		No marginal cost

Environmental Indicators	Location	Means of Monitoring	Frequency	Reporting	Responsibility		Estimated ⁹ Cost (USD)
					Supervision	Responsibility	
Treated water quality: total & faecal coliform, pH, DO, NH ₃ , NO ₃ , NO, chlorine, PAC, NaCl, and heavy metals (As, Cd, Pb,).	At WTP & random user locations along distribution network	Using field and analytical methods described in QCVN & TCVN standards for water quality monitoring, and parameters of QCVN 14:2008/BTNMT	Biannually, or when public complaint arises	For each event	Song Chu / DoNRE / MoH		TBD
WTP sludge quality: ToC, heavy metals (As, Cd, Pb,), coliforms, pH, BOD, nutrients (N&P), PAC, chlorine,	After removal of sludge from reservoir and before disposal at designated landfill or site .	Using field and analytical methods described in QCVN & TCVN standards for water quality monitoring	Quarterly for 5 years	Biannually	Song Chu		TBD
Public complaints of operation of WTP, drinking water availability & quality, and malfunctions with pipelines (e.g., leaks).	At all sites	Regular record keeping	Continuously	Biannually	Song Chu		TBD
Erosion follow up along the project	At all sites	Photographical record of sloped sites	1 year after completion, 1 year after correction if needed	Annually, once if no problems are detected	Song Chu		TBD
	Specifically at Yen My lake and Nam Canal intakes and in major waste water discharge sites	Photographical record of connecting pipe with ground	Biannually and after storm surges	Biannually			TBD

310. In addition to the monitoring costs identified in the table above, the following costs will be added:

- Costs for a local environment specialist to provide intermittent support to the PMU (in preparing survey TORs, assessment of water and air quality sampling results, drafting of safeguard provisions to be incorporated in construction tender documents and contracts, preparing reports to the Thanh Hoa PPC and DoNRE);
- Cost of orientation-training for PMB staff and community leaders on managing environmental impacts of pipeline construction and related safeguards (to be facilitated by the environment specialist).
- Cost for environmental audit after project completion;

Table 47. Calculating the total number of mud, water and air samples taken and analysed in the environment monitoring process during the constructing period of the project

Construction items	Total construction time	Total monitoring sessions	Number of surface water (a session)	Number of soil samples (1 session)	Number of air samples (1 session)	Total number of surface water samples/session	Total number of mud samples	Total number of air samples
Water pipelines	24	9	4	0	3	36	0	27
Water treatment plant	24	9	0	0	2	0	0	18

311. All the expenditure for implementing measures to minimize the impacts on the environment in the constructing period is included in the constructor's contracts.

312. Expenses of carrying out activities and paying salary for the staff of Board of Project Management are included in project management expenditure of Board of Project Management.

313. Expenses for implementing EMP of construction monitoring consultants (DDSC) are included in the construction monitoring contracts

314. The participation of the community to the implementation progress of EMP is based on voluntary contribution and for the benefits of the community and their families. Consequently, these participants are not paid for supervising EMP. However, the expenses of materials, equipment's and tools used in the monitoring activities as well as a small amount of money paid for some responsible representatives appointed by local residents to participate in those activities should be arranged. According to the stipulation of Decision No. 80/2005/QĐ-TTg about Regulations on monitoring public investment issued by the Prime Minister on 4/18/2005, and the Joint Circular guiding the implementation of Decision No. 80/2005/QĐ-TTg, "the supported expenditure for monitoring public investment in the area of a commune/ ward is balanced in the estimated expenditure of Fatherland Front Committee of that commune / ward and is guaranteed by commune's/ward's budget; supported expenses for activities such as propagandizing, opening classes to train, guide, review partially, summarize the monitoring public investment in the level of a district or a province are balanced in the estimated expenditure of Fatherland Front Committee of that district or province and guaranteed by that district's /province's budget".

315. As a result, all the estimated expenditure for implementing EMP in the following table is calculated for the expense employing Environment Monitoring Consultants in order to implement and complete all the tasks of Environment Monitoring Consultants as well as open the training courses listed in this report.

Table 48. Estimated expenditure for the environment protection project

No.	Tasks	Expenses
1	Processing mud sediments at treatment station	40 millions/month
2	Processing waste water, living waste from workers daily activities in operating period	20 millions
3	Planting trees at treatment stations	120 millions
4	Expense for Explosion Protection (fire extinguishers, fire hydrants, alarming lamps)	10 millions
5	Lake contains wastewater and sludge	467 millions
6	Recover roads	3,9 billions

Table 49. Costs estimated for hiring the environmental management consultants for implementing the Environmental Management Plan (EMP) and organizing training course during the construction phase of the project (exchange rate: 1 USD = 21036 VNĐ)

No	Contents	Unit	Quantity	Price (VNĐ)	Amount (VNĐ)	Amount (USD)
1	Expert cost (salaries, accommodation, work, travel)	The monitoring	9		290,000,000	13785.6
2	Training course	Classes	5	5,720,000	28,600,000	1359.6
3	Stationery	The monitoring	9	800,000	7,200,000	342.1
4	Offices, communications	The monitoring	9	5,000,000	45,000,000	2139.2
5	Costs of the analysis of environmental samples					
5.1	Water samples	Samples	36	758,000	27,288,000	1297.3
5.2	Air water	Samples	45	1,305,000	58,725,000	2792.3
6	Costs of management (25%)				114,203,250	5521.9
7	VAT(10%)				57,101,625	2208.7
Total costs of environmental monitoring					628,117,875	
Total costs of environmental monitoring					629,000,000	30,000

Table 50. Costs for the analysis of environmental monitoring during the construction phase and the first year of operation (exchange rate: 1 USD = 21036 VND)

Stt	Analysis's Target	Price (VND)	Volume (M3)	Amount (VND)	Amount (USD)
I Air samples					
1	TSP	500.000	45	22,500,000	1069.6
2	CO	95.000	45	4,275,000	203.2
3	NO2	95.000	45	4,275,000	203.2
4	SO2	95.000	45	4,275,000	203.2
5	HC	320.000	45	14,400,000	684.5
6	Noise	160.000	45	7,200,000	213.9
7	Microclimate	40.000	45	1,800,000	85.5
II Groundwater/ sewage samples					
1	Temperatures	3.000	36	108,000	5.1
2	pH	40.000	36	1,440,000	68.5
3	DO	80.000	36	2,880,000	136.9
4	TSS	60.000	36	2,160,000	102.7
5	BOD5	95.000	36	3,420,000	162.6
6	COD	100.000	36	3,600,000	171.1
7	Oil	300.000	36	10,080,000	513.4
8	Coliform	80.000	36	2,880,000	136.9
Total costs of sampling analysis				86,013,000	3960.3

c. Training plan for the environmental management consultants

316. The PMU needs to cooperate with the environmental management consultants to open training programs to enhance the knowledge and experience in managing and monitoring the environment. In the terms of reference of the environmental management consultants there must be tasks to prepare a detailed action plan and training materials for participants in managing and monitoring environment. These training materials are prepared by the environmental management consultants at an early stage of mobilizing the environmental management consultants and need to be approved in contents by the PMU and ADB.

317. Participants include coordinators of the package, environmental officials, communities of the PMU, the construction management consultants, construction and installation contractors, local authorities at the place where the project is implemented, and representatives of the residents in the project area.

318. Time and content of the training courses will be discussed with the PMU to match with scale, extent and progress of the project.

Table 51. Training programs on environment

I. Objects	The Project Management Unit (PMU)
Training course	Monitoring and reporting environment
Participants	Environmental officials and environmental management officials
Training frequency	Immediately after the starting of the project, updating the implementation process on demand
Time	Presentation in 1 day
Contents	General management of environment is related to the projects including requirements of the capital lenders and the DONRE, coordinating with parties of rights and responsibilities associated

	<p>Environmental monitoring for the project includes:</p> <ul style="list-style-type: none"> ○ Requirements in environmental monitoring; ○ Monitor and implement measures for minimizing impacts; ○ The participation of the communities in environmental monitoring. <p>Instruct and monitor the contractors, the DDSC and representatives of the communities in environmental monitoring</p> <ul style="list-style-type: none"> ○ Forms used in the process of environmental monitoring. ○ Quick response to risks and control risks. ○ Ways to receive and submit forms.
Responsibilities	The environmental management consultants, the project management unit
II. Objects	THE DDSC, THE CONTRACTORS, THE COMMUNE/WARD AUTHORITIES, REPRESENTATIVES OF COMMUNITIES
Training course	Implementation of measures for minimizing
Participants	The DDSC; managers of construction, environmental officials of contractors; representatives of communes and ward and of the residents
Training frequency	Immediately after giving bidding package to the contractors, updating on demand
Time	Presentation in 1 day
Contents	<ul style="list-style-type: none"> ○ Primary work of monitoring the overall environment ○ Requirements in environmental monitoring; ○ Responsibilities of the contractors and the DDSC; ○ Contents and methods of environmental monitoring; ○ Quick response to risks and control risks; ○ Introduce monitoring forms and instruct how to fill the forms and report problems; ○ Make and submit the reports.
Responsibilities	The PMU, the environmental management consultants
III. Objects	WORKERS
Training course	Safe environment and sanitation
Participants	Representatives of the workers who work directly with participants of the project
Training frequency	Immediately after the starting of the construction, updating on demand
Time	Presentation in 1 day and presentation at the scene in 1 day
Contents	<ul style="list-style-type: none"> ○ Present primarily issues of safety and environmental protection. ○ Workers' tasks; ○ Management of safety and environmental sanitation at work ○ Measures for minimizing applied at work; ○ Measures for safety of electricity, transportation, air pollution, and mechanics. ○ Measures for dealing with emergency
Responsibilities	The contractors, the PMU, the environmental management consultants

XIII. COMMITMENT OF THE PROJECT OWNER

319. During the whole process of project operation, the contractors commit to comply with the regulations of Vietnam Environmental Protection Law, which includes: Decrees 80/2006/NĐ-CP and 21/2008/NĐ-CP issued by government on February 28th, 2008 about amending and supplementing some points in the decree 80/2006/NĐ-CP on August 9, 2006 on detailed regulations and adapting directions of some points in the Law of Environmental Protection; the Decree 29/20011/NĐ-CP on 18/4/2011 regulating on the strategic environmental impacts assessment, environmental impacts assessment and environmental protection commitment; the circular 26/2011/TT-BTNMT on 18/07/2011 of Minister of Natural Resources and Environment; and the other related documents and Decree 201/2013/ND-CP on stricter regulations for effective water resource management including associated consultation of communities. The contractors also committed to obey the ADB's policies on environmental safety.

320. The contractors committed to implement the measures of protecting environment, minimizing the environmental impacts mentioned in Chapter 4 and carry out the programs of managing and monitoring environment shown in Chapter 5 of this report, implement the community commitments mentioned in Chapter 6. The contractors also committed to compensate and remedy the environmental pollution when the environmental risks occur in the process of project implementation, promised to remain the environment according to the regulations in the Law of Environmental Protection after finishing the project operation.

321. On a more specific not the project will commit to undertake the measures for waste treatment and minimizing other impacts is outlined in the agreement: During project implementation, the Project Owner is committed to fully implementing the measures for handling waste, mitigating the negative impact on the natural and eco-social environment in the town, specifically as follows: (i) commitment to building wastewater treatment facilities such as BASTAF tanks and portable toilets, ensuring that water quality after going through the treatment system meets the discharge limits for domestic wastewater, preventing surface water and groundwater from being polluted by wastewater; (ii) Commitment not causing air pollution due to transport activities and excavation, not allowing rock and soil spillage into the street, not allowing dust carried by movement of dump trucks on the street causing dust contamination for the HHs residing along the transport routes; (iii) commitment to collecting and handling solid waste in accordance with the provisions of the Decree No. 59/2007/ND-CP dated 09/04 2007 04 on solid waste management; collecting, storing, transporting and handling hazardous wastes in accordance with the Circular No. 9/2012/TT-BTNMT dated 14/4/2011 of the MoNRE on hazardous waste management; (iv) commitment to good management of plant's staff, not allowing conflicts with the local people; (v) commitment to working closely with the local authorities in using water, ensuring security and order, and environmental sanitation.

322. Also, to commit to achieving the current treatment standard requirements and technical regulation on environment: during construction, the Project Owner is committed to ensuring compliance with the Vietnamese and International standards and regulations on environment, ensuring air quality, surface water, groundwater, sediment and soil, including the following national technical regulations: (i) QCVN 08:2008/BTNMT on Surface Water Quality; (ii) QCVN 09:2008/BTNMT; (iii) QCVN 14:2008/BTNMT on domestic wastewater; (iv) QCVN 05:2009/BTNMT on Ambient Air Quality; (v) QCVN 40:2011/BTNMT on Industrial Wastewater; (vi) QCVN 26:2010/BTNMT on Noise ; (vii) QCVN 27:2010/BTNMT on Vibration.

XIV. CONCLUSION

323. The project of constructing the water supplying system in Nghi Son economic zone, Thanh Hoa province is a feasible project and suitable with the orientation of planning the socio – economic development of Thanh Hoa province, meeting the demand of developing the local socio – economic, supporting for sustainable development through investing in water supplying system satisfying the increase needs of Nghi Son economics zone, and the demand of using clean water of people.

324. The content of the environmental impacts assessment report has complied with the current requests of environment impacts assessment of Vietnam government and ADB's policies. This report would be one of the most important and necessary to submit to the environmental sate management agencies in determining the construction's location, scale and ask for the investment license approval. In addition, this is also an important document supporting the process of appraising, negotiating, and signing the loan agreement between the government and ADB.

325. The environmental impacts assessment has defined and evaluated almost the environmental impacts in all the periods of project, from the design phase to the operation phase. In the process of environmental impacts assessment, the impacts are assessed basing on the theory and experimental formula, the statistics, and experience of the similar projects that had been taken out. However, there are no absolutely accurate methods but only relatively quantified. In project implementation process, it is required to have the suitable adjustment basing on the opinions of environmental monitoring consultants in order to minimize the negative impacts on environment.

326. The positive effects when implementing this project could be mentioned are contributing to stabilize the socio – economics life of residents in project are, completing the infrastructures of Nghi Son economic zone, improving the quality of water supplying and living environment of local people through investing in building water supplying system and the pipelines for distributing water.

327. Almost impacts in the pre-building and building period are temporary and in short term, only occur in a small scale around the site and in a narrow scope of project, or transportation roads, waste dumps. In the construction period, it cannot avoid the effects of dust, noise, and the social security and labor safety; however, they can be minimized by building the environmental management plans. The water resource from Yen My lake, the southern channel of Muc river absolutely have no effects on the agricultural irrigation of local people.

328. The construction process can have some negative effects on the socio – economics life of effected people, make the life conditions change, disturb people's living habits, and effect the production, economy of local people. However, those impacts are temporary and not really serious.

329. The impacts in the operation period are hidden and in long term. Therefore, the contractors will strictly implement the policies to control the pollutions mentioned in this report in order to meet the Vietnamese environmental standards. The solutions to control pollutions and limit the negative impacts of projects in the construction and operation periods which were shown in this report are feasible and could ensure the Vietnamese environmental standards.

330. The environmental monitoring program will be implemented right after being approved, and permitted to construct and operate. The monitoring statistics will be stored and be the legal

base of following Vietnam environmental protection law and ADB's policies. These statistics also serve for the activities of measuring stability of project.

331. Basing in the characteristics of environmental status and the forecasts of pollution level, the policies of preventing, minimizing the impacts of project have been build suitable with the specific conditions and cases. To ensuring uniformity in environmental protections plans, a system of environmental management will be built from the establishing to operating the project. It will help to ensure the tasks of managing, monitoring, reporting, preparing and adjusting the solutions of minimizing environmental pollutions during the project time. The environmental observation will be carried out regularly based on the State's environmental protection law and guiding documents.

332. The project has been propagated to local people and authorities, and project also received their support and valuable distribution opinions.

A. Recommendations

- In the process of project implementation, the board of project management have proposed the people's committee of Thanh Hoa province to control the related offices, local administrative authorities to close coordinate in protecting environment during the whole project implementation process, from the period of preparing, constructing to operating the items of project.
- In the task of environmental protection, the board of project management need to have the coordination and ideas distribution of Natural Resources and Environment Department of Thanh Hoa province and the Natural Resources and Environment Division in the project's location to well implementing the project.
- In the task of ensuring the transportation, the board of project management need to have the close coordination and support of Department of Transport, traffic polices, local authorities to solve the issues of ramification lines, preventing traffic jam and traffic accidents.
- To ensuring the social order and security, the board of project management, the contractors, the construction units need to closely coordinate with local authorities, the board of polices to strictly manage the human.

333. For purposes of compliance with ADB environmental assessment guidelines, no additional study or full environmental impact assessment is needed to further assess the potential environmental impacts of the project.

References

1. Rapid Environmental Assessment, WHO, 1993
2. Department of Transportation – United States of America. 2006. Transit Noise and Vibration Impact Assessment
3. The ADB's policy documents
4. The report of environmental observation of Thanh Hoa province in 2010
5. The report of studying the feasibility of constructing the water supplying system in Nghi Son economics zone
6. The general planning on building Nghi Son economics zone in the period of 2006-2025
7. The standards and regulations of Vietnam
8. The Political Publishing, 2005. Vietnamese Law on Environmental Protection (Language: Vietnamese)

ANNEX 1: The laws, decrees, circulars and regulations/standards of Vietnam

Regulations elements involved in the Nghi Son water system project:

- Water resources Law No. 17 approved by the Socialist Republic of Vietnam dated 21st, June, 2012.
- Construction Law No.16/²003/QH11^{ap}proved by the 11th term, 4th session Congress of the Socialist Republic of Vietnam dated 16th, November, 2003 and published under the Order No.26/2003/L/CTN dated 10th, December, 2003 by the State President.
- Environmental Protection Law No. 52/2005/QH11 approved by Congress of the Socialist Republic of Vietnam dated 29th, November, 2005 and issued by the State President on 12th, December, 2005
- Vietnam Technical Standard and Regulation Law No. 68/2006/QH11 dated 29th, June, 2006.
- Law on Amendment and Addition to some points of the laws relating to basic construction investment No. 38/2009.QH12 dated 19th, June, 2009 of 12th term, 5th session Congress of the Socialist Republic of Vietnam.
- Decree No. 179/1999/ ND-CP dated 30th, December, 1999 by the Prime Minister about the Regulation on implementation of Water resources Law.
- Decree No. 13/2003/ ND-CP dated 19th, February, 2003 by Prime Minister about the Regulation on the terms of harmful/toxic wastes and the transportation of these wastes on the road.
- Decree No. 149/2004/ND-CP dated 27th, July, 2004 by Prime Minister about the Regulation on the licensing of exploration, exploitation, water resources use and discharge into water sources.
- Decree No. 80/2006/ ND-BTNMT dated 8th, September, 2006 by Prime Minister about regulating and guiding the application of Environmental Protection Law.
- Decree No. 140/2006/ND-CP dated 12th, December, 2006 by Prime Minister about the Regulation on the environmental protection in the formulation, appraisal, approval and implementation stages of strategies, planning, plans, programs and development projects.
- Decree No. 149/2004/ND-CP dated 27th, July, 2004 by Prime Minister about the Regulation on the licensing of exploration, exploitation, water resources use and discharge into water sources.
- Decree No. 80/2006/ ND-BTNMT dated 8th, September, 2006 by Prime Minister about regulating and guiding the application of Environmental Protection Law.
- Decree No. 140/2006/ND-CP dated 12th, December, 2006 by Prime Minister about the Regulation on the environmental protection in the formulation, appraisal, approval and implementation stages of strategies, planning, plans, programs and development projects

- Decree No. 149/2004/ND-CP dated 27th, July, 2004 by Prime Minister about the Regulation on the licensing of exploration, exploitation, water resources use and discharge into water sources.
- Decree No. 80/2006/ ND-BTNMT dated 8th, September, 2006 by Prime Minister about regulating and guiding the application of Environmental Protection Law.
- Decree No. 140/2006/ND-CP dated 12th, December, 2006 by Prime Minister about the Regulation on the environmental protection in the formulation, appraisal, approval and implementation stages of strategies, planning, plans, programs and development projects.
- Decree No.12/2009/ND-CP dated 10th, February, 2009 by Prime Minister on the management of constructional work investment.
- Decree No. 117/2009/ ND-CP dated 31rd, December, 2009 by Prime Minister on handling law violations in the environmental protection field.
- Decree No. 29/2011/ ND-CP dated 18th, April, 2011 by Prime Minister about the Regulation on strategic environmental Assessment, environmental impact Assessment and environmental protection Commitment.
- Circular No. 06/2007/ TT-BKH dated 27th, August, 2007 by the Minister of Planning and Investment on guiding the implementation of Decree No. 140/2006/ ND-CP on 22nd , November, 2006 of the Government that regulated environmental protection in the stages of formulation, appraisal, approval and implementation of strategies, planning, plans, programs and development projects.
- Circular No. 02/2009/ TT-BTNMT dated 10th, March, 2009 by the Ministry of Natural Resources and Environment about the Regulation on evaluating the possibility of receiving sewages of water sources.
- Circular No. 04/2009/TT-BYT dated 17th, June, 2009 by the Ministry of Public Health on the publishing of National technical Regulation on drinking and cooking water
- Circular No. 05/2009/TT0BYT dated 17th, June, 2009 of the Ministry of Public Health on the publishing of National technical Regulation on domestic water.
- Circular No. 16/2009/BTNMT dated 7th, October, 2009 by the Ministry of Natural Resources and Environment on the regulation on National technical regulation on the environment.
- Circular No. 26/ 2011/ BTNMT dated 18th, July, 2011 by the Ministry of Natural Resources and Environment on the detailed regulation on some points of Decree 29/2011/ND-CP dated 18th, April, 2011 of the Government on the regulation on strategic environmental Assessment, environmental impact Assessment and environmental protection Commitment
- Decision 256/ QD-TTg dated 2nd, December, 2003 by Prime Minister on the approval of National environmental Protection Strategy until 2010 and the orientation to 2020
- Decison No. 48/2008/QĐ-TTg dated 03/4/2008 by Prime Minister on the general guidelines for preparation of feasibility report – Official development assistance project of 5 banks (Asian development bank, France developement agency, Japan Cooperation bank, German Reconstruction bank, and World bank).

- Decision No. 23/2006/ QD-BTNMT dated 26th, December, 2006 by the Ministry of Natural Resources and Environment on the publishing of harmful wastes list.
- Decision No. 04/2008/QD-BTNMT dated 18th, July, 2008 by the Ministry of Natural Resources and Environment on the publishing of National technical Regulation on the environment.
- Decision No. 16/ 2008/ QD-BTNMT dated 31st, December, 2008 by the Ministry of Natural Resources and Environment on the publishing of National technical Regulation on the environment
- Regulations, including:
 - ❖ QCVN 01/2009/BYT - National technical regulation on drinking and cooking water.
 - ❖ QCVN 02/2009/BYT - National technical regulation on domestic water.
 - ❖ QCVN 03: 2008/BTNMT- National technical regulation on the permitted limits of heavy metals in soil.
 - ❖ QCVN 05/2009/BTNMT- National technical regulation on surrounding air quality.
 - ❖ QCVN 06/2009/BTNMT- National technical regulation on a number of toxic substances in the surrounding air.
 - ❖ QCVN 26/2010/BTNMT - National technical regulation on noise.
 - ❖ QCVN 27:2010/BTNMT - National technical regulation on vibration level.
 - ❖ QCVN 08:2008/BTNMT - National technical regulation on surface water quality.
 - ❖ QCVN 09:2008/BTNMT- National technical regulation on underground water quality.
 - ❖ QCVN 14:2008/BTNMT -National technical regulation on domestic sewage.
 - ❖ QCVN 40/2011/BTNMT – National technical regulation on industrial sewage.

1.1 The legal and technical bases

- Decision No. 761/1997 QD-TTg on September 13th, 1997 by Prime Minister on the approval of the master plan for the Socio-Economic development in the north and central key economic region by 2010 and vision to 2020.
- Decision No. 847/QD-TTg October 10th, 1997 on the approval of the planning of South Thanh Hóa – North Nghệ An region.
- Decision No. 10/1998/QTg dated January 23rd, 1998, approving the planning of urban development in Vietnam by 2020.
- Decision 202/1999/TTg, approving the overall plan for the development of seaports Vietnam.
- Decision 604/1999- Decision/TTg by Prime Minister, approving the master plan for the construction of Nghi Sơn new urban area.
- Conclusion Report No. 135-TB/TU by the Thanh Hóa province Party Standing Committee on the review plan for adjusting the master plan for the urban area system in Thanh Hóa province by 2020

ANNEX 2: Community meeting report and photography

SOME PICTURES IN COMMUNITY CONSULTATION MEETINGS



Picture 1. At Truc Lam Commune –
Tinh Gia



Picture 2. Consultation about environmental
issues (Truc Lam-Tinh Gia)



H3. People's comments (Xuan
Lam)



H4. Comments of commune leader (Xuan
Lam)



H5. Presenting environmental issues



H6. Consultation at Cong Chinh Commune



H7. At Cong Liem Commune



H8. Studying environmental documents

MINUTES OF MEETINGS & LIST OF PARTICIPANTS

Cty TNHH khai thác công trình
thủy lợi sông Chu – Thanh Hoá

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Số: 346/BTCITLSC...

Thanh Hóa, ngày 18 tháng 5 năm 2011

V/v: Tham vấn cộng đồng về các vấn đề
môi trường dự án Xây dựng hệ thống cấp
nước khu kinh tế Nghi Sơn

Kính gửi: UBND và UBMTTQ các xã trong vùng dự án Xây dựng hệ thống cấp nước
khu kinh tế Nghi Sơn

- Căn cứ vào thông tư 05/2008/TT-BTNMT ngày 8/12/2008 của Bộ Tài nguyên và Môi trường
hướng dẫn về Đánh giá môi trường chiến lược, Đánh giá tác động môi trường và Cam kết bảo vệ
môi trường.

- Căn cứ văn bản số: 321/UBND-KTTC ngày 18/01/2011 của Chủ tịch UBND tỉnh Thanh Hoá về
việc đầu tư xây dựng hệ thống cấp nước cho khu kinh tế Nghi Sơn (vốn vay ADB),

Để thực hiện báo cáo Đánh giá tác động môi trường của dự án, chúng tôi gửi các tài liệu tóm tắt về
các hạng mục đầu tư chính, các tác động môi trường, các giải pháp bảo vệ môi trường của dự án
Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn tham vấn ý kiến của UBND và UBMTTQ của xã
về các vấn đề môi trường của dự án.

Trân trọng cảm ơn ý kiến đóng góp của các đơn vị.

Nơi nhận:

- Như trên;
- CTHĐTV; BGĐ;
- Lưu HC;



PHÓ TỔNG GIÁM ĐỐC
LÊ VĂN MINH

Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

Thanh Hóa, Ngày 9 tháng 6 năm 2011

BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 9 tháng 6 năm 2011

Kết thúc:h ngày 9 tháng 6 năm 2011

Địa điểm : UBND xã Côi Bình

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:

- Ông/bà : ... Lê Văn Minh Chức vụ : ... AG. 1. DA

- Ông/bà : Chức vụ :

2. Đại diện đơn vị tư vấn :

- Ông/bà : ... Bùi Thái Bình Chức vụ : ... AG. 1. DA

- Ông/bà : Chức vụ :

3. Đại diện UBND phường/xã

- Ông/bà : ... Trần Văn Hiệp Chức vụ : ... CT UBND

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

4. Đại diện các hội/đoàn thể địa phương:

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương

Ông/bà ... Trần Văn Hiệp giới thiệu thành phần cuộc họp

2. Đại diện Ban Quản lý dự án

Ông/bà nêu mục đích cuộc họp

3. Đại diện tư vấn trình bày các vấn đề sau:

- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);

- Các hạng mục đầu tư của dự án;

- Đánh giá sơ bộ các tác động môi trường của dự án bao gồm các tác động tới môi trường tự nhiên và xã hội trong các giai đoạn thực hiện dự án và các biện pháp giảm thiểu các tác động xấu trong quá trình thực hiện dự án.

- Ý kiến của các bên liên quan

IV. CÁC Ý KIẾN THAM VẤN VỀ VẤN ĐỀ MÔI TRƯỜNG

- Quan trọng thi công phát sinh bụi ảnh hưởng tới hoa màu của người dân, ảnh hưởng tới an ninh trật tự xã hội khu vực dân cư.
- Đơn vị thi công cần có trách nhiệm dọn dẹp vệ sinh hiện trường thi công.
- Nếu thi công làm bị hại đường xá cần có trách nhiệm sửa chữa cho người dân.

ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

Thanh Hóa, Ngày 19 tháng 5 năm 2011

**BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG**
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 19 tháng 5 năm 2011

Kết thúc:h ngày 19 tháng 5 năm 2011

Địa điểm: UBND xã Long Bình

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:

- Ông/bà: Lê Văn Minh Chức vụ: BQLDP

- Ông/bà: Chức vụ:

2. Đại diện đơn vị tư vấn:

- Ông/bà: Nguyễn Thái Bình Chức vụ: Cán bộ DA

- Ông/bà: Trần Thị Thu Hương Chức vụ: CBDA

3. Đại diện UBND phường/xã:

- Ông/bà: Trần Văn Hiệp Chức vụ: CTUBND

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

4. Đại diện các hội/đoàn thể địa phương:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương

Ông/bà: Trần Văn Hiệp giới thiệu thành phần cuộc họp

2. Đại diện Ban Quản lý dự án

Ông/bà: nêu mục đích cuộc họp

3. Đại diện tư vấn trình bày các vấn đề sau:

- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);
- Các hạng mục đầu tư của dự án;
- Nhiệm vụ của tư vấn trong quá trình thực hiện dự án;
- Phát tài liệu về dự án và tham vấn về các vấn đề môi trường.

IV. CÁC Ý KIẾN THAM VẤN VỀ VẤN ĐỀ MÔI TRƯỜNG

- Nhất trí ủng hộ dự án
- Đề nghị có hình sách bảo vệ rừng trồng cây cho người dân và trong quá trình thực hiện dự án cần thực hiện đầy đủ các biện pháp bảo vệ môi trường

Ngày....17/Tháng 5....Năm 2011



THỦ TƯỚNG GIÁM ĐỐC
LÊ VĂN MINH

ĐẠI DIỆN ĐOÀN THỂ ĐỊA PHƯƠNG

ĐẠI DIỆN CHÍNH QUYỀN ĐỊA PHƯƠNG



ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

UBMTTQ *Xã Công Bình*.....

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Số: *08/UBMT-CB*

Thanh Hóa, ngày ... tháng ... năm 2011

V/v : Ý kiến cộng đồng đối với báo cáo Đánh giá tác động môi trường của dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn

Kính gửi: Công ty TNHH khai thác công trình thủy lợi sông Chu

UBMTTQ *Xã Công Bình*..... nhận được công văn số *346/KTCL.TL.SC* ngày *18* tháng *5* năm 2011 của Công ty TNHH khai thác công trình thủy lợi sông Chu thông báo về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn. Trên cơ sở nghiên cứu tài liệu này, chúng tôi có ý kiến như sau:

1. Đồng ý với việc triển khai dự án “ Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn – tỉnh Thanh Hóa”, nhất trí với các nội dung về đánh giá tác động môi trường và thực hiện các biện pháp bảo vệ môi trường trong quá trình thực hiện dự án.

2. Ngoài ra cần lưu ý thêm một số nội dung sau

a. Ý kiến về các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

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b. Ý kiến về các giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

Đề nghị có biện pháp che chắn xe vận chuyển, biện pháp tưới nước trên đường để giảm bụi.

c. Kiến nghị đối với Chủ dự án:

Cơ chính sách hỗ trợ, thỏa thuận cho người dân.

Nơi nhận:

-Như trên;

-Lưu văn phòng.

Ngày *25* tháng *5* năm *2011*

UBMTTQ.....



Mai Kim Hùng

UBND Xã... Công... Bình...

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Số: 01/CVTL.

Thanh Hóa, ngày ... tháng ... năm 2011

V/v : Ý kiến cộng đồng đối với báo cáo Đánh giá tác động môi trường của dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn

Kính gửi: Công ty TNHH khai thác công trình thủy lợi sông Chu

UBND Xã... Công... Bình... nhận được công văn số 344/KTCLTLX... ngày 18 tháng 5... năm 2011 của Công ty TNHH khai thác công trình thủy lợi sông Chu thông báo về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn. Trên cơ sở nghiên cứu tài liệu này, chúng tôi có ý kiến như sau:

1. Đồng ý với việc triển khai dự án “ Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn – tỉnh Thanh Hóa”, nhất trí với các nội dung về đánh giá tác động môi trường và thực hiện các biện pháp bảo vệ môi trường trong quá trình thực hiện dự án.

2. Ngoài ra cần lưu ý thêm một số nội dung sau

a. Ý kiến về các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

Ảnh hưởng đến đời sống của người dân... ảnh hưởng tới sản xuất... của người dân...

b. Ý kiến về các giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

Đề nghị đơn vị thi công thực hiện tốt các biện pháp bảo vệ môi trường...

c. Kiến nghị đối với Chủ dự án:

Có chính sách bồi thường thỏa đáng cho người dân...

Nơi nhận:

-Như trên;

-Lưu văn phòng.

Ngày 15 tháng 5... năm 2011



Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

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Thanh Hóa, Ngày 9 tháng 6 năm 2011

BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 9 tháng 6 năm 2011

Kết thúc:h ngày 9 tháng 6 năm 2011

Địa điểm : UBND Xã Công Chính

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:

-Ông/bà : Chức vụ :

-Ông/bà : Chức vụ :

2. Đại diện đơn vị tư vấn:

-Ông/bà : Bà Thái Bạch Diễm Chức vụ : Cán bộ DA

-Ông/bà : Chức vụ :

3. Đại diện UBND phường/xã

-Ông/bà : Bà Minh Hiền Chức vụ : P.C.T. UBND

-Ông/bà : Chức vụ :

-Ông/bà : Chức vụ :

-Ông/bà : Chức vụ :

4. Đại diện các hội/đoàn thể địa phương:

-Ông/bà : Chức vụ :

-Ông/bà : Chức vụ :

-Ông/bà : Chức vụ :

-Ông/bà : Chức vụ :

-Ông/bà : Chức vụ :

-Ông/bà : Chức vụ :

III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương

Ông/bà..... Bà Minh Hiền..... giới thiệu thành phần cuộc họp

2. Đại diện Ban Quản lý dự án

Ông/bà..... nêu mục đích cuộc họp

3. Đại diện tư vấn trình bày các vấn đề sau:

- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);

- Các hạng mục đầu tư của dự án;

- Đánh giá sơ bộ các tác động môi trường của dự án bao gồm các tác động tới môi trường tự nhiên và xã hội trong các giai đoạn thực hiện dự án và các biện pháp giảm thiểu các tác động xấu trong quá trình thực hiện dự án.

- Ý kiến của các bên liên quan

IV. CÁC Ý KIẾN THAM VẤN VỀ VẤN ĐỀ MÔI TRƯỜNG

- Nhất trí với các biện pháp bảo vệ môi trường dự án.

Quá trình dự án thực hiện ảnh hưởng tới sản xuất của người dân, ảnh hưởng giao thông xã hội, ồn... Do đó cần thực hiện nghiêm túc các biện pháp bảo vệ môi trường.



ĐẠI DIỆN BQL DỰ ÁN

PHÓ TỔNG GIÁM ĐỐC

LÊ VĂN MINH

ĐẠI DIỆN ĐOÀN THỂ ĐỊA PHƯƠNG



ĐẠI DIỆN THINH QUYỀN ĐỊA PHƯƠNG

HÀ TIẾN DŨNG

ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

Ngày....9...Tháng..6...Năm 2011

Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

Thanh Hóa, Ngày 19 tháng 5 năm 2011

BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 19 tháng 5 năm 2011

Kết thúc:h ngày 19 tháng 5 năm 2011

Địa điểm : UBND Xã Long Chính

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

2. Đại diện đơn vị tư vấn :

- Ông/bà : ... Bùi Thái Bạch Đức ... Chức vụ : ... Giám đốc dự án ...

- Ông/bà : Chức vụ :

3. Đại diện UBND phường/xã

- Ông/bà : ... Hà Minh Thiện ... Chức vụ : ... CT UBND ...

- Ông/bà : ... Hà Tiến Dũng ... Chức vụ : ... PCT UBND ...

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

4. Đại diện các hội/đoàn thể địa phương:

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương

Ông/bà ... Hà Minh Thiện ... giới thiệu thành phần cuộc họp

2. Đại diện Ban Quản lý dự án

Ông/bà nêu mục đích cuộc họp

3. Đại diện tư vấn trình bày các vấn đề sau:

- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);
- Các hạng mục đầu tư của dự án;
- Nhiệm vụ của tư vấn trong quá trình thực hiện dự án;
- Phát tài liệu về dự án và tham vấn về các vấn đề môi trường.

IV. CÁC Ý KIẾN THAM VẤN VỀ VẤN ĐỀ MÔI TRƯỜNG

Ủng hộ dự án
Đề nghị nghiên cứu thực hiện các biện pháp bảo vệ
môi trường

Ngày 18 Tháng 5 Năm 2011



ĐẠI DIỆN BQL DỰ ÁN

PHÓ TỔNG GIÁM ĐỐC
LÊ VĂN MINH

ĐẠI DIỆN ĐOÀN THỂ ĐỊA PHƯƠNG



ĐẠI DIỆN CHÍNH QUYỀN ĐỊA PHƯƠNG

HÀ TIẾN DŨNG

ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

UBMTTQ *xã... Công Chúa*.....

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Số: *01*

Thanh Hóa, ngày ... tháng ... năm 2011

V/v: Ý kiến cộng đồng đối với báo cáo Đánh giá tác động môi trường của dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn

Kính gửi: Công ty TNHH khai thác công trình thủy lợi sông Chu

UBMTTQ *xã... Công Chúa*... nhận được công văn số *346/KTCTMSSC* ngày *18* tháng *5* năm 2011 của Công ty TNHH khai thác công trình thủy lợi sông Chu thông báo về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn. Trên cơ sở nghiên cứu tài liệu này, chúng tôi có ý kiến như sau:

1. Đồng ý với việc triển khai dự án “ Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn – tỉnh Thanh Hóa”, nhất trí với các nội dung về đánh giá tác động môi trường và thực hiện các biện pháp bảo vệ môi trường trong quá trình thực hiện dự án.

2. Ngoài ra cần lưu ý thêm một số nội dung sau

a. Ý kiến về các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

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b. Ý kiến về các giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

Cần bắt đầu thực hiện ngay từ các biện pháp bảo vệ môi trường
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c. Kiến nghị đối với Chủ dự án:

Cố gắng giảm bớt thiệt hại cho người dân
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Nơi nhận:

-Như trên;

-Lưu văn phòng.

Ngày *30* tháng *5* năm *2011*



Lê Công Chúa

UBND xã Công Chính

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Số: 11/LBAD

Thanh Hóa, ngày 20 tháng 5 năm 2011

V/v : Ý kiến cộng đồng đối với báo cáo Đánh giá tác động môi trường của dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn

Kính gửi: Công ty TNHH khai thác công trình thủy lợi sông Chu

UBND xã Công Chính nhận được công văn số 346/KẾ.CM.NS, ngày 18 tháng 5 năm 2011 của Công ty TNHH khai thác công trình thủy lợi sông Chu thông báo về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn. Trên cơ sở nghiên cứu tài liệu này, chúng tôi có ý kiến như sau:

1. Đồng ý với việc triển khai dự án “ Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn – tỉnh Thanh Hóa”, nhất trí với các nội dung về đánh giá tác động môi trường và thực hiện các biện pháp bảo vệ môi trường trong quá trình thực hiện dự án.

2. Ngoài ra cần lưu ý thêm một số nội dung sau

a. Ý kiến về các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

..... Chiến dịch đất đai, cần bồi thường thỏa đáng

b. Ý kiến về các giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

..... thực hiện đầy đủ các biện pháp bảo vệ môi trường

c. Kiến nghị đối với Chủ dự án:

Nơi nhận:

-Như trên;

-Lưu văn phòng.

Ngày... tháng 5... năm 2011

UBND.....



HÀ MINH THIÊN

Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

Thanh Hóa, Ngày 9 tháng 6 năm 2011

**BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG**
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 9 tháng 6 năm 2011

Kết thúc:h ngày 9 tháng 6 năm 2011

Địa điểm: UBND xã Long Liên

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:

- Ông/bà: Lê Văn Minh Chức vụ: G.P. BALPA

- Ông/bà: Chức vụ:

2. Đại diện đơn vị tư vấn:

- Ông/bà: Hoàng Chức vụ: Cán bộ dự án

- Ông/bà: Bùi Thái Bạch Dương Chức vụ: Cán bộ dự án

3. Đại diện UBND phường/xã:

- Ông/bà: Lê Việt Hoàn Chức vụ: Chủ tịch UBND

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

4. Đại diện các hội/đoàn thể địa phương:

- Ông/bà: Huỳnh Ngọc Hoàng Chức vụ: CT. UB M.T. T. xã

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương

Ông/bà: Lê Việt Hoàn giới thiệu thành phần cuộc họp

2. Đại diện Ban Quản lý dự án

Ông/bà: nêu mục đích cuộc họp

3. Đại diện tư vấn trình bày các vấn đề sau:

- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);

- Các hạng mục đầu tư của dự án;

- Đánh giá sơ bộ các tác động môi trường của dự án bao gồm các tác động tới môi trường tự nhiên và xã hội trong các giai đoạn thực hiện dự án và các biện pháp giảm thiểu các tác động xấu trong quá trình thực hiện dự án.

- Ý kiến của các bên liên quan

IV. CÁC Ý KIẾN THAM VẤN VỀ VẤN ĐỀ MÔI TRƯỜNG

- Nhu cầu đảm bảo phục vụ môi trường sinh hoạt, sinh hoạt của dân địa phương Nghi Sơn là phù hợp.
- Quá trình di dân cần thực hiện đầy đủ các biện pháp bảo vệ môi trường không làm ảnh hưởng tới sinh hoạt của người dân.

Mach Ng. x. Khang

Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

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Thanh Hóa, Ngày 19 tháng 5 năm 2011

BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 19 tháng 5 năm 2011

Kết thúc:h ngày 19 tháng 5 năm 2011

Địa điểm: UBND Công Viên

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:

- Ông/bà: Lê Văn Minh Chức vụ: G.P. BQL DA

- Ông/bà: Chức vụ:

2. Đại diện đơn vị tư vấn:

- Ông/bà: Ông Thái Bạch Đông Chức vụ: CB DA

- Ông/bà: Bà Thị Hồng Chức vụ: CB DA

3. Đại diện UBND phường/xã

- Ông/bà: Lê Việt Hoàn Chức vụ: CT UBND

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

4. Đại diện các hội/đoàn thể địa phương:

- Ông/bà: Mạnh Ngọc Phương Chức vụ: CT UBND TA

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

5. Đại diện các hội gia đình/ tổ chức:..... người (danh sách kèm theo)

III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương

Ông/bà: Lê Việt Hoàn giới thiệu thành phần cuộc họp

2. Đại diện Ban Quản lý dự án

Ông/bà: nêu mục đích cuộc họp

3. Đại diện tư vấn trình bày các vấn đề sau:

- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);
- Các hạng mục đầu tư của dự án;
- Nhiệm vụ của tư vấn trong quá trình thực hiện dự án;
- Phát tài liệu về dự án và tham vấn về các vấn đề môi trường.

IV. CÁC Ý KIẾN THAM VẤN VỀ VẤN ĐỀ MÔI TRƯỜNG

Nhất trí ủng hộ thực hiện dự án
thực hiện chính sách đền bù thỏa đáng cho người dân.

Ngày...13...Tháng...5...Năm 2011



ĐẠI DIỆN BQL DỰ ÁN

L. Huân

PHÓ TỔNG GIÁM ĐỐC

LÊ VĂN MINH

ĐẠI DIỆN ĐOÀN THỂ ĐỊA PHƯƠNG



Phạm Ngọc Khanh

Phạm Ngọc Khanh



ĐẠI DIỆN CHÍNH QUYỀN ĐỊA PHƯƠNG

Lê Viết Hoan

Lê Viết Hoan

ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

UBMTTQ ... *Xã Công Viên* ...

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Số: 01/CV-UBMTTQ

Công Viên Thanh Hóa, ngày ... tháng ... năm 2011

V/v: Ý kiến cộng đồng đối với báo cáo Đánh giá tác động môi trường của dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn

Kính gửi: Công ty TNHH khai thác công trình thủy lợi sông Chu

UBMTTQ ... *Xã Công Viên* ... nhận được công văn số *246/KTSL.TLSC*, ngày *18* tháng *7* năm 2011 của Công ty TNHH khai thác công trình thủy lợi sông Chu thông báo về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn. Trên cơ sở nghiên cứu tài liệu này, chúng tôi có ý kiến như sau:

1. Đồng ý với việc triển khai dự án “ Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn – tỉnh Thanh Hóa” , nhất trí với các nội dung về đánh giá tác động môi trường và thực hiện các biện pháp bảo vệ môi trường trong quá trình thực hiện dự án.

2. Ngoài ra cần lưu ý thêm một số nội dung sau

a. Ý kiến về các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

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b. Ý kiến về các giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

Thực hiện dự án phải đảm bảo Công Tác đền bù và tái định cư ảnh hưởng đến Sinh hoạt của nhân dân địa phương Bảo Công Tác môi trường

c. Kiến nghị đối với Chủ dự án:

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Nơi nhận:

-Như trên;

-Lưu văn phòng.

Ngày *20* tháng *5* năm *2011*

UBMTTQ ... *Xã Công Viên* ...



Nguyễn Thị Hằng

UBND Xã Công Liêm.....

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Số: 11 / CV - UBND

Thanh Hóa, ngày 25 tháng 5 năm 2011

V/v : Ý kiến cộng đồng đối với báo cáo Đánh giá tác động môi trường của dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn

Kính gửi: Công ty TNHH khai thác công trình thủy lợi sông Chu

UBND Xã Công Liêm..... nhận được công văn số 346/KT.U.TLSC. ngày 13 tháng 5 năm 2011 của Công ty TNHH khai thác công trình thủy lợi sông Chu thông báo về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn. Trên cơ sở nghiên cứu tài liệu này, chúng tôi có ý kiến như sau:

1. Đồng ý với việc triển khai dự án “ Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn – tỉnh Thanh Hóa”, nhất trí với các nội dung về đánh giá tác động môi trường và thực hiện các biện pháp bảo vệ môi trường trong quá trình thực hiện dự án.

2. Ngoài ra cần lưu ý thêm một số nội dung sau

a. Ý kiến về các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

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b. Ý kiến về các giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

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.....

c. Kiến nghị đối với Chủ dự án:

Đề nghị bảo vệ và phát huy nguồn nước sinh hoạt cho khu Công nghiệp Kinh tế Nghi Sơn. Là phía hợp: Những đề nghị bảo vệ và phát triển Nông nghiệp và Công nghiệp Song song với nhau và giữ Khu ở việc hướng dân nước đi qua xã Công Liêm. Nên có kho chứa có van để cho ND mở nước xuống sông phục vụ SX N. Nay rất khó khăn cho việc tưới phục vụ SX N.

Nơi nhận:

-Như trên;

-Lưu văn phòng.

Ngày 30 tháng 5 năm 2011

UBND Xã Công Liêm



Lê Việt Hoan

Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

Thanh Hóa, Ngày 11 tháng 6 năm 2011

BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 11 tháng 6 năm 2011

Kết thúc:h ngày 11 tháng 6 năm 2011

Địa điểm: UBND Xã Hải Bình

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:

- Ông/bà: Lê Văn Minh Chức vụ: Giám đốc LDA

- Ông/bà: L Chức vụ:

2. Đại diện đơn vị tư vấn:

- Ông/bà: Bùi Thanh Bạch Hùng Chức vụ: C.B. DA

- Ông/bà: Hồ Thị Thuý Chức vụ: C.B. DA

3. Đại diện UBND phường/xã:

- Ông/bà: Nguyễn Quốc Tuấn Chức vụ: CT UBND

- Ông/bà: Nguyễn Trọng Dũng Chức vụ: P.T. UBND

- Ông/bà: Đỗ Văn Hòa Chức vụ: P.T. UBND

- Ông/bà: Ngô Văn Chính Chức vụ: Cán bộ địa phương

4. Đại diện các hội/đoàn thể địa phương:

- Ông/bà: Trần Xuân Thuận Chức vụ: C.T. V. B. MTTQ

- Ông/bà: Nguyễn A Nguyễn Chức vụ: C.T. C. B.

- Ông/bà: Nguyễn Thị Hằng Chức vụ: C.T. Hội PV

- Ông/bà: Nguyễn Văn Bình Chức vụ: C.T. Hội LĐ

- Ông/bà: Đỗ Văn Thanh Chức vụ: K.T. T.T.

- Ông/bà: Lê Phúc Hoàng Chức vụ: C.B. Địa phương

III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương

Ông/bà: Nguyễn Quốc Tuấn giới thiệu thành phần cuộc họp

2. Đại diện Ban Quản lý dự án

Ông/bà: nêu mục đích cuộc họp

3. Đại diện tư vấn trình bày các vấn đề sau:

- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);
- Các hạng mục đầu tư của dự án;
- Đánh giá sơ bộ các tác động môi trường của dự án bao gồm các tác động tới môi trường tự nhiên và xã hội trong các giai đoạn thực hiện dự án và các biện pháp giảm thiểu các tác động xấu trong quá trình thực hiện dự án.
- Ý kiến của các bên liên quan

IV. CÁC Ý KIẾN THAM VẤN VỀ VẤN ĐỀ MÔI TRƯỜNG

- Môi trường cấp nước sạch là cần thiết, nâng cao đời sống cho người dân.
- Khi thi công phải đảm bảo vệ sinh an toàn thực phẩm và
- Đảm bảo thi công cần thực hiện đúng quy trình bảo vệ môi trường.
- Đảm bảo tiền lương cho người dân.
- Đảm bảo tiến độ thi công và dự án, phục vụ môi trường sạch cho người dân.



ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

Thanh Hóa, Ngày 24 tháng 5 năm 2011

BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 24 tháng 5 năm 2011

Kết thúc:h ngày 24 tháng 5 năm 2011

Địa điểm: UBND xã Hải Bình

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:

- Ông/bà: ...Đ. Văn Minh... Chức vụ: ...GĐ. BQLDA...

- Ông/bà: Chức vụ:

2. Đại diện đơn vị tư vấn:

- Ông/bà: ...Đỗ Xuân Bách Dũng... Chức vụ: ...CBDA...

- Ông/bà: Chức vụ:

3. Đại diện UBND phường/xã

- Ông/bà: ...Nguyễn Quốc Tuấn... Chức vụ: ...Chủ tịch UBND...

- Ông/bà: ...Nguyễn Trọng Dũng... Chức vụ: ...P.T. UBND...

- Ông/bà: ...Đỗ Văn Hoa... Chức vụ: ...P.T. UBND...

- Ông/bà: ...Nguyễn Văn Chanh... Chức vụ: ...Cán bộ Địa phương XD...

4. Đại diện các hội/đoàn thể địa phương:

- Ông/bà: ...Tấn X. Văn Tuấn... Chức vụ: ...Chủ tịch UBND TTC...

- Ông/bà: ...Đ. A. Nguyễn... Chức vụ: ...C. CLB...

- Ông/bà: ...Đ. Chi. Hồng... Chức vụ: ...C. HTG. PM...

- Ông/bà: ...Đ. Văn Kim... Chức vụ: ...C. HTG. ND...

- Ông/bà: ...Đ. Văn Chanh... Chức vụ: ...Kế Toán - Tài chính...

- Ông/bà: ...L. Phạm Hằng... Chức vụ: ...Cán bộ Địa phương XD...

III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương

Ông/bà: ...Nguyễn Quốc Tuấn... giới thiệu thành phần cuộc họp

2. Đại diện Ban Quản lý dự án

Ông/bà: nêu mục đích cuộc họp

3. Đại diện tư vấn trình bày các vấn đề sau:

- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);
- Các hạng mục đầu tư của dự án;
- Nhiệm vụ của tư vấn trong quá trình thực hiện dự án;
- Phát tài liệu về dự án và tham vấn về các vấn đề môi trường.

IV. CÁC Ý KIẾN THAM VẤN VỀ VẤN ĐỀ MÔI TRƯỜNG

- Trong quá trình tổ chức thực hiện dự án yêu cầu các đơn vị thi công phải thực hiện đúng qui định về Bảo vệ môi trường.
- Đảm bảo về môi trường giảm thiểu ô nhiễm không khí.
- Không làm ảnh hưởng giao thông, đảm bảo an toàn cho người và các loại phương tiện tham gia giao thông.
- Đảm bảo kết quả thi công của dự án phục vụ nhân dân cho nhân dân Công nhân Công tác.

Ngày 24 Tháng 5 Năm 2011



ĐẠI DIỆN BQL DỰ ÁN

PHÓ TỔNG GIÁM ĐỐC

LÊ VĂN MINH

ĐẠI DIỆN ĐOÀN THỂ ĐỊA PHƯƠNG

ĐẠI DIỆN CHÍNH QUYỀN ĐỊA PHƯƠNG



Nguyễn Trường Giang

ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

UBMTTQ *xã Hải Bình*

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Số: *25/2011/MT*

Thanh Hóa, ngày *27* tháng *5* năm *2011*

V/v : Ý kiến cộng đồng đối với báo cáo Đánh giá tác động môi trường của dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn

Kính gửi: Công ty TNHH khai thác công trình thủy lợi sông Chu

UBMTTQ *xã Hải Bình*..... nhận được công văn số *246/19.C.TN.Sa* ngày *18* tháng *5* năm 2011 của Công ty TNHH khai thác công trình thủy lợi sông Chu thông báo về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn. Trên cơ sở nghiên cứu tài liệu này, chúng tôi có ý kiến như sau:

1. Đồng ý với việc triển khai dự án “ Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn – tỉnh Thanh Hóa”, nhất trí với các nội dung về đánh giá tác động môi trường và thực hiện các biện pháp bảo vệ môi trường trong quá trình thực hiện dự án.

2. Ngoài ra cần lưu ý thêm một số nội dung sau

a. Ý kiến về các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

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b. Ý kiến về các giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

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c. Kiến nghị đối với Chủ dự án:

1.- Khi thi công phải đảm bảo về giao thông
2.- Đảm bảo về môi trường
3.- Đảm bảo về chế độ đền bù giải phóng mặt bằng cho nhân dân khi dự án đi qua

Nơi nhận:

-Như trên;

-Lưu văn phòng.

Ngày *27* tháng *5* năm *2011*

UBMTTQ *xã Hải Bình*
chủ tịch

Trần Xuân Thước

UBND xã Hải Bình

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Số: 62/UV.UBND

Thanh Hóa, ngày 26 tháng 5 năm 2011

V/v: Ý kiến cộng đồng đối với báo cáo Đánh giá tác động môi trường của dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn

Kính gửi: Công ty TNHH khai thác công trình thủy lợi sông Chu

UBND xã Hải Bình nhận được công văn số 346/KT.UBND ngày 18 tháng 5 năm 2011 của Công ty TNHH khai thác công trình thủy lợi sông Chu thông báo về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn. Trên cơ sở nghiên cứu tài liệu này, chúng tôi có ý kiến như sau:

1. Đồng ý với việc triển khai dự án “Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn – tỉnh Thanh Hóa”, nhất trí với các nội dung về đánh giá tác động môi trường và thực hiện các biện pháp bảo vệ môi trường trong quá trình thực hiện dự án.

2. Ngoài ra cần lưu ý thêm một số nội dung sau

a. Ý kiến về các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

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b. Ý kiến về các giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

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c. Kiến nghị đối với Chủ dự án:

1. Đề nghị Chủ dự án phải đảm bảo về môi trường.
2. Đảm bảo về chất lượng môi trường và giải pháp M.B. cho nhân dân bị ảnh hưởng.
3. Đảm bảo về giao thông khi thi công xây dựng.

Nơi nhận:

- Như trên;
- Lưu văn phòng.

Ngày 27 tháng 5 năm 2011

UBND xã Hải Bình

Nguyễn Văn Dương

UBMTTQ *Việt Nam*.....
Kê Phú Sơn

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Số: *13*

Thanh Hóa, ngày ... tháng ... năm 2011

V/v : Ý kiến cộng đồng đối với báo cáo Đánh giá tác động môi trường của dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn

Kính gửi: Công ty TNHH khai thác công trình thủy lợi sông Chu

UBMTTQ *Kê Phú Sơn*... nhận được công văn số *3.96/105CT.2011* ngày *18* tháng *5*... năm 2011 của Công ty TNHH khai thác công trình thủy lợi sông Chu thông báo về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn. Trên cơ sở nghiên cứu tài liệu này, chúng tôi có ý kiến như sau:

1. Đồng ý với việc triển khai dự án “ Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn – tỉnh Thanh Hóa” , nhất trí với các nội dung về đánh giá tác động môi trường và thực hiện các biện pháp bảo vệ môi trường trong quá trình thực hiện dự án.

2. Ngoài ra cần lưu ý thêm một số nội dung sau

a. Ý kiến về các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

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b. Ý kiến về các giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

Thực hiện tất cả các biện pháp bảo vệ môi trường
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c. Kiến nghị đối với Chủ dự án:

Đảng cộng đồng cùng các GPMB
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Nơi nhận:

-Như trên;

-Lưu văn phòng.

Ngày...*20* tháng...*5*... năm *2011*
UBMTTQ *Kê Phú Sơn*
ĐTK

ĐỖ VIỆT THỌ

UBND Phu Sơn

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Số: 19

Thanh Hóa, ngày 20 tháng 5 năm 2011

V/v : Ý kiến cộng đồng đối với báo cáo Đánh giá tác động môi trường của dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn

Kính gửi: Công ty TNHH khai thác công trình thủy lợi sông Chu

UBND Phu Sơn nhận được công văn số 3.46/P.T.17.71.56 ngày 18 tháng 5 năm 2011 của Công ty TNHH khai thác công trình thủy lợi sông Chu thông báo về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn. Trên cơ sở nghiên cứu tài liệu này, chúng tôi có ý kiến như sau:

1. Đồng ý với việc triển khai dự án “ Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn – tỉnh Thanh Hóa”, nhất trí với các nội dung về đánh giá tác động môi trường và thực hiện các biện pháp bảo vệ môi trường trong quá trình thực hiện dự án.

2. Ngoài ra cần lưu ý thêm một số nội dung sau

a. Ý kiến về các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

Không ảnh hưởng xấu trong thi công

b. Ý kiến về các giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

Thực hiện tốt các biện pháp giảm thiểu tác động môi trường

c. Kiến nghị đối với Chủ dự án:

Tăng cường làm tốt công tác giải phóng mặt bằng

Nơi nhận:

-Như trên;

-Lưu văn phòng.

Ngày 20 tháng 5 năm 2011



Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

Thanh Hóa, Ngày 16 tháng 6 năm 2011

**BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG**
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 16 tháng 6 năm 2011

Kết thúc:h ngày 16 tháng 6 năm 2011

Địa điểm: UBND xã Thanh Thọ

II. THÀNH PHẦN THAM GIA

- Đại diện Ban quản lý dự án:
- Ông/bà: ...Lê Văn Minh... Chức vụ: ...GA.BQLDA...
- Ông/bà: Chức vụ:
- Đại diện đơn vị tư vấn:
- Ông/bà: ...Bác Thái Bạch Hằng... Chức vụ: ...CBDA...
- Ông/bà: ...Hà Thị Hồng... Chức vụ: ...CBDA...
- Ông/bà: Chức vụ:
- Đại diện UBND phường/xã:
- Ông/bà: ...Bác Việt Hùng... Chức vụ: ...CTUBND...
- Ông/bà: ...Lê Xuân Ninh... Chức vụ: ...CTMTTA.Xã...
- Ông/bà: Chức vụ:
- Đại diện các hội/đoàn thể địa phương:
- Ông/bà: Chức vụ:
- Ông/bà: Chức vụ:
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- Ông/bà: Chức vụ:

III. NỘI DUNG CUỘC HỌP

- Đại diện chính quyền địa phương
Ông/bà: ...Bác Việt Hùng... giới thiệu thành phần cuộc họp
- Đại diện Ban Quản lý dự án
Ông/bà: nêu mục đích cuộc họp
- Đại diện tư vấn trình bày các vấn đề sau:
 - Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);
 - Các hạng mục đầu tư của dự án;
 - Đánh giá sơ bộ các tác động môi trường của dự án bao gồm các tác động tới môi trường tự nhiên và xã hội trong các giai đoạn thực hiện dự án và các biện pháp giảm thiểu các tác động xấu trong quá trình thực hiện dự án.
 - Ý kiến của các bên liên quan

Yêu cầu thí sinh Phân Tích Công Tác Bài Khảo Tế'
về học Thái, và một học của công Trình ảnh hưởng
đến ý kiến của Thuyết Lễ, và học mẫu của các
đặc, với Chi công.

- Công việc xây dựng không từ bỏ đến hai hàng
phần nữa. Trên tay của không từ bỏ, đi vào
bên dưới của ra bên của nhà dài.
- này nói cho biết tại sao công trình của
nhà dân đã xây dựng.

ĐẠI DIỆN BQL

LÊ VĂN MINH



ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

Lê Xuân Vinh

Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

Thanh Hóa, Ngày 26 tháng 7 năm 2011

BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 14 tháng 5 năm 2011

Kết thúc:h ngày 16 tháng 5 năm 2011

Địa điểm : UBND Xã Thanh Thọ

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:

- Ông/bà : Ông Lê Văn Minh Chức vụ : Trưởng BAN QLDA

- Ông/bà : Chức vụ :

2. Đại diện đơn vị tư vấn :

- Ông/bà : Ông Thái Bạch Hồng Chức vụ : Cán bộ DA

- Ông/bà : Chức vụ :

3. Đại diện UBND phường/xã :

- Ông/bà Ông Việt Nhân Chức vụ : CT UBND xã

- Ông/bà Ông Xuân Vinh Chức vụ : PMT QL xã

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

4. Đại diện các hội/đoàn thể địa phương:

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

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- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương :

Ông/bà Ông Việt Nhân giới thiệu thành phần cuộc họp

2. Đại diện Ban Quản lý dự án

Ông/bà nêu mục đích cuộc họp

3. Đại diện tư vấn trình bày các vấn đề sau:

- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);
- Các hạng mục đầu tư của dự án;
- Nhiệm vụ của tư vấn trong quá trình thực hiện dự án;
- Phát tài liệu về dự án và tham vấn về các vấn đề môi trường.

IV. CÁC Ý KIẾN THAM VẤN VỀ VẤN ĐỀ MÔI TRƯỜNG

lưu giữ khi nhà thầu thi công, tránh làm hỏng di vật
lưu giữ và xử lý kịp thời các chất thải của công trình ảnh
hưởng đến nguồn nước và thủy lợi, và hạn chế
các nhà dân sát công trình.

Công nhân xây dựng không được thả nước thải
xả nguồn nước vào sông biển. Không được thả, đi
các loại chất thải ra hạ nguồn của nhà dân
nay. Mọi nhà thi công phải bảo vệ công trình của
nhà dân tại xây dựng.

Ngày 20 Tháng 5 Năm 2011

ĐẠI DIỆN BQL DỰ ÁN



PHÓ TỔNG GIÁM ĐỐC

LÊ VĂN MINH

ĐẠI DIỆN CHÍNH QUYỀN ĐỊA PHƯƠNG



CHỦ TỊCH

ĐẠI VIẾT NIÊN

ĐẠI DIỆN ĐOÀN THỂ ĐỊA PHƯƠNG



Lê Xuân Vinh

ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

UBND *thị trấn Nghi Sơn*
Xã Nghi Thọ

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Số: 01

Thanh Hóa, ngày 15 tháng 5 năm 2011

V/v : Ý kiến cộng đồng đối với báo cáo Đánh giá tác động môi trường của dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn

Kính gửi: Công ty TNHH khai thác công trình thủy lợi sông Chu

UBND *thị trấn Nghi Sơn* nhận được công văn số *176/CT.T.C.* ngày *18* tháng *5* năm 2011 của Công ty TNHH khai thác công trình thủy lợi sông Chu thông báo về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn. Trên cơ sở nghiên cứu tài liệu này, chúng tôi có ý kiến như sau:

1. Đồng ý với việc triển khai dự án “ Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn – tỉnh Thanh Hóa” , nhất trí với các nội dung về đánh giá tác động môi trường và thực hiện các biện pháp bảo vệ môi trường trong quá trình thực hiện dự án.

2. Ngoài ra cần lưu ý thêm một số nội dung sau

a. Ý kiến về các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

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b. Ý kiến về các giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

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c. Kiến nghị đối với Chủ dự án:

*Khi Công ty TNHH khai thác công trình thủy lợi sông Chu...
Đánh giá của Công ty TNHH khai thác công trình thủy lợi sông Chu...
Về hòa vào các khu dân cư, đây là nơi cư trú của người dân...
Đảm bảo công tác của nhân dân địa phương xây dựng*

Nơi nhận:

-Như trên;

-Lưu văn phòng.

Ngày 15 tháng 5 năm 2011.

UBND *thị trấn Nghi Sơn*
Xã Nghi Thọ



Lê Xuân Vinh

UBND *Thanh Hóa*.....

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Số: *08/CT-UBND*

Thanh Hóa, ngày *25* tháng *5* năm *2011*

V/v : Ý kiến cộng đồng đối với báo cáo Đánh giá tác động môi trường của dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn

Kính gửi: Công ty TNHH khai thác công trình thủy lợi sông Chu

UBND *Thanh Hóa*..... nhận được công văn số *446/19.07.2011* ngày *18* tháng *5* năm 2011 của Công ty TNHH khai thác công trình thủy lợi sông Chu thông báo về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn. Trên cơ sở nghiên cứu tài liệu này, chúng tôi có ý kiến như sau:

1. Đồng ý với việc triển khai dự án “ Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn – tỉnh Thanh Hóa” , nhất trí với các nội dung về đánh giá tác động môi trường và thực hiện các biện pháp bảo vệ môi trường trong quá trình thực hiện dự án.

2. Ngoài ra cần lưu ý thêm một số nội dung sau

a. Ý kiến về các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

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b. Ý kiến về các giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

.....
.....
.....
.....

c. Kiến nghị đối với Chủ dự án:

*Chỉ nhà thầu xây dựng - Đơn vị thi công phải có trách nhiệm khai
thác ảnh hưởng đến môi trường. Phải có biện pháp bảo vệ môi trường
trong quá trình thi công. Phải có biện pháp bảo vệ môi trường
trong quá trình xây dựng.*

Nơi nhận:

-Như trên;

-Lưu văn phòng.

Ngày *25* tháng *5* năm *2011*

UBND *Thanh Hóa*
12/11
CHỦ TỊCH
BỘ VIẾT NIÊN

Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

Thanh Hóa, Ngày 11 tháng 6 năm 2011

**BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG**
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 11 tháng 6 năm 2011

Kết thúc:h ngày 11 tháng 6 năm 2011

Địa điểm : UBND Xã Nghi Hòa

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:

- Ông/bà : ...Lê Văn Hùng..... Chức vụ : ...Giám đốc.....

- Ông/bà : Chức vụ :

2. Đại diện đơn vị tư vấn :

- Ông/bà : ...Đỗ Thái Bình..... Chức vụ : ...CBDA.....

- Ông/bà : ...Hà Thị Hương..... Chức vụ : ...CBDA.....

3. Đại diện UBND phường/xã :

- Ông/bà : ...N. Nguyễn Trung Bình..... Chức vụ : ...CT UBND.....

- Ông/bà : ...Nguyễn Thị Nga..... Chức vụ : ...PCT UBND.....

- Ông/bà : ...Lê Mạnh Hà..... Chức vụ : ...Ủy viên UBND.....

- Ông/bà : ...T. Trần Xuân Huy..... Chức vụ : ...CT HĐND.....

4. Đại diện các hội/đoàn thể địa phương:

- Ông/bà : ...Lê Văn Hùng..... Chức vụ : ...CT MTTQ.....

- Ông/bà : ...Lê Thị Xuân Hương..... Chức vụ : ...BT Đoàn xã.....

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương

Ông/bàN. Nguyễn Trung Bình..... giới thiệu thành phần cuộc họp

2. Đại diện Ban Quản lý dự án

Ông/bànêu mục đích cuộc họp

3. Đại diện tư vấn trình bày các vấn đề sau:

- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);
- Các hạng mục đầu tư của dự án;
- Đánh giá sơ bộ các tác động môi trường của dự án bao gồm các tác động tới môi trường tự nhiên và xã hội trong các giai đoạn thực hiện dự án và các biện pháp giảm thiểu các tác động xấu trong quá trình thực hiện dự án.
- Ý kiến của các bên liên quan

IV. CÁC Ý KIẾN THAM VẤN VỀ VẤN ĐỀ MÔI TRƯỜNG

Sau khi nghiên cứu tài liệu đánh giá sơ bộ về đồng môi trường dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn, hội nghị đã thảo luận và thống nhất một số vấn đề:

- Việc đầu tư xây dựng hệ thống cấp nước phục vụ cho khu kinh tế Nghi Sơn với chung với nhân dân xã Tĩnh Hải nói riêng là cần cấp thiết. Có như vậy mới đáp ứng nhu cầu sử dụng nước sạch của người dân, góp phần chống bệnh tật, nâng cao chất lượng cuộc sống cho người dân, thúc đẩy sự phát triển kinh tế xã hội, tạo công ăn việc làm cho người dân địa phương khi nhà máy đi vào thi công, vận hành.

- Trong quá trình thi công do tập kết vật liệu nên làm phát sinh bụi, khí thải, tiếng ồn do các phương tiện, máy móc thi công, ảnh hưởng tới trật tự giao thông khi phương tiện thường xuyên đi qua.

- Nhà thầu cần thực hiện các biện pháp bảo vệ môi trường như che chắn xe vận chuyển, thông vận chuyển quá tải, thường xuyên tưới nước tránh bụi vào mùa khô, các phương tiện khi thi công không quá tải.

- Để nghị chủ dự án tuân thủ đúng các quy định của Việt Nam về môi trường, kết hợp với chính quyền và ban công an trong việc đảm bảo an ninh trật tự trong khu vực thi công.

ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

Thanh Hóa, Ngày 27 tháng 5 năm 2011

BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 24 tháng 5 năm 2011

Kết thúc:h ngày 24 tháng 5 năm 2011

Địa điểm : UBND Xã Tĩnh Hải

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:

- Ông/bà : La Văn Minh Chức vụ : GP.BQL DA

- Ông/bà : Chức vụ :

2. Đại diện đơn vị tư vấn :

- Ông/bà : Bác Sĩ Bạch Hồng Chức vụ : CBDA

- Ông/bà : Đỗ Thị Hồng Chức vụ : CBDA

3. Đại diện UBND phường/xã :

- Ông/bà : Nguyễn Trung Bình Chức vụ : CT UBND

- Ông/bà : Nguyễn Thị Nga Chức vụ : PC.T.UBND

- Ông/bà : Cô Nàng Hà Chức vụ : Ủy viên UBND

- Ông/bà : Chức vụ :

4. Đại diện các hội/đoàn thể địa phương:

- Ông/bà : La Thị Xuân Hồng Chức vụ : ĐT Đoàn Xã

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương :

Ông/bà : Nguyễn Trung Bình giới thiệu thành phần cuộc họp

2. Đại diện Ban Quản lý dự án

Ông/bà : nêu mục đích cuộc họp

3. Đại diện tư vấn trình bày các vấn đề sau:

- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);
- Các hạng mục đầu tư của dự án;
- Nhiệm vụ của tư vấn trong quá trình thực hiện dự án;
- Phát tài liệu về dự án và tham vấn về các vấn đề môi trường.

IV. CÁC Ý KIẾN THAM VẤN VỀ VẤN ĐỀ MÔI TRƯỜNG

- Nhất trí ủng hộ thực hiện dự án.
Như cần sử dụng một số địa điểm nguồn dân
là cấp thiết.

Ngày... 24... Tháng 5... Năm 2011



ĐẠI DIỆN BQL DỰ ÁN

Lê Văn Minh

PHÓ TỔNG GIÁM ĐỐC

LÊ VĂN MINH

ĐẠI DIỆN ĐOÀN THỂ ĐỊA PHƯƠNG

Bí Đoàn xã



Lê Thị Xuân Hương

Lê Thị Xuân Hương

ĐẠI DIỆN CHÍNH QUYỀN ĐỊA PHƯƠNG



ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

Nguyễn Thị Nga



Đỗ Văn Đông



Cộng hoà Xã hội Chủ nghĩa Việt Nam

Độc lập – Tự do – Hạnh phúc

Thanh Hóa, Ngày 11 tháng 6 năm 2011

BIÊN BẢN CUỘC HỌP THAM VẤN ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG

DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày...11... tháng...6... năm 2011

Kết thúc:h ngày...11... tháng...6... năm 2011

Địa điểm : UBND Xã Thiệu Lâm

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:

- Ông/bà : Lê Văn Minh Chức vụ : Giám đốc

- Ông/bà : Chức vụ :

2. Đại diện đơn vị tư vấn :

- Ông/bà : Bùi Thái Bạch Dương Chức vụ : Cán bộ Dự

- Ông/bà : Hà Thị Hiền Chức vụ : Cán bộ Dự

3. Đại diện UBND phường/xã :

- Ông/bà : Đỗ Văn Hùng Chức vụ : PCT UBND

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

4. Đại diện các hội/đoàn thể địa phương:

- Ông/bà : Lê Xuân Hùng Chức vụ : CT UB MTTT

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương :

Ông/bà : Đỗ Văn Hùng giới thiệu thành phần cuộc họp

2. Đại diện Ban Quản lý dự án

Ông/bà : nêu mục đích cuộc họp

3. Đại diện tư vấn trình bày các vấn đề sau:

- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);

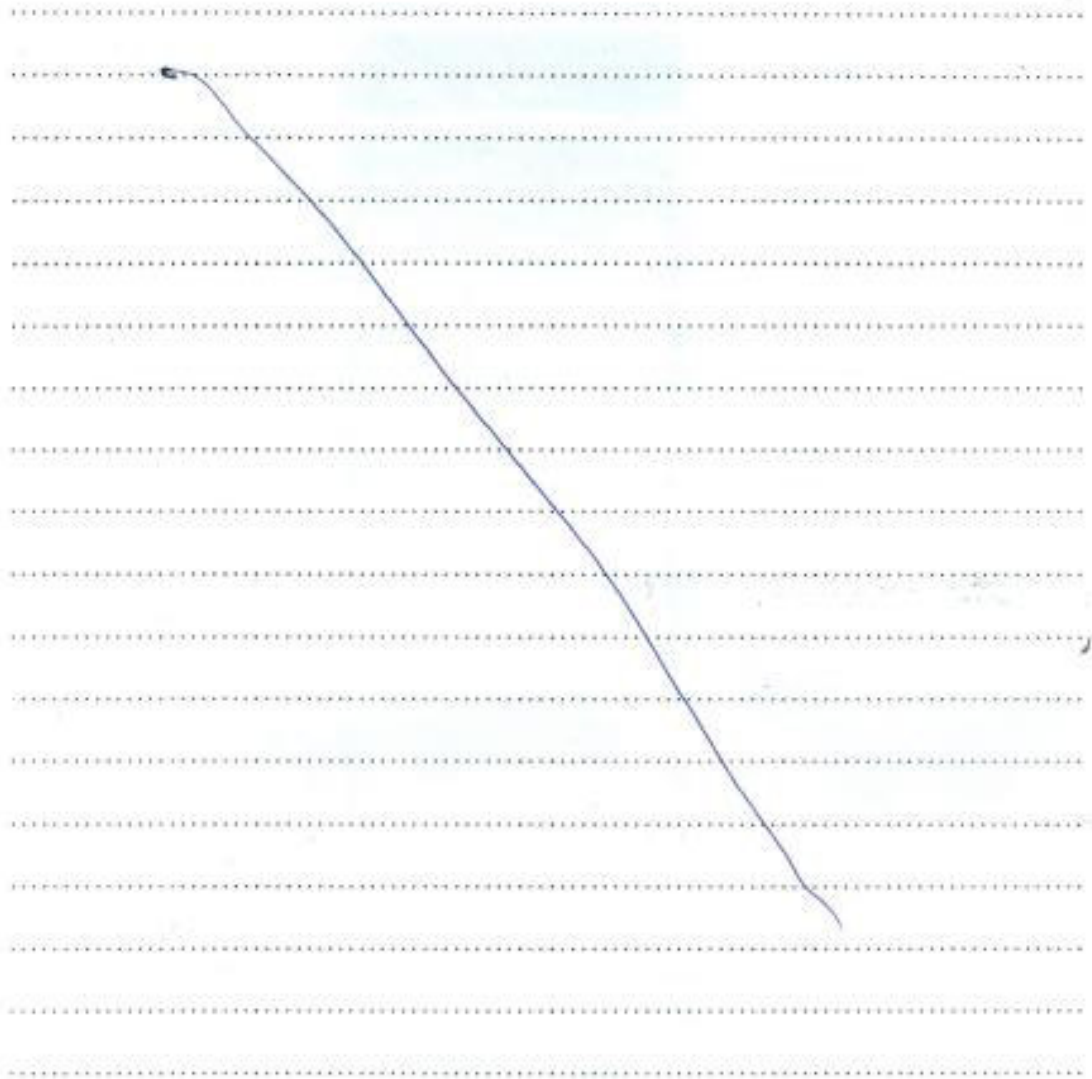
- Các hạng mục đầu tư của dự án;

- Đánh giá sơ bộ các tác động môi trường của dự án bao gồm các tác động tới môi trường tự nhiên và xã hội trong các giai đoạn thực hiện dự án và các biện pháp giảm thiểu các tác động xấu trong quá trình thực hiện dự án.

- Ý kiến của các bên liên quan

IV. CÁC Ý KIẾN THAM VẤN VỀ VẤN ĐỀ MÔI TRƯỜNG

Khu vực tái công đi lại không thuận lợi, cần
lưu thông công vụ từ văn phòng đi về các
địa điểm thi công nên lưu lại hai đường xe,
nhả vào cầu sông chừa cho người dân
đi lại. Thi công ảnh hưởng tới hoa màu
của người dân do bụi phủ
Cần tiến hành tiếp tục để có một cách tiếp
thị dân địa phương thành kế dài dài thời gian
là chính sách bồi thường thỏa đáng cho người
dân.



Ngày...16...Tháng...6...Năm 2011

ĐẠI DIỆN BQL DỰ ÁN



L. Minh

PHÓ TỔNG GIÁM ĐỐC
LÊ VĂN MINH

ĐẠI DIỆN CHÍNH QUYỀN ĐỊA PHƯƠNG



Đỗ Văn Hưng
ĐỖ VĂN HƯNG

ĐẠI DIỆN ĐOÀN THỂ ĐỊA PHƯƠNG



Lê Xuân Hườn

LÊ XUÂN HƯỜN

ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

Thanh Hóa, Ngày 21 tháng 5 năm 2011

BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 21 tháng 5 năm 2011

Kết thúc:h ngày 21 tháng 5 năm 2011

Địa điểm : UBND Xã Trục Lân

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:
- Ông/bà : Lê Văn Minh Chức vụ : G.P. BALDA
- Ông/bà : Chức vụ :
2. Đại diện đơn vị tư vấn :
- Ông/bà : Bà. Thái Bạch Diệu Chức vụ : C.B.A
- Ông/bà : Bà. Lê Thị Hương Chức vụ : C.B.A
3. Đại diện UBND phường/xã
- Ông/bà : Bà. Văn Hùng Chức vụ : P.C.T.UBND
- Ông/bà : Chức vụ :
- Ông/bà : Chức vụ :
- Ông/bà : Chức vụ :
4. Đại diện các hội/đoàn thể địa phương:
- Ông/bà : Lê Xuân Hỷ Chức vụ : CT UBND
- Ông/bà : Chức vụ :
- Ông/bà : Chức vụ :
- Ông/bà : Chức vụ :
- Ông/bà : Chức vụ :
- Ông/bà : Chức vụ :
5. Đại diện các hội gia đình/ tổ chức:..... người (danh sách kèm theo)

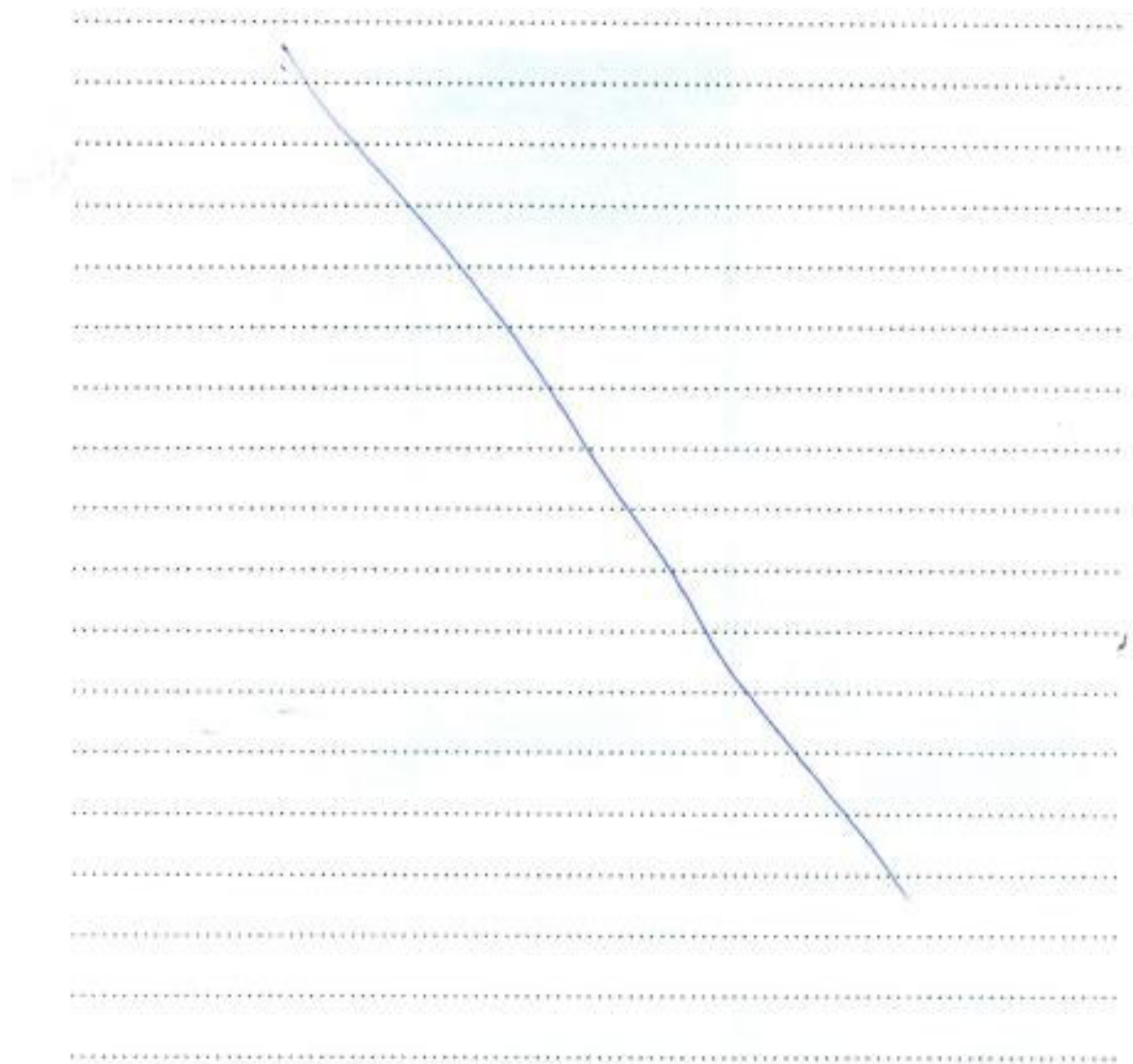
III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương
Ông/bà..... Bà. Văn Hùng giới thiệu thành phần cuộc họp
2. Đại diện Ban Quản lý dự án
Ông/bà.....nêu mục đích cuộc họp
3. Đại diện tư vấn trình bày các vấn đề sau:
 - Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);
 - Các hạng mục đầu tư của dự án;
 - Nhiệm vụ của tư vấn trong quá trình thực hiện dự án;
 - Phát tài liệu về dự án và tham vấn về các vấn đề môi trường.

IV. CÁC Ý KIẾN THAM VẤN VỀ VẤN ĐỀ MÔI TRƯỜNG

Như cần cấp nước phục vụ cho khu kinh tế Nghi Sơn và cấp nước sạch cho người dân xã Trúc Lâm là thiết thực, cần thiết, góp phần nâng cao chất lượng cuộc sống của người dân.

- Ngặt trí vẫn là vấn đề hiện tại.



Ngày...1...Tháng...5...Năm 2011

ĐẠI DIỆN BQL DỰ ÁN





PHÓ TỔNG GIÁM ĐỐC
LÊ VĂN MINH

ĐẠI DIỆN ĐOÀN THỂ ĐỊA PHƯƠNG





LÊ XUÂN HƯƠNG

ĐẠI DIỆN CHÍNH QUYỀN ĐỊA PHƯƠNG





ĐỖ VĂN HƯNG

ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

UBMTTQ

Xã Trúc Lân

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

Số: 14

Thanh Hóa, ngày ... tháng ... năm 2011

V/v : Ý kiến cộng đồng đối với báo cáo Đánh giá tác động môi trường của dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn

Kính gửi: Công ty TNHH khai thác công trình thủy lợi sông Chu

UBMTTQ Xã Trúc Lân... nhận được công văn số .../KTCL ngày ... tháng ... năm 2011 của Công ty TNHH khai thác công trình thủy lợi sông Chu thông báo về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn. Trên cơ sở nghiên cứu tài liệu này, chúng tôi có ý kiến như sau:

1. Đồng ý với việc triển khai dự án “ Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn – tỉnh Thanh Hóa”, nhất trí với các nội dung về đánh giá tác động môi trường và thực hiện các biện pháp bảo vệ môi trường trong quá trình thực hiện dự án.

2. Ngoài ra cần lưu ý thêm một số nội dung sau

a. Ý kiến về các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

Chi Thúc hiện Dự án trong quá trình thi công sẽ ảnh hưởng tới môi trường và các khu dân cư xung quanh. Tác động đến tích đất canh tác của dân gần khu vực thi công của dự án.

b. Ý kiến về các giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

Đề nghị Chủ đầu tư, đơn vị thi công xem xét các khả năng mà công trình có giải pháp khắc phục từ đó các tác động xấu đến môi trường, hòa nhập vào dân.

c. Kiến nghị đối với Chủ dự án:

Hiện tại giá bán hàng hóa của Tỉnh Năm 2011 không thấp hơn với giá Năm 2010. Trong khu vực giá tăng hàng Năm 2011 tăng Cao So với Năm 2010. Vì vậy nên phải tính toán kỹ lưỡng, xem xét hỗ trợ để dân địa phương không bị thiệt hại.

Nơi nhận:

-Như trên;

-Lưu văn phòng.

Ngày ... tháng ... năm ...

UBMTTQ Xã Trúc Lân



LÊ VĂN HƯNG

UBND Xã Trù Lân

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Số: 14

Thanh Hóa, ngày ... tháng ... năm 2011

V/v: Ý kiến cộng đồng đối với báo cáo Đánh giá tác động môi trường của dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn

Kính gửi: Công ty TNHH khai thác công trình thủy lợi sông Chu

UBND xã Trù Lân nhận được công văn số 396/KCTTLSC ngày 18 tháng 5 năm 2011 của Công ty TNHH khai thác công trình thủy lợi sông Chu thông báo về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn. Trên cơ sở nghiên cứu tài liệu này, chúng tôi có ý kiến như sau:

1. Đồng ý với việc triển khai dự án “ Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn – tỉnh Thanh Hóa”, nhất trí với các nội dung về đánh giá tác động môi trường và thực hiện các biện pháp bảo vệ môi trường trong quá trình thực hiện dự án.

2. Ngoài ra cần lưu ý thêm một số nội dung sau

a. Ý kiến về các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

Trong quá trình thi công thực hiện dự án có thể "lưu ảnh hưởng đến" nguồn nước xung quanh, chặt đứt các hệ quả kinh tế thu hồi đất. Thực hiện dự án sẽ mất đi khu vực sản xuất, nơi thường bốc trứ đọng đồng ruộng sẽ mất đi một số hệ quả bất lợi cho nhân

b. Ý kiến về các giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

phải có các biện pháp giảm thiểu ảnh hưởng đến môi trường xung quanh. Đối với các hệ quả kinh tế thu hồi đất phải có biện pháp hỗ trợ chuyển đổi nghề nghiệp, tạo công ăn việc làm tăng thu nhập

c. Kiến nghị đối với Chủ dự án:

Thực hiện đúng đủ các chính sách, chi trả quyền lợi trong công tác bồi thường, tái định cư. Phải thực hiện đúng một số công bố, tuân thủ các quy định hàng hóa lâu dài thời gian

Nơi nhận:

-Như trên;

-Lưu văn phòng.

Ngày 14 tháng 6 năm 2011

UBND xã Trù Lân



ĐỖ VĂN HƯNG

Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

Thanh Hóa, Ngày 10 tháng 6 năm 2011

BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 10 tháng 6 năm 2011

Kết thúc:h ngày 10 tháng 6 năm 2011

Địa điểm: UBND xã Xuân Lâm

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:

- Ông/bà: Lê Văn Minh Chức vụ: Giám đốc LPA

- Ông/bà: Chức vụ:

2. Đại diện đơn vị tư vấn:

- Ông/bà: Bùi Thế Bách Chức vụ: CBDA

- Ông/bà: Hồ Thị Hiền Chức vụ: CBDA

3. Đại diện UBND phường/xã:

- Ông/bà: Phạm Đức Bình Chức vụ: CT UBND

- Ông/bà: Nguyễn Bá M Chức vụ: PG UBND

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

4. Đại diện các hội/đoàn thể địa phương:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

- Ông/bà: Chức vụ:

III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương

Ông/bà: Phạm Đức Bình giới thiệu thành phần cuộc họp

2. Đại diện Ban Quản lý dự án

Ông/bà: nêu mục đích cuộc họp

3. Đại diện tư vấn trình bày các vấn đề sau:

- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);

- Các hạng mục đầu tư của dự án;

- Đánh giá sơ bộ các tác động môi trường của dự án bao gồm các tác động tới môi trường tự nhiên và xã hội trong các giai đoạn thực hiện dự án và các biện pháp giảm thiểu các tác động xấu trong quá trình thực hiện dự án.

- Ý kiến của các bên liên quan

- Sau khi nhận của tài liệu tranh giá sẽ báo cáo
thông tin về tình của dự án, hội nghị thảo luận và
thống nhất với các tác động môi trường dự kiến
và các hiệp pháp gồm thiên nhiên và tài sản của
sử dụng việc của người dân là cần thiết.
- Các yêu cầu dự án trong thời gian sớm nhất,
đảm bảo quá trình thi công không ảnh hưởng
đến môi trường xung quanh phát hành tới địa
phương của dự án.
- Đảm bảo thiết bị vận chuyển

ĐẠI DIỆN CHÍNH QUYỀN ĐỊA PHƯƠNG



LÊ VĂN MINH

PHAM DŨ C BÌNH

ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

Thanh Hóa, Ngày 26 tháng 5 năm 2011

BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 26 tháng 5 năm 2011

Kết thúc:h ngày 26 tháng 5 năm 2011

Địa điểm : UBND xã Xuân Lam

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:

- Ông/bà : ... Lê Văn Minh Chức vụ : Giám đốc

- Ông/bà : Chức vụ :

2. Đại diện đơn vị tư vấn :

- Ông/bà : ... Bùi Thái Bình Chức vụ : ... C.B.Đ

- Ông/bà : Chức vụ :

3. Đại diện UBND phường/xã

- Ông/bà : ... Phạm Đức Bình Chức vụ : ... CT UBND

- Ông/bà : ... Nguyễn B. M Chức vụ : ... CT UBND

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

4. Đại diện các hội/đoàn thể địa phương:

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương

Ông/bà ... Phạm Đức Bình giới thiệu thành phần cuộc họp

2. Đại diện Ban Quản lý dự án

Ông/bà nêu mục đích cuộc họp

3. Đại diện tư vấn trình bày các vấn đề sau:

- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);
- Các hạng mục đầu tư của dự án;
- Nhiệm vụ của tư vấn trong quá trình thực hiện dự án;
- Phát tài liệu về dự án và tham vấn về các vấn đề môi trường.

IV. CÁC Ý KIẾN THAM VẤN VỀ VẤN ĐỀ MÔI TRƯỜNG

Đồng ý. Việc triển khai thực hiện dự án phục vụ sự phát triển kinh tế - xã hội và cũng như đảm bảo nguồn nước và phục vụ cho sản xuất.

Ngày... 12... Tháng... 5... Năm 2011

 ĐẠI DIỆN BQL DỰ ÁN  PHÓ TỔNG GIÁM ĐỐC LÊ VĂN MINH ĐẠI DIỆN ĐOÀN THỂ ĐỊA PHƯƠNG	 ĐẠI DIỆN CHÍNH QUYỀN ĐỊA PHƯƠNG  PHẠM ĐỨC BÌNH ĐẠI DIỆN ĐƠN VỊ TƯ VẤN
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UBMTTQ

Xã Xuân Lâm

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

Số: 01

Thanh Hóa, ngày 25 tháng 5 năm 2011

V/v : Ý kiến cộng đồng đối với báo cáo Đánh giá tác động môi trường của dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn

Kính gửi: Công ty TNHH khai thác công trình thủy lợi sông Chu

UBMTTQ Xã Xuân Lâm ... nhận được công văn số 346/KTCLTC ngày 18 tháng 5 năm 2011 của Công ty TNHH khai thác công trình thủy lợi sông Chu thông báo về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn. Trên cơ sở nghiên cứu tài liệu này, chúng tôi có ý kiến như sau:

1. Đồng ý với việc triển khai dự án " Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn – tỉnh Thanh Hóa", nhất trí với các nội dung về đánh giá tác động môi trường và thực hiện các biện pháp bảo vệ môi trường trong quá trình thực hiện dự án.

2. Ngoài ra cần lưu ý thêm một số nội dung sau

a. Ý kiến về các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

Đánh giá tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội: Việc triển khai Dự án X.D. hồ Thủy Cáp Nước Saei khu kinh tế Nghi Sơn, yêu cầu bảo vệ nguồn nước và hệ thống cấp nước của địa phương. Cần có biện pháp bảo vệ môi trường và hệ thống cấp nước để tránh ô nhiễm môi trường và hệ thống cấp nước.

b. Ý kiến về các giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

Đầu tư thiết bị tiên tiến nhất tại thị trấn X.D. Dự án cho phép và yêu cầu đầu tư thiết bị tiên tiến nhất để giảm thiểu ô nhiễm môi trường và hệ thống cấp nước. Cần có biện pháp giảm thiểu ô nhiễm môi trường và hệ thống cấp nước.

c. Kiến nghị đối với Chủ dự án:

Nơi nhận:

-Như trên;

-Lưu văn phòng.

Ngày 25 tháng 5 năm 2011

UBMTTQ Xã Xuân Lâm



NGUYỄN DUY BIÊN

UBND XÃ XUÂN LÂM

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM
Độc lập – Tự do – Hạnh phúc

Số: 25/ CV. UBND

Thanh Hóa, ngày ... tháng ... năm 2011

V/v: Ý kiến cộng đồng đối với báo cáo Đánh giá tác động môi trường của dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn

Kính gửi: Công ty TNHH khai thác công trình thủy lợi sông Chu

UBND XÃ XUÂN LÂM nhận được công văn số 346/HCTN.SL ngày 18 tháng 5 năm 2011 của Công ty TNHH khai thác công trình thủy lợi sông Chu thông báo về các hạng mục đầu tư chính, các vấn đề môi trường, các giải pháp bảo vệ môi trường của Dự án Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn. Trên cơ sở nghiên cứu tài liệu này, chúng tôi có ý kiến như sau:

1. Đồng ý với việc triển khai dự án “ Xây dựng hệ thống cấp nước khu kinh tế Nghi Sơn – tỉnh Thanh Hóa”, nhất trí với các nội dung về đánh giá tác động môi trường và thực hiện các biện pháp bảo vệ môi trường trong quá trình thực hiện dự án.

2. Ngoài ra cần lưu ý thêm một số nội dung sau

a. Ý kiến về các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

Đồng ý với việc triển khai dự án Xây dựng hệ thống cấp nước sạch phục vụ phát triển khu kinh tế Nghi Sơn, cụ thể là bảo vệ nguồn nước sạch phục vụ sinh hoạt cho Nhân dân

b. Ý kiến về các giải pháp, biện pháp giảm thiểu các tác động xấu của Dự án đến môi trường tự nhiên và kinh tế - xã hội:

Sau khi triển khai dự án trong thời gian sớm nhất, Trung tâm Kiểm tra, kiểm soát, hướng dẫn môi trường xây dựng và phát triển khu kinh tế Nghi Sơn

c. Kiến nghị đối với Chủ dự án:

Nên đầu tư Thiết bị xử lý nước thải để có thể bơm nước

Nơi nhận:

-Nhu trên;

-Lưu văn phòng.

Ngày 25 tháng 5 năm 2011

UBND XÃ XUÂN LÂM



NGUYỄN BÁ TRÍ

Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

Thanh Hóa, Ngày 10 tháng 6 năm 2011

BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 10 tháng 6 năm 2011

Kết thúc:h ngày 10 tháng 6 năm 2011

Địa điểm : UBND xã Yên Mỹ

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:

- Ông/bà : Lê Văn Minh Chức vụ : GP. BQLDA

- Ông/bà : Chức vụ :

2. Đại diện đơn vị tư vấn :

- Ông/bà : B. Trần Thái Bạch Dương Chức vụ : Cán bộ Dự án

- Ông/bà : Hà Thị Hương Chức vụ : Cán bộ Dự án

3. Đại diện UBND phường/xã :

- Ông/bà : Nguyễn Trọng Kim Chức vụ : Bí thư Ủy. CT UBND xã

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

4. Đại diện các hội/đoàn thể địa phương:

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương :

Ông/bà : Nguyễn Trọng Kim giới thiệu thành phần cuộc họp

2. Đại diện Ban Quản lý dự án

Ông/bà : nêu mục đích cuộc họp

3. Đại diện tư vấn trình bày các vấn đề sau:

- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);
- Các hạng mục đầu tư của dự án;
- Nhiệm vụ của tư vấn trong quá trình thực hiện dự án;
- Phát tài liệu về dự án và tham vấn về các vấn đề môi trường.

IV. CÁC Ý KIẾN THAM VẤN VỀ VẤN ĐỀ MÔI TRƯỜNG

Khi thực hiện dự án, qua trình thi công xây dựng, hợp tác xây dựng giữa công ty chủ đầu tư do phải đào đắp đất, ảnh hưởng đến môi trường, việc đi lại của dân, ảnh hưởng đến người dân.

Đề nghị các cơ quan tư vấn môi trường cần chú ý khi thi công xây dựng để có chi phí khắc phục hậu quả.

Ngày...10...Tháng...6...Năm 2011

ĐẠI DIỆN BQL DỰ ÁN

ĐẠI DIỆN CHÍNH QUYỀN ĐỊA PHƯƠNG



PHÓ TỔNG GIÁM ĐỐC

LÊ VĂN MINH

ĐẠI DIỆN ĐOÀN THỂ ĐỊA PHƯƠNG



NGUYỄN TRỌNG KIM

ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

Cộng hoà Xã hội Chủ nghĩa Việt Nam
Độc lập – Tự do – Hạnh phúc

Thanh Hóa, Ngày 20 tháng 5 năm 2011

**BIÊN BẢN CUỘC HỌP THAM VẤN
ĐÁNH GIÁ TÁC ĐỘNG MÔI TRƯỜNG**
DỰ ÁN XÂY DỰNG HỆ THỐNG CẤP NƯỚC KHU KINH TẾ NGHI SƠN

I. THÔNG TIN CHUNG

Thời gian:

Bắt đầu:h ngày 20 tháng 5 năm 2011

Kết thúc:h ngày 20 tháng 5 năm 2011

Địa điểm : UBND Xã Yên Mỹ

II. THÀNH PHẦN THAM GIA

1. Đại diện Ban quản lý dự án:

- Ông/bà : Lê Văn Minh Chức vụ : G.P. Đ.S. L. P.A.

- Ông/bà : Chức vụ :

2. Đại diện đơn vị tư vấn :

- Ông/bà : Bùi Thái Bạch Chức vụ : G.Đ. Đ.Đ.

- Ông/bà : Chức vụ :

3. Đại diện UBND phường/xã :

- Ông/bà : Nguyễn Trọng Kim Chức vụ : CT. UBND

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

4. Đại diện các hội/đoàn thể địa phương:

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

- Ông/bà : Chức vụ :

III. NỘI DUNG CUỘC HỌP

1. Đại diện chính quyền địa phương :

Ông/bà : Nguyễn Trọng Kim giới thiệu thành phần cuộc họp

2. Đại diện Ban Quản lý dự án :

Ông/bà : nêu mục đích cuộc họp

3. Đại diện tư vấn trình bày các vấn đề sau:

- Giới thiệu chung về dự án (mục tiêu, vị trí, quy mô, kế hoạch của dự án);
- Các hạng mục đầu tư của dự án;
- Nhiệm vụ của tư vấn trong quá trình thực hiện dự án;
- Phát tài liệu về dự án và tham vấn về các vấn đề môi trường.

IV. CÁC Ý KIẾN THAM VẤN VỀ VẤN ĐỀ MÔI TRƯỜNG

Khi thực hiện dự án, qua' tình thế công
cộng, tình thế hàng' đến' được gần thông' thôn
không' do phải' các' địa' được, địa' hàng' đến' môi
trường, vấn' đi lại' lớn' do, tình' hoạt' lý' ngày
của' nhân' dân.

Để' tiếp' các' cơ' quan' Tư' vấn' từ' toàn' đến'
địa' lý' khi' thì' công' cộng' từ' về' có' chi' phí'
khả' phục' hậu' quả'.

Ngày... 24... Tháng... 5... Năm 2011

ĐẠI DIỆN BQL DỰ ÁN



PHÓ TỔNG GIÁM ĐỐC

LÊ VĂN MINH

ĐẠI DIỆN ĐOÀN THỂ ĐỊA PHƯƠNG

ĐẠI DIỆN CHÍNH QUYỀN ĐỊA PHƯƠNG



NGUYỄN TRỌNG KIM

ĐẠI DIỆN ĐƠN VỊ TƯ VẤN

Annex 1: Template for Safeguards Monitoring Report

I. Summary:

(to be included as part of the *main* Report)

- **Summary of EMP/RP Implementation**
- **Description of monitoring activities** carried out (e.g. field visits, survey questionnaire, public consultation meetings, focus group discussions, etc)
- **Key issues**, any **corrective actions** already taken, and any **grievances**
- Recommendations

II. Safeguards Monitoring Report

(to be included in the annex/appendix of the *main* Report)

1. Introduction and Project Overview

Project Number and Title:		
Safeguards Category	Environment	
	Indigenous Peoples	
	Involuntary Resettlement	
Reporting period:		
Last report date:		
Key sub-project activities since last report:	This section can include, among others, the following: <ul style="list-style-type: none">• Activities of Proponent• Progress of Work (% physical completion)• Changes of Surrounding Environment• Status of Permits / Consents	
Report prepared by:		

2. Environmental Performance Monitoring

a. Summary of Compliance with EMAP Requirements (Environmental Performance)

EMAP Requirements	Compliance Status (Yes, No, Partial)	Comment or Reasons for Non-Compliance	Issues for Further Action
Use environmental impact as main heading and EMAP as listing (see example below)	Use EMoP list as basis for rating/evaluating compliance (see example below)		
Rise of employment opportunities: <ul style="list-style-type: none">• Job openings of the project should give priority to local communities.• Recruitment of local laborers should be stipulated in the contract for construction	<ul style="list-style-type: none">• Field inspections and interviews with communities - DONE• Note each complaint case in the field – 3 COMPLAINTS RECEIVED• Set up grievance centre and report as part of monitoring action plan – NOT DONE		

Document : Initial Environmental Examination Report*MFF0054-VIE: PFR3 – Nghi Son Subproject – Nghi Son Economic Zone, Thanh Hoa province***b. Issues for Further Action**

Issue	Required Action	Responsibility and Timing	Resolution
Old Issues from Previous Reports			
List of EMoP measures or activities not completed (last column of previous table)			
New Issues from This Report			

c. Other activities

- Other issues not covered by EMAP/EMoP
- Environmental monitoring as required by GOI (e.g., air quality, water sampling)

3. Involuntary Resettlement Performance Monitoring**a. Summary of Compliance with RP Requirements**

RP Requirements	Compliance status Yes/No/Partial	Comment or Reasons for Compliance, Partial Compliance/Non-Compliance	Issues for Further Action ¹
Establishment of personnel in PMU/PIU			
Public consultation and socialization process		Provide information on: <ul style="list-style-type: none"> • Public consultation, participation activities carried out • Inclusive dates of these activities To be elaborated on in Item 5	
Land area to be acquired is identified and finalised			
Land acquisition completed			
Establishment of Resettlement Site(s)		Please state: <ul style="list-style-type: none"> • Number of AHs to be relocated as per agreed RP • Number of AHs already relocated • Number of houses built • Status of installation of community facilities to be provided as per agreed RP 	
Compensation payments for affected assets is completed		Please state: <ul style="list-style-type: none"> • Total Number of Eligible AHs and APs (as per agreed RP) • Number of AHs and APs compensated as of this monitoring period • Total Budget allocation as per agreed RP • Total budget disbursed to AHs as of this monitoring period 	
Transport assistance for relocating affected HH		As above	

¹ To be elaborated further in table 3.b (Issues for Further Action)

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Additional assistance to vulnerable affected household		Please state: <ul style="list-style-type: none"> • Total Number of vulnerable AHs and APs (as per agreed RP) • Agreed forms of assistance as per RP • Number of AHs and APs assisted as of this monitoring period 	
Income Restoration Program		Please state progress per income restoration feature/activity and actual period of implementation	
Temporary impacts have been addressed (affected properties restored to at least pre-project conditions)		Please state: <ul style="list-style-type: none"> • Total Number of AHs affected by temporary impacts as per agreed RP • Actual Number of AHs and total area affected by temporary impacts (if this differs from the projected number, such as in cases of unforeseen project impacts) • Status of restoring affected property 	
Capacity building activities			

b. Issues for Further Action

Issue	Required Action	Responsibility and Timing	Resolution
Old Issues from Previous Reports			
List of RP activities not completed (last column of previous table)			
New Issues from This Report			

4. Occupational, Health and Safety (OHS) Performance Monitoring**a. OHS for worker**

Issue	Required Action	Responsibility and Timing	Resolution
Old Issues from Previous Reports			
New Issues from This Report			

b. Public Safety

Issue	Required Action	Responsibility and Timing	Resolution
Old Issues from Previous Reports			

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New Issues from This Report			

5. Information Disclosure and Socialization including Capability Building

- Field Visits (sites visited, dates, persons met)
- Public Consultations and meetings (Date; time; location; agenda; number of participants disaggregated by sex and ethnic group, not including project staff; Issues raised by participants and how these were addressed by the project team)
- Training (Nature of training, number of participants disaggregated by gender and ethnicity, date, location, etc.)
- Press/Media Releases
- Material development/production (e.g., brochure, leaflet, posters)

6. Grievance Redress Mechanism**Summary:**

- Number of new grievances, if any, since last monitoring period: ____
- Number of grievances resolved: ____
- Number of outstanding grievances: ____

Type of Grievance	Details (Date, person, address, contact details, etc.)	Required Action, Responsibility and Timing	Resolution
Old Issues from Previous Reports			
New Issues from This Report			

7. Conclusion

- Important results from the implementation of EMAP/EMoP and RP monitoring
- Recommendations to improve EMAP/EMoP and RP management, implementation, and monitoring

8. Attachments

- Consents / permits
- Monitoring data (water quality, air quality, etc.)
- Photographs
- Maps

