

Environmental monitoring result to be reported to JICA (construction phase)

PACKAGE J1

Site Environmental Compliance Inspection and Monitoring Form

Project : North-South Expressway Construction Project (Ben Luc-Long Thanh) **Executing Agency** : Vietnam Expressway Corporation (VEC)
Section and Location : J1 Construction site **Supervision Consultant** : KEI-NE-OC-TEDI
Date : August 2018 **Contractor(s) for Reporting** : J1 Contractor Shimizu-Vinaconex E&C JO
Reporting Period : 2nd Quarter of 2018 **Monitoring Agency** : CEECO

1. Mitigation Compliance Inspection

Mitigation Measure	Mitigations Implemented (Yes, No)	Mitigations Effective? (1 to 5)*	Current situation	Action required	Contractor's action taken
1. Completion of detailed design in accordance with EMP requirements	Yes	1	1	None	None
2. Preparation of tender document included detailed requirements in pollution control and protection of natural ecosystems.	Yes	1	1	None	None
3. Proper preparation of CEMP by contractors	Yes	1	1	None	None
4. Evidence of marking of work site boundaries	Yes	1	1	None	None
5. No cutting trees outside the project ROW	Yes	1	1	None	None
6. Replanting vegetation damaged by site clearance	Not yet implemented	-	-	None	None
7. No dumping of all kinds of wastes and cut trees in rivers, canals, ponds and field	Yes	2	2	None	None

8. General site condition and cleanliness	Yes	1	1	None	None
9. Covering of all trucks moving to and from site	Yes	2	2	None	None
10. Watering road, construction site on rainless day	Yes	2	2	None	None
11. Registration papers and compliance certificates of construction vehicles with Vietnam Register Authority of Police approved environmental emissions standards	Yes	2	2	None	None
12. Installation of temporary waste storage areas at each construction site including segregation of hazardous and non-hazardous wastes.	Yes	2	2	None	None
13. Sanitation conditions at construction worker camps, included sewage treatment facilities (toilets), domestic solid wastes management, house keeping etc.	Yes	1	1	None	None
14. Clean water and safe food supply for workers	Yes	2	2	None	None
15. Requirements for vegetation waste (cut trees) burning met	Yes	2	2	None	None
16. Proper organization of material transport to minimize environmental pollution and community disturbance	Yes	2	2	None	None
17. Condition and effectiveness of erosion controls	Yes	2	2	None	None
18. Condition and effectiveness of construction waste management	Yes	2	2	None	None
19. Evidence of soil and/or water acidification due to leakage of acidic water from construction site to surrounding field, canals	Not	1	1	None	None
20. Evidence of direct or indirect disturbance of mangroves and other vegetation outside defined worksite boundaries	Not occurred	1	1	None	None
21. Stabilization, rehabilitation and landscaping of all land surfaces affected by construction activities	Yes	2	2	None	None
22. Installation of noise and dust control walls	Yes	1	1	None	None
23. Dust generation during windy conditions	Yes	1	1	None	None

24. Number and type of community complaints on environmental issues received	No community complaints on environmental issues received	1	1	None	None
25. Mangrove replanting for compensation of mangrove area lost by the project at the Thi Vai river, Long Tau and Soai Rap river banks	Not yet implemented	-	-	None	None

* Mitigation Effectiveness Rating Criteria (Indicative examples)

Very Good (all required mitigations implemented)
Good (the majority of required mitigations implemented)
Fair (some mitigations implemented)
Poor (few mitigations implemented)
Very Poor (very few mitigations implemented)

2. Ambient air monitoring

Parameter	Result* ¹ (µg/m ³)		Countries standards ² (µg/m ³)	Reference Standard* ³ (µg/m ³)	Baseline* ⁴ (µg/m ³)	Action required (Y/N)	Contractor's action taken		Date/ Location* ⁵
TSP	65 (A3)	257 (A2)	300	-	58 – 269	No	None	None	Date: 11-12 th June 2018 Location: A1: Household area near Pier P2 at Sta: (21+ 799.500) – the beginning point of the package A2: Household area at Sta: (22+200.00) – nearly the gate of construction site on Road No. 01 A3: Between workcamp N.2 and batching plant at Eastern bank – nearly Pier P28 at Sta: (24+1670.00)
PM10	49 (A3)	74 (A1)	150*	150*	58 - 269	No	None	None	
CO	1420 (A3)	5540 (A3)	30,000	-	1170 – 3920	No	None	None	
NO _x	31 (A3)	67 (A1)	200	200	21 – 69	No	None	None	
SO ₂	28 (A3)	76 (A1)	350	N/A	32- 82	No	None	None	

*1 The monitoring results of all monitoring points shall be attached to this form every time.

*2 National Technical Regulation for ambient air quality QCVN 05:2013/BTNMT, 1h average, except * (PM10), 24h average.

*3 Reference Standard is WB/IFC (WHO) guideline for ambient air quality.

*4 The Baseline data is the measured data in 2014 (dry season).

*5 The location of the monitoring points shall be attached to this form.

3. Noise and vibration

Parameter	Unit	Result		Country standards* ²	Reference Standard	Baseline* ⁴	Action required (Y/N)	Contractor's action taken		Date/ Location* ⁵	
Noise (Leq)	6:00-21:00	dBA	48.1 (A3)	67.8 (A1)	70	70	47.1-63.5	No	None	None	Date: 19-20 Mar 2018 Location: A1: Household area near Pier P2 at Sta:
	21:00-6:00		45.1	54.9	55	70	41.5-57.7	No	None	None	

			(A3)	(A1)							(21+ 799.500) – the beginning point of the package A2: Household area at Sta: (22+200.00) – nearly the gate of construction site on Road No. 01 A3: Between workcamp N.2 and batching plant at Eastern bank – nearly Pier P28 at Sta: (24+1670.00)
Vibration	6:00-21:00	dB	43.5 (A3)	57.9 (A1)	75	N/A	36.2-53.2	No	None	None	
	21:00-6:00		41.3 (A3)	51.4 (A1)	Baseline Level	N/A	32.2-51.4	No	None	None	

*1 The monitoring results of all monitoring points shall be attached.

*2 Noise: National Technical Regulation QCVN 26:2010/BTNMT, Vibration: National Technical Regulation QCVN 27:2010/BTNMT

*3 Reference Standard is WB/IFC (WHO) guideline for noise.

*4 The Baseline data is the measured data in 2014 (dry season).

*5 The location of the monitoring points shall be attached to this form.

4. Surface water quality

Parameter	Result ^{*1} (mg/L)		Limited values ^{*2} (mg/L)**		Reference Standard ^{*3} (mg/L)	Baseline ^{*4} (mg/L)	Action required (Y/N)	Contractor's action taken		Date/ Location ^{*5}
	B1	B2	B1	B2				Date: 11-12 th June 2018		
pH	6.25 (SW3-1)	7.41 (SW2-2)	5.5-9	5.5-9	6.5-8.5	7.11-7.28	No	None	None	Location:
TDS	3087(SW1-1)	5242 (SW4-2)								SW1-1: Soai Rap river - high tide (upstream)
SS	15 (SW3-1)	20 (SW1-1)	50	100	-	48-73	No	None	None	SW1-2: Soai Rap river - low tide (upstream)
BOD	6 (SW2-2)	8 (SW2-1-3)	15	25	5	8-12	No	None	None	SW2-1: Soai Rap river - high tide (downstream)
COD	11 (SW1-2)	15 (SW2/1-1)	30	50	-	15-21	No	None	None	SW2-2: Soai Rap river – low tide (downstream)
NO ₂ -N	0	0	0.05	0.05	-	0.014-0.018	No	None	None	SW3-1: Binh Khanh bridge construction area - high tide (downstream)
NO ₃ -N	0.114 (SW1-2)	0.315 (SW3-1)	10	15	-	0.238-0.557	No	None	None	SW3-2: Binh Khanh bridge construction area – low tide (downstream)
NH ₄ ⁺ -N	0.036 (SW1-2)	0.082 (SW1-2)	0.9	0.9	-	0.036-0.051	No	None	None	
*Zinc (Zn)	0.032 (SW1-2)	0.062(SW3-2)	-	-	-	-	No	None	None	
*Mangan (Mn)	0.027 (SW1-1)	0.075 (SW3-2)	0.5	1	-	-	No	None	None	
*iron(Fe)	0.097 (SW2-2)	0.175 (SW3-2)	1.5	2	-	-	No	None	None	
*copper (Cu)	<0.01	0.017 (SW2-1)	0.5	1	-	-	No	None	None	
Chrome(Cr)	NDT	NDT	-	-	-	-	No	None	None	

Arsenic (As)	NDT	NDT	1.5	2	-	-	No	None	None
Cadmium (Cd)	NDT	NDT	0.01	0.01	-	-	No	None	None
Lead (Pb)	NDT	NDT	0.5	0.5	-	-	No	None	None
PO ₄ ³⁻ -P	0.014 (SW1-2)	0.025 (SW3-1)	0.3	0.5	-	0.038-0.064	No	None	None
Turbidity	15.7 (SW3-2)	28.2 (SW2-1)	-	-	-	25.6-98.4	No	None	None
Oil & grease	<0.01	0.26 (SW3-1)	1	1	-	NDT	No	None	None
Coliform	70 (SW2-2)	460 (SW1-1)	7500	10000	-	20-150	No	None	None

*1 Please attach the list of results of all monitoring points.

*2 National Technical Regulation for surface water quality QCVN 08MT:2015/BTNMT. ** Unit: N/A for pH, MPN/100ML for coliforms

*3 Japan Standards for river water quality (Class C)

*4 The Baseline data is the measured data in 2014 (dry season).

*5 The location of the monitoring points shall be attached to this form.

5. Groundwater quality

Parameter	Result (mg/L) ^{*1}	Limited values ^{*2} (mg/L) ^{**}	Reference Standard ^{*3} (mg/L)	Baseline ^{*4} (mg/L)	Action required (Y/N)	Contractor's action taken		Date/ Location ^{*5}
pH	7.21	5.5-8.5	-	7.48	No	None	None	Date: 11-12 th June 2018 Location: Wells of residents, along with alignment, 200-300m from the central line on western bank (Nha Be district)
COD	0.84	4	-	1.3	No	None	None	
TDS	NDT	1500	-	<2	No	None	None	
NH ₄ ⁺ -N	0.056	1	-	0.043	No	None	None	
NO ₂ ⁻ -N	NDT	1	-	NDT	No	None	None	
NO ₃ ⁻ -N	0.125	15	-	0.062	No	None	None	
PO ₄	<0.01	-	-	-	No	None	None	
Fe	0.051	5	-	0.043	No	None	None	
Al	NDT	NDT	-	0	No	None	None	
As	NDT	0.05	-	0	No	None	None	
Mn	0.042	0.5	-	0.036	No	None	None	
Zn	0.027	3	-	0.027	No	None	None	
EC	103	-	-	1617	No	None	None	
Hardness	22.5	500	-	-	No	None	None	
oil	NDT	-	-	0	No	None	None	
E. Coli (MPN/100ML)	0	0	-	0	No	None	None	

*1 Please attach the list of results of all monitoring points

*2 National Technical Regulation for surface water quality QCVN 09MT:2015/BTNMT. ** Unit: N/A for pH, MPN/100ML for coliforms

*3 Japan Ground Water Environmental Standard (1999) as a specified Reference Standard is not available.

*4 The Baseline data is the measured data in 2014 (dry season).

*5 The location of the monitoring points shall be attached to this form.

6. Waste Water

Parameter	Result (mg/L) ^{*1}		Limited values ^{*2} (mg/L) ^{**}		Reference Standard ^{*3} (mg/L)	Baseline ^{*4} (mg/L)	Action required (Y/N)	Contractor's action taken		Date/ Location ^{*5}
			domestic	Industrial						
pH	6.91 (WW1)	8.36 (WW3)	5-9	5.5-9	-	-	No	None	None	Date: 11-12 th June 2018 Location: WW1: Clarifier outlet of concrete batching plant (Nha Be side) WW2: Clarifier outlet of concrete batching plant (Can Gio side) WW3: Worker camp (Nha Be side)
BOD	21 (WW1)	39 (WW3)	50	50	-	-	No	None	None	
TSS	17 (WW1)	56 (WW2)	100	-	-	-	No	None	None	
TDS	NDT	NDT	1000	-	-	-	No	None	None	
H2S	NDT (WW1&2)	0.24 (WW3)	-	None malodourous	-	-		Agreed		
NH ₃ -N	2.19 (WW1)	3.98 (WW3)	10	10	-	-	No	None	None	
Total Nitro	-	-	50	-	-	-	Requested to analysis next quarter	Agreed		
Total Phosphorus	-	-	10	-	-	-				
Oil & Grease	0.37 (WW2)	1.63 (WW3)	-	-	-	-	No	None	None	
T. Coliform	21 (WW1)	1700 (WW3)	5000	5000	-	-	No	None	None	

*1 Please attach the list of results of monitoring sites;

A. at construction site; at least 01 ample at discharging point of each concrete batching plant,

B. Workers camp: at least 01 sample at discharging point of septic tank of each workers camp

*2 National Technical Regulation on domestic waste water QCVN 14:2008/BTNMT. National Technical Regulation on industrial waste water QCVN 24:2009/BTNMT.

** Unit: N/A for pH, MPN/100ML for coliforms

*3 Japan Ground Water Environmental Standard (1999) as a specified Reference Standard is not available.

*4 The Baseline data is the measured data in 2014 (dry season).

*5 The location of the monitoring points shall be attached to this form.

7. Waste

Monitoring Item	Monitoring Results during Reporting Period			
	Creating volume (kg/week)	Collecting Proportion (%)	Collecting Measure	Disposal Method
Domestic waste				
Organic component	32.5	100%	- Covered containers - Separated storage area	- Contracting with functional unit
Inorganic Component	110	100%		
Reusable Component	52.5	80%	Separated storage area	- Concrete wasted from batching plant is used for surface leveling. - Steel is just recycled partially, the rest will be given to demanding units
Hazardous waste				
Oily waste	3.5	100%	Separated storage area	Not yet
Asbestos waste	0	0%		
Waste contaminated by heavy metals	0	0%		

*Solid and hazardous wastes disposal monitoring will be carried out at all work sites.

8. Environmental Incidents During Reporting Period (if relevant)

Environmental Incidents (accidents, spills, complaint)	Date / Location	Reported by	Description	Action Taken	Further Action Required
Accidents	None				
Oil/Chemical spills	None				
People Complaint	None				
.....					
.....					
.....					

9. Natural environment monitoring: Will be implemented by CSC

10. Aquatic Organism Monitoring	Site 1	Site 2	Site 3	Site 4	Assessment	Action Taken
Aquatic organism						
Location	Soai Rap River (at bridge construction section)	Soai Rap River Downstream (GIS point)	Long Tau upstream (GIS point)	Long Tau downstream (GIS point)		
Frequency	Bi-Quarter					
Species composition (species)	23				<p>- The section of the J1 bridge construction on Soai Rap river belongs to the transitional ecosystem, which is poor in both species composition and quantity, due to the particular ecological conditions of salinity fluctuation in rainy season and dry season.</p> <p>- The water quality is rich in nutrients and contaminated with organic matter. The pollution is caused by the domestic waste water coming from of upstream sources</p>	Contractor is requested to analyze separated the upstream and downstream water samples in next sampling session
Density	Phytoplankton:	2,600 cells per liter	J3 construction site			
	Zooplankton:	1,000 cells per m3				
	Benthos animal	50 individuals per m2				
Bio- indexes species	Phytoplankton:	<i>Pseudanabaena sp.</i> <i>Aulacoseira granulata</i>				
	Zooplankton:	<i>Acartia clause</i>				
	Benthos animal	<i>Melanoides tribercolatus</i>				
Density of predominant species	Phytoplankton:	621 cells per liter (<i>Aulacoseira granulata</i>)				
	Zooplankton:	150 cell per m3 (<i>Acartia clause</i>)				
	Benthos animal	15 individuals per m2				

11. Natural environment monitoring (Mangrove) *: Will be implemented by CSC

Mangroves and Wild terrestrial animals Monitoring	Site 1	Site 2	Assessment	Action Taken
Mangroves Monitoring				
Location	Phuoc Khanh commune (Can Gio district)	Thi Vai river bank (Dong Nai province)		
Frequency	annually	annually		
Date				
Total area (ha) of reforestation				
Biomass of mangroves (kg/m ²)				
Density of predominant species (individuals/m ²)				

Species diversity measured by Shannon Weaver index				
Average height and stem diameter				
Wild terrestrial animals (species composition and density)				
Aquatic organisms (planktons, fish; species composition, density and Bioindexes)				

* In case there is any report of monitoring result which covers all monitoring parameters shown above, it is acceptable to attach the report to this form instead of filling this table.

Signature



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NGUYEN QUOC LUAN

Notes:

Attachment:

1. Pictures captioned on construction site
2. Location of sampling points

ATTACHMENT:

**PICTURES OF AMBIENT AIR, NOISE AND VIBRATION SAMPLING
HÌNH ẢNH THU MẪU KHÔNG KHÍ XUNG QUANH, TIẾNG ÒN VÀ ĐỘ RUNG**



A1: Day time/ Ban ngày



A1: Night time/ Ban đêm



A2: Day time/ Ban ngày



A2: Night time/ Ban đêm

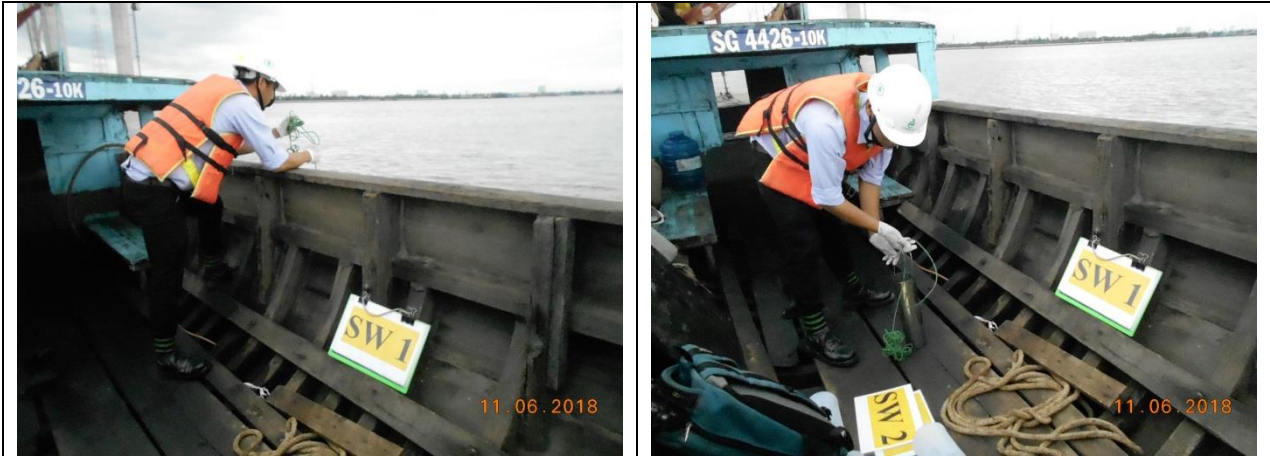


A3: Day time/ Ban ngày

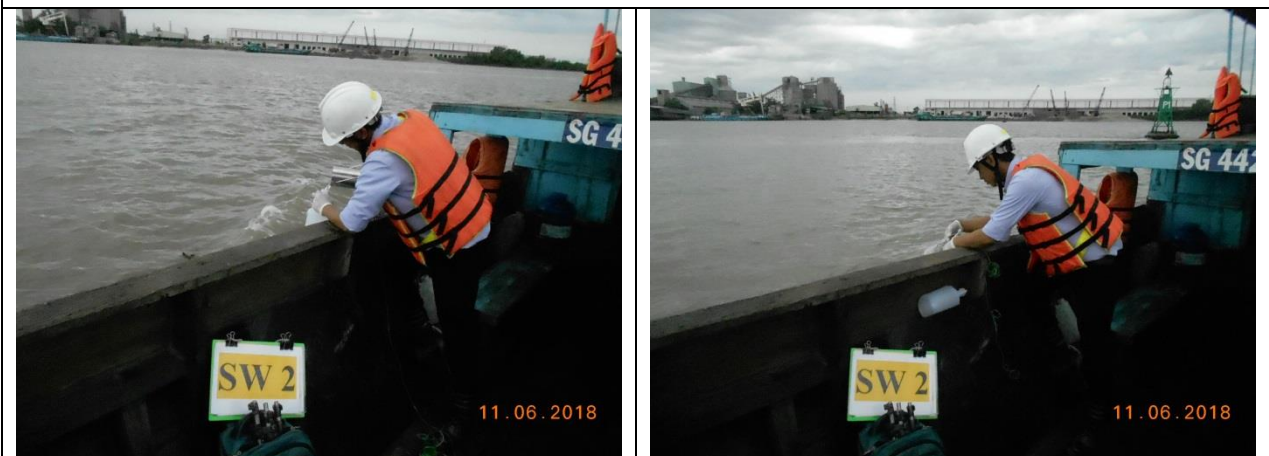


A3: Night time/ Ban đêm

**PICTURES OF SAMPLING SURFACE WATER, SOIL, EMISSION,
WASTEWATER, UNDERGROUND WATER.
HÌNH ẢNH THU MẪU NƯỚC MẶT, ĐẤT, KHÍ THẢI, NƯỚC THẢI, NƯỚC NGẦM**



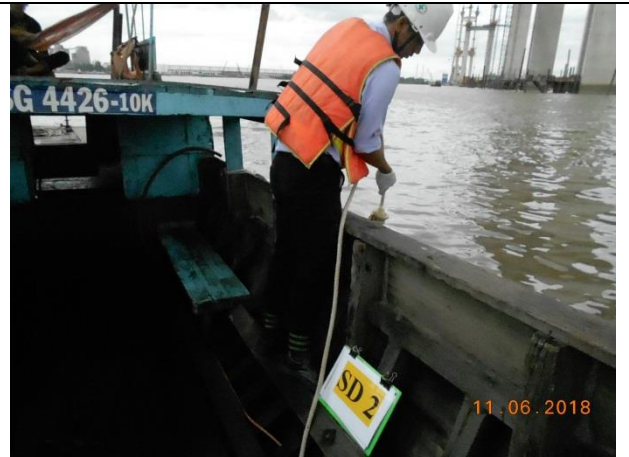
Sampling surface water at SW1 / Thu mẫu nước mặt tại SW1



Sampling surface water at SW2 / Thu mẫu nước mặt tại SW2



Sampling surface water at SW3 / Thu mẫu nước mặt tại SW3



Sampling sediment / Thu mẫu trầm tích



Sampling soil / Thu mẫu đất



**Sampling wastewater at WW1 /
Thu mẫu nước thải tại WW1**



**Sampling wastewater at WW2 /
Thu mẫu nước thải tại WW2**



Sampling emission / Thu mẫu khí thải



Sampling underground water / Thu mẫu nước ngầm

Attachment 2: Sampling location diagram

