



Nam Ngiep 1 Hydropower Project

Quarterly Environment Monitoring Report Third Quarter of 2025

July to September 2025

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ABBREVIATIONS / ACRONYMS

AIP	Annual Implementation Plan
ADB	Asian Development Bank
ADM	Administration Division
BAC	Biodiversity Advisory Committee
BOF	Biodiversity Offset Framework
BOMC	Biodiversity Offset Management Committee
BOMP	Biodiversity Offset Management Plan
BOMU	Biodiversity Offset Management Unit
BSP	Biodiversity Service Provider
CA	Concession Agreement between the NNP1PC and GOL
CAP	Corrective Action Plan
CCA	Community Conservation Agreement
CDP	Community Development Plan
COD	Commercial Operation Date
CVC	Conventional Vibrated Concrete
CWC	Civil Works Contract
DAFO	District Agriculture and Forestry Office
DCC	Document Control
DD	Data Deficient of IUCN conservation status
DEB	Department of Energy and Business of the Ministry of Energy and Mine
DEMO	District Energy and Mines Office
DOF	Department of Forestry of Ministry of Agriculture and Forestry
DWP	Detailed Work Program
EC	Electrolytic Conductivity
EIA	Environmental Impact Assessment
EMMR	Environmental Management and Monitoring Reports
EMO	Environmental Management Office of ESD within NNP1PC
EMU	Environmental Monitoring Unit
EMWC	Electrical-Mechanical Works Contract
EPF	Environmental Protection Fund
ESD	Environmental and Social Division of NNP1PC
ESMMP	Environmental and Social Monitoring and Management Plan

FMM	Financial Management Manual
FPF	Forest Protection Fund
FTS	Fortune Service
GOL	Government of Lao PDR
GIS	Geographic Information Systems
HMWC	Hydraulic Metal Works Contract
HR	Human Resources
H&S	Health and Safety
IAP	Independent Advisory Panel
IEE	Initial Environmental Examination
IMA	Independent Monitoring Agency
INRMP	Integrated Natural Resources Management Plan
IUCN	International Union for Conservation of Nature
ISP	Intergraded Spatial Planning
KGS	Khammany General Service
KPI	Key performance Indicator
kV	kilo-Volt
LC	Least Concern of IUCN conservation status
LTA	Lender's Technical Advisor
LHSE	Lao Holding State Enterprise
MAF	Ministry of Agriculture and Forestry
MEM	Ministry of Energy and Mines, Lao PDR
MOM	Minutes of Meeting
MONRE	Ministry of Natural Resource and Environment, Lao PDR
MOU	Memorandum of Understanding
MPI	Ministry of Planning and Investment
NC-NX	Nam Chouane-Nam Xang
NCR	Non-Compliance Report
NNP1PC	Nam Ngiep 1 Power Company Limited
OAA	Other aquatic animals
OC	Obayashi Corporation
OFIs	Opportunity for Improvement
O&M	Operation & Maintenance
ONC	Observation of Non-Compliance

OSOV	Owners’ Site Office and Village
PAFO	Provincial Department of Agriculture and Forestry
PCD	Procurement Division
PEMO	Province Energy and Mine Office
PONRE	Provincial Department of Natural Resource and Environment, MONRE
RCC	Roller Compacted Concrete
SIR	Site Inspection Report
SMO	Social Management Office of ESD within NNP1PC
SMART	Spatial Monitoring and Reporting Tool
SOP	Standard Operating Procedure
SS-ESMMP	Site Specific Environmental and Social Monitoring and Management Plan
TD	Technical Division
TOR	Terms of Reference
TPZ	Totally Protected Zone
TSS	Total Suspended Solids
UAE	United Analysis and Engineering Consultant Company Ltd.
UR	Upper Reservoir
VU	Vulnerable of IUCN conservation status
WCS	Wildlife Conservation Organization
WMF	Watershed Management Fund
WMP	Watershed Management Plan
WRPC	Watershed and Reservoir Protection Committee
WRPO	Watershed and Reservoir Protection Office
WWTS	Wastewater Treatment System

EXECUTIVE SUMMARY

The quarterly environment monitoring report of Nam Ngiep 1 Hydropower Project provides information and analysis of compliance with the environmental and social obligations of the Project stipulated in the Concession Agreement between the Nam Ngiep 1 Power Company (NNP1PC) and the Government of Lao PDR (GOL), and as required by environmental legislation of the Lao PDR, the ADB Safeguard Policy Statement and IFC Performance Standards. The Company ensures compliance with these requirements through implementation of project specific sub-plans, programmes and activities prepared as part of the Environmental and Social Management and Monitoring Plan for the Operation Phase (ESMMP-OP).

During Q3 2025, the final evaluation of the four (04) Environmental Management Plans (EMPs) under the ISO 14001:2015 Environmental Management System (EMS), was conducted. The timeframe of the EMPs is from August 2024 to July 2025. The four EMPs include EMP01: HSE awareness training for NNP1PC staff and contractors, EMP02: Reducing the paper consumption in NNP1 offices, EMP03: Recycling the HDPE plastic waste by producing four HDPE waste bins, and EMP04: Planting trees at selected rehabilitation areas. Based on the evaluation results, EMP01, EMP02, and EMP04 successfully achieved their targets. However, EMP03 was not fully achieved, with certain targets remaining unmet. A detailed assessment of EMPs 2024 can be found in the relevant section of this report.

The ISO Committee, in collaboration with the HR team, arranged and conducted a two-day onsite training from 23–24 September 2025, covering (i) organizational Context and Risk Management for ISO 14001, (ii) ISO 14001:2015 Internal Audit Techniques. A total of 24 staff participated in the training, including 13 internal auditors, 2 LHSE staff, 4 new internal auditor candidates, and 5 interested employees. All participants successfully passed the assessment conducted by the SGS-accredited trainer for ISO 14001:2015. Three joint monthly site inspections were conducted by EMO, ADM and Technical Division (TD) to follow up on the progress of corrective actions from previous findings and any new findings. During these inspections, three Observation of Non-Compliance (ONCs) were identified. The Site Inspection Reports (SIRs) with details of findings and recommendations were submitted to TD and ADM and two of the ONCs were resolved by the end of Q3 2025; however, one issue was escalated to NRC level 1 and the corrective actions are ongoing and expected to be rectified by October 2025.

In Q3 2025, a total of 14.9 m³ solid waste from NNP1 project sites and camps was disposed of at the NNP1 Project Landfill, a decrease of 0.34 m³ compared with Q2 2025. The local waste management contractor maintained routine waste collection and operation of the NNP1 Project Landfill throughout Q3 2025.

In response to early warnings of Typhoon Bualoi, NNP1PC initiated water level monitoring at the upstream reservoir and in Nam Ngiep River downstream of the re-regulation dam starting 28 September 2025, with real-time alerts issued to downstream villages via WhatsApp prior to the typhoon's arrival. On 29 September, heavy rainfall caused a sharp rise in reservoir levels, the Technical Division (TD) has prepared a reservoir buffer before the typhoon, but the sudden high inflow required spillway gate operation following the Flood Management Plan. Warnings were sent to downstream communities, followed by evacuation. NNP1PC supported the evacuation to shelters and ensured essential services. Lives were lost, and villagers returned home safely after two days. Post-typhoon, food and relief supplies were distributed to five affected villages. Some property damage was reported and is still being finalized. The designated evacuation point was not accessible due to water blocking the lower section of the access road. NNP1PC is working

with government agencies to assess the flood impacts, and the findings will be included in the upcoming report. A separate report from the Technical Division and SMO will be submitted once completed.

The environmental flow requirements have been monitored in accordance with the ESMMP-OP, and the results show that the rate of water level increase due to dam operations (ramping-up) in three cases did not comply with the requirements.

The concentration of dissolved oxygen (DO) at the surface level in R05 (Main Reservoir immediately upstream of the main dam) ranged between 5.9 mg/L and 9.2 mg/L. The monthly mean DO concentration at the intake level increased from 1.52 mg/L in July 2025 to 3.16 mg/L in August 2025 and 2.89 mg/L in September 2025. The DO concentrations in Nam Chian and Nam Phouan were above 6 mg/L. The DO concentrations at the surface level in the Re-regulation Reservoir (R07) were between 2.5 and 8.1 mg/L. During combined gate and turbine discharges in August and September 2025, DO concentrations in Nam Ngiep downstream the Re-regulation Dam were greater than 6 mg/L (complied with the standard). During gate discharges in July 2025, the DO levels were above the Standard for the first 5.2 km and then dropped to slightly below the Standard until close to the confluence with the Mekong River where the DO complied with the Standard.

The depth profile monitoring during the period indicates formation of oxyclines in the Main Reservoir at the monitored stations at varying depths.

In Q3 2025, the Bolikhamxay Watershed and Reservoir Protection Office (BLK-WRPO) resumed forest and reservoir patrols in July 2025. However, the patrols were subsequently suspended throughout August and September 2025 due to the continued delay in the disbursement of the 2025 operational budget from the Forest Protection Fund (FPF), Department of Forestry (DoF), Ministry of Agriculture and Environment (MAE).

In Q3 2025, XSB-WRPO did not conduct patrolling in the Totally Protected Zones (TPZs), watershed forests, or reservoir areas due to delays in submitting the 2025 activity plan to NNP1PC-EMO and BSP-WCS, as well as the financial report to XSB-WRPC. The FCMP booklets were distributed to the key XSB offices including Hom Anouvong and Thathom DAFOs. The Fisheries Co-Management Regulations (FCMR) were endorsed by the Head of XSB Provincial Justice Office on 23 July 2025 and subsequently submitted to the XSB Provincial Assembly for approval on 24 July 2025. The construction of the upstream reservoir checkpoint was completed and the downstream checkpoint is expected to be completed in fourth quarter 2025.

In Q3 2025, Bolikhamxay Biodiversity Offset Management Unit (BOMU) carried out the patrol sub-stations guarding and access control. BSP-WCS finalized the reports on the Community Conservation Agreement (CCA) consultations and the review of Village Fish Conservation Zones. NNP1PC disbursed the funds stipulated in the Nam Chouan-Nam Xang (NC-NX) 2025 Annual Implementation Plan (AIP) to the Environment and Forestry Protection Fund, Ministry of Agriculture and Environment (EFPF-MAE).

The fish species dominating the fish catch by weight in Q3 2025 include *Oreochromis niloticus*, *Cyprinus carpio*, *Clarias batrachus* and two species group of Hampala and Poropuntius which are classified as Least Concern (LC) according to the IUCN Red List of Threatened Species and *Oreochromis niloticus* which is an exotic species. There is a slightly change in the dominant species composition. Some species/groups present in Q2 (e.g., *Barbonymus gonionotus*, *Hypsibarbus*, *Mastacembelus*) do not appear in Q3, and two new species (*Cyprinus carpio* and

Clarias batrachus) appear in Q3. The recorded catch of threatened species includes two species that is classified as Vulnerable (VU): *Scaphognathops bandanensis*, and *Tor sinensis*.

1 INTRODUCTION

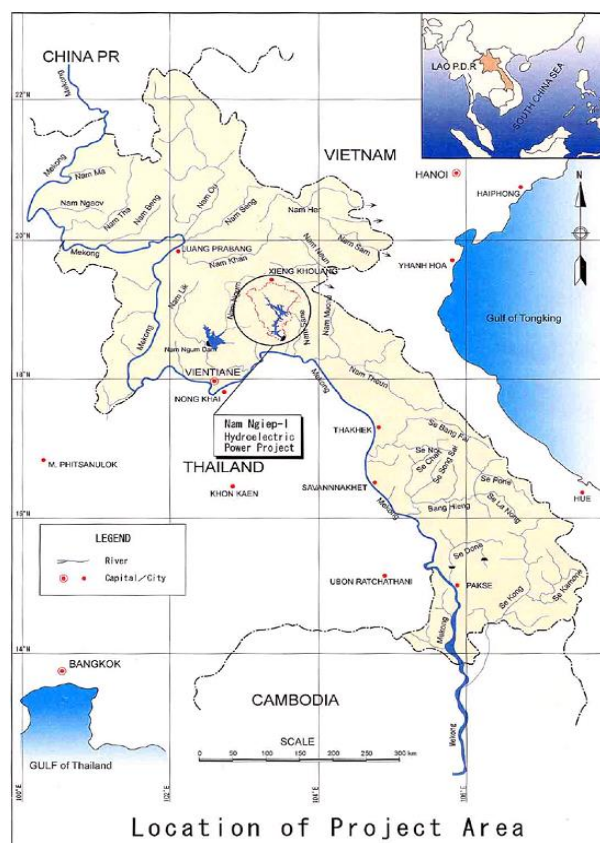
The Nam Ngiep originates in the mountains of Xiengkhouang Province, flowing through Khoun District into Thathom District of Xaysomboun Province, through Hom District and into Bolikhamxay District of Bolikhamxay Province. The Nam Ngiep meets the Mekong River just upstream from Pakxan in Bolikhamxay Province.

Two dams and power stations were constructed along the Ngiep River in Bolikhamxay. At the main dam site, a primary power station generated around 1,546 GWh of electricity for export to Thailand and release water to a regulating pond where a second dam and power station generate around 105 GWh of electricity for local use.

The Project Commercial Operation Date was achieved on 05 September 2019.

This Quarterly Environment Report provides a summary of environmental monitoring activities and mitigation actions during **Q3 2025**. The report is published on the Company website (<https://namngiep1.com/>).

Related construction Site Specific Environmental and Social Monitoring and Management Plans (SS-ESMMPs) are also publicly disclosed on the Company website as required under the Concession Agreement.



2 ENVIRONMENTAL MANAGEMENT AND MONITORING

The environmental management and monitoring activities reported in this section document the implementation of the relevant sub-plans and programmes of the Environmental and Social Management and Monitoring Plan for the Operation Phase during Q3 2025.

2.1 ENVIRONMENTAL MANAGEMENT SYSTEM

During Q3 2025, the final evaluation of the four (04) Environmental Management Plans (EMPs) under the ISO 14001:2015 Environmental Management System (EMS), was conducted. The timeframe of the EMPs is from August 2024 to July 2025. The four EMPs include EMP01: HSE awareness training for NNP1PC staff and contractors, EMP02: Reducing the paper consumption in NNP1 offices, EMP03: Recycling the HDPE plastic waste by producing four HDPE waste bins, and EMP04: Planting trees at selected rehabilitation areas. Based on the evaluation results, EMP01, EMP02, and EMP04 successfully achieved their targets. However, EMP03 was not fully achieved, with certain targets remaining unmet. The details of EMPs 2024 implementation are shown in **Table 2.1-1**.

TABLE 2.1-1: THE DETAILS OF EMPs 2024 IMPLEMENTATION

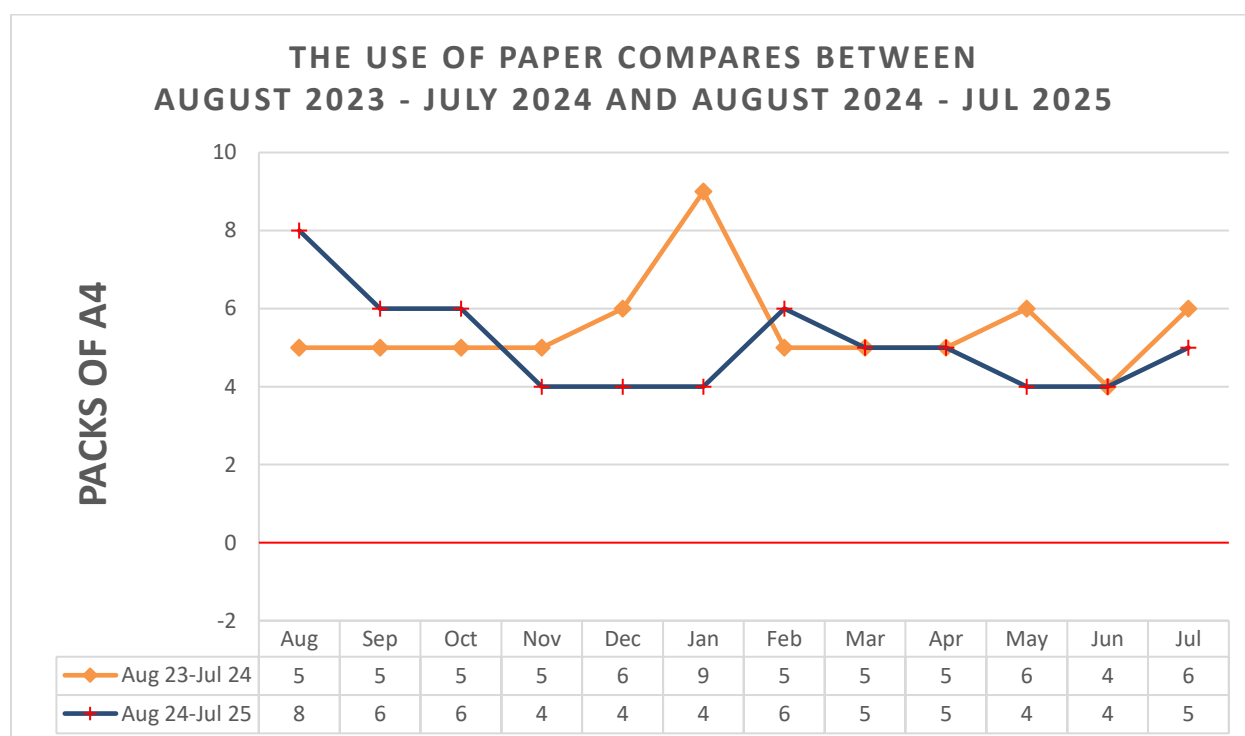
EMP No.	Activity Description	Key Performance Indicator (KPI)	Evaluation Date	Implementation Progress
01/2024*	Providing HSE awareness training to NNP1PC staff and contractors	100% of new NNP1PC employees and contractors and 80% of existing NP1PC employees and contractors will be trained in health, safety, and environmental awareness August 2024 to July 2025	Aug 2024 – July 2025	Achieved. The annual HSE training was conducted on 30 July 2025.
02/2024*	Reducing the paper consumption in NNP1 offices	Total use of A4 paper for printing in the NNP1PC's offices (VTE, OSOV1, OSOV2) is reduced by 5% during August 2024 to July 2025 compared with the previous 12 months.	Sep 2024 - July 2025	8% reduction (KPI achieved) In July, continued digital reporting to GOL saved 756 sheets. Total saved to date: 1,542 sheets (target: 3,500 sheets by 2025). See the graph below,
03/2024 [#]	To make at least one new product (four HDPE waste bins) from the HDPE plastic waste within the implementation timeline from August 2024 to July 2025.	Collect and sort HDPE plastic waste to produce four waste bins from August 2024 to July 2025.	Sep 2024 - July 2025	Collected a total of 50 kg of HDPE bottle caps. On hold for producing the HDPE waste bins due to higher machine cost. the team is currently exploring hand tools alternative for making the waste bins.
04/2024*	Planting at least 200 trees at selected rehabilitation areas.	At least 50% of planted trees survive by July 2025.	Sep 2024 - July 2025	Achieved with corrective action Current survival rate 39%: 77 out of 200 trees have survived. To address this, an additional action to replace the 123 dead trees was

EMP No.	Activity Description	Key Performance Indicator (KPI)	Evaluation Date	Implementation Progress
				conducted on 11 June 2025.

*EMP_s implemented in 2023, continued in 2024 for further success

New EMP for implementation in 2024 and futures.

- EMP02: Reducing the paper consumption in NNP1 offices**



- Progress Activity for EMP:01- HSE awareness training**

On 30 July 2025, the annual HSE awareness training for NNP1PC staff and contractors was conducted with a total of 49 participants. The training included pre- and post-assessments to ensure that all participants have a clear understanding of key HSE principles.



The ISO Committee, in collaboration with the HR team, arranged and conducted a two-day onsite training from 23–24 September 2025 to support the ISO14001 internal audit scheduled for October 2025 covering (i) organizational Context and Risk Management for ISO 14001, (ii) ISO 14001:2015 Internal Audit Techniques. A total of 24 staff participated in the training, including 13 internal auditors, 2 LHSE staff, 4 new internal auditor candidates, and 5 interested employees. All participants successfully passed the assessment conducted by the SGS-accredited trainer for ISO 14001:2015.



2.2 CONTRACTOR SS-ESMMPs

In Q3 2025, one SSESMP for drilling work and installation for monitoring equipment was submitted to the Environment Management Office (EMO) for review and approval. On 25 September 2025, EMO issued a no objection to the proposed activity but required the contractor Sinohydro Foundation Engineering Co., Ltd to revise and resubmit the documents within 10 business days, addressing the following key comments:

- Provide a detailed description and map of the location of rented house/guesthouse and indicate where equipment, tools and admixture chemicals will be kept and handled.
- Preventive measures against oil and admixture chemical spillage and contamination during operation and maintenance of equipment and tools must be clearly outlined.
- Waste bins shall be provided on-site, daily waste segregation shall be implemented, the daily general waste must be collected and transported to NNP1PC landfill and drilling mud and concrete waste must be disposed of at an authorized location.
- The storage of hazardous materials should have adequate roofing and concrete floor to reduce the risk of soil contamination.
- A copy of the Safety Data Sheets (SDS) for all hazardous materials shall be provided on-site.

The SS-ESMMP is provided in **Appendix 6**. The EMO's comment and contractor's responses to the EMO's comments are documented in **Appendix 7**.

2.3 RESULTS OF COMPLIANCE INSPECTIONS AT CONSTRUCTION SITES

During Q3 2025, three joint monthly site inspections were conducted by EMO, ADM and Technical Division (TD) to follow up on the progress of corrective actions from previous and new findings. Three Site Inspection Reports (SIRs) were submitted to TD and ADM. During the inspection, three Observation of Non-Compliance (ONCs) were identified. Subsequent

inspections have confirmed that two issues have been resolved by the end of Q2 2025. And one issue was escalated to NRC level 1, and the corrective actions are ongoing and expected to be rectified by October 2025.

The status of the ONC and NCR reports is summarized in **Table 2.3-1**, **Figure 2.3-1** and **Figure 2.3-2**. The Site Inspection Results During Q3 2025 is presented in **Appendix 1: The Site Inspection Results During Q3 2025**.

TABLE 2.3-1: STATUS OF ONCs AND NCRs REPORT DURING Q3 2025

Status	ONC	NCR- Level 1	NCR- Level 2	NCR- Level 3	Incident Report
Carried over ONC/NCR from the previous quarter	0	0	0	0	0
Newly opened ONC/NCR	2	1	0	0	0
Total No. of ONC/NCR	2¹	1	0	0	0
Resolved ONC/NCR	2	0	0	0	0
Unresolved ONC/NCR carried forward to the next quarter	0	1	0	0	0

¹ One ONC (ON-ADM-0026) was escalated to NCR level 1 (NCR-01-ADM/2025). For a detailed description, please refer to Appendix 1: The Site Inspection Results During Q3 2025

FIGURE 2.3-1: STATUS OF ONCs DURING Q3 2025

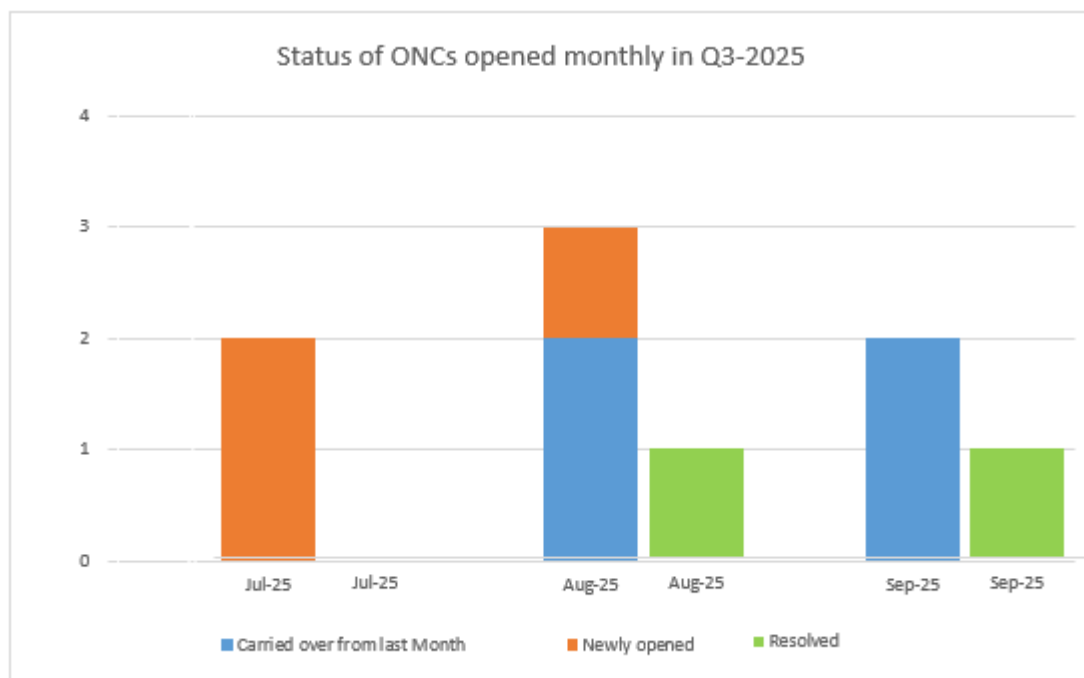
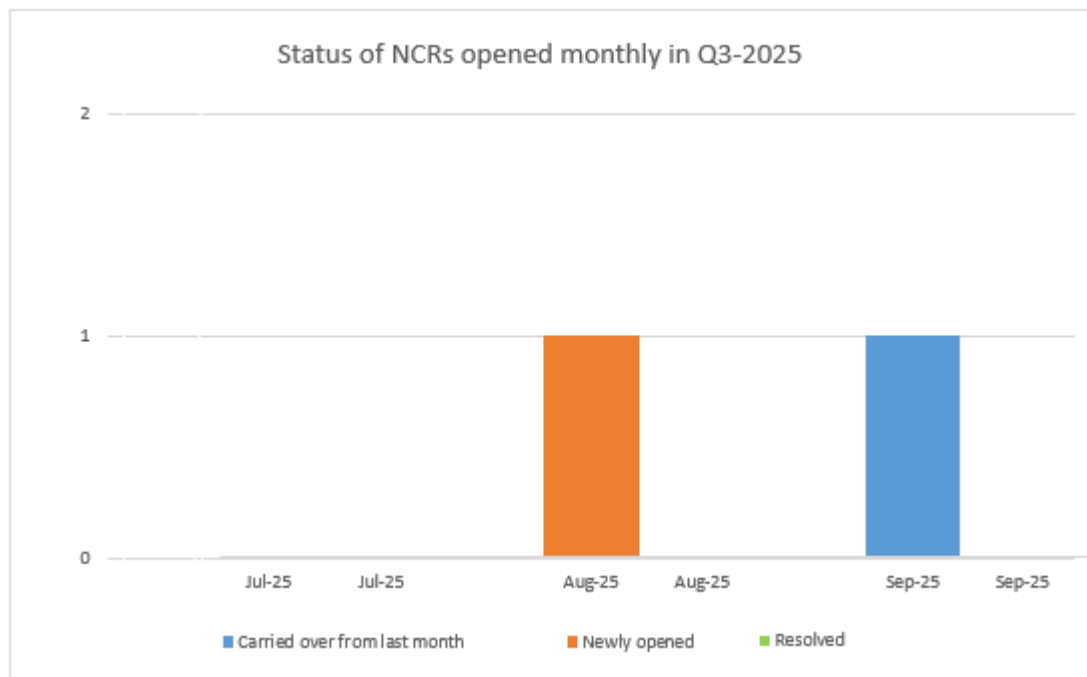
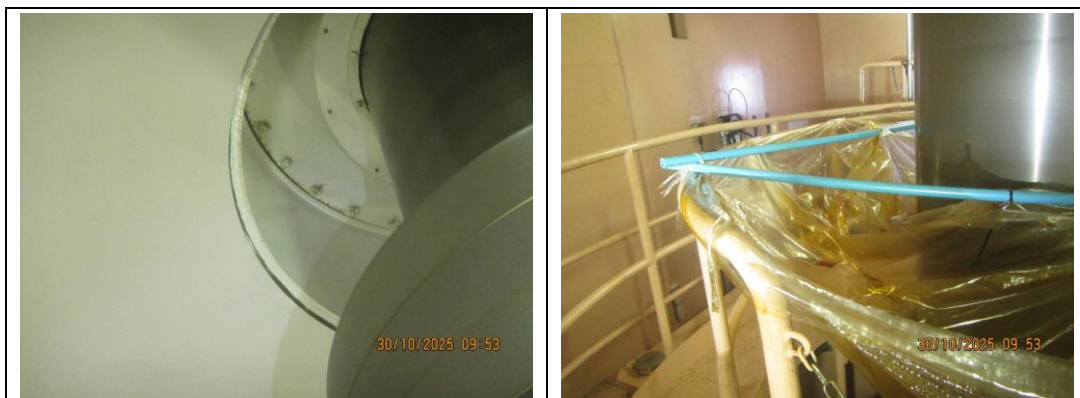


FIGURE 2.3-2: STATUS OF NCRs DURING Q3 2025

- **Oil leakage status at the Main Dam Powerhouse**

The oil leakage was first detected in June 2023. The permanent resolution is still under discussion, as a repair will require a prolonged it power. In the meantime, temporary countermeasures are in place. Currently, the oil leakage from unit 1 in the Main Powerhouse, of about 5 Liters/month or less, is being collected in a bucket using plastic sheets and regularly transferred to the designated hazardous waste storage. Daily monitoring by TD has confirmed that no oil contamination has occurred outside this room, including any discharge to the river. During the monthly joint environmental site inspections, special attention is consistently given to this area to ensure that the leakage remains fully contained. The permanent countermeasure has not yet been determined as the place of leakage is not accessible and can only be checked and repaired when Unit No. 1 is closed down. This will be done during a scheduled major revision (2027?).





- **Oil leakage status at the Re-regulation Powerhouse**

In the Re-regulation Powerhouse, an oil leakage from the combined bearing housing (thrust bearing) was detected in July 2022. Currently, the oil leakage of about 3 Liters/month or lower is contained and collected in buckets and transferred to designated hazardous waste storage facility. As a temporary measure, the maintenance engineer has applied silicone to seal the leakage. The permanent countermeasure has not yet been determined. This will be done during a scheduled major revision (2027?).



2.4 SITE DECOMMISSIONING AND REHABILITATION

All 31 rehabilitated areas were inspected. No evidence of erosion or instability were observed at any of the inspected sites.

2.5 WASTE MANAGEMENT AT THE OPERATION SITES

2.5.1 Waste Management at NNP1 Project Sites

In Q3 2025, a total of 14.9 m³ solid waste from NNP1 project sites and camps was disposed of at the NNP1 Project Landfill, a decrease of 0.34 m³ compared with Q2 2025. The local waste management contractor has maintained routine waste collection and operation of the NNP1 Project Landfill management throughout Q3 2025.

The amount of recyclable waste managed on site during Q3 2025 is shown in **Table 2.5-1**.

TABLE 2.5-1: AMOUNTS OF RECYCLABLE WASTE DURING Q3 2025

Source and Type of Recyclables		Unit	Carried Over from Q2 2025	Status in Q3 2025			
				Additions	Total (A)	Sold (B)	Remaining Amount (A - B)
Construction activity							
1	Scrap metal	kg	0	0	0	0	0
Sub-Total 1		kg	0	0	0	0	0
Operation camp							
2	Plastic bottle	kg	16	77	93	73	20
3	Aluminium Can	kg	N/A*	N/A	N/A*	N/A	N/A
4	Paper/Cardboard	kg	6	107	113	92	21
5	Glass	kg	225	56	281	0	281
6	Scrap metal	Kg	0	0	0	0	0
Sub-Total 2		kg	247	240	487	165	322
Grand Total (Sub-Total 1+2)		kg	247	240	487	165	322

*Please note that aluminium cans are collected and sold separately by housekeepers before storage so there is no accurate recorded quantity. The item is therefore marked Not-available (N/A).

2.5.2 Hazardous Waste Management

The amounts of hazardous waste and hazardous materials that were collected, stored and disposed of during Q3 2025 are shown in **TABLE 2.5-2**.

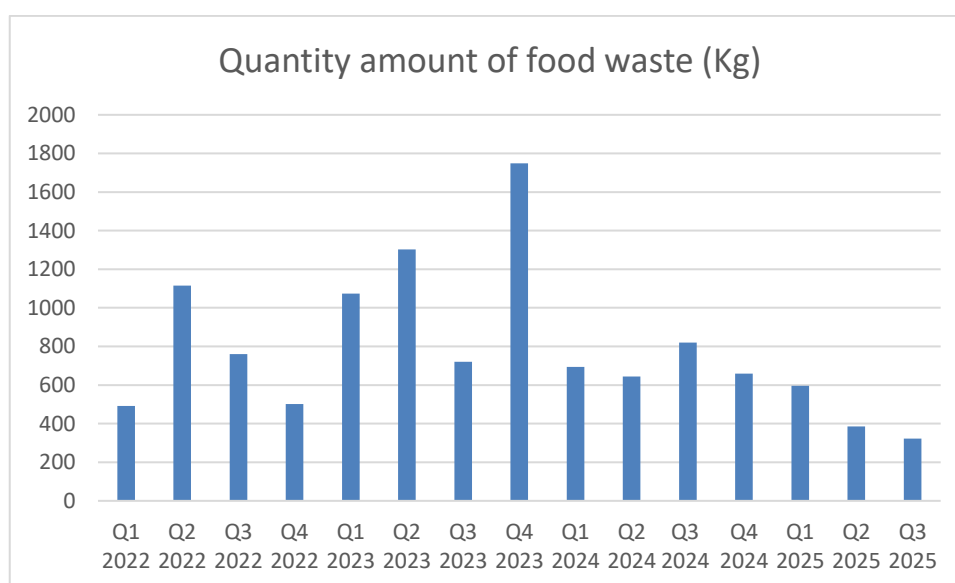
TABLE 2.5-2: HAZARDOUS MATERIAL AND HAZARDOUS WASTE RECORDED DURING Q3 2025

No.	Type of Hazardous Material	Unit	Total in Q3 2025	Used/ Disposed	Remaining
1	Diesel	Litre	13,844	13,540	304
2	Gasoline	Litre	2,721	2,544	177
3	Lubricant (Turbine oil)	Litre	31	0	31
4	Colour paint	Litre	38	0	38
5	Thinner	Litre	1	0	1
6	Grease oil	Litre	745	0	745

No.	Type of Hazardous Material	Unit	Total in Q3 2025	Used/ Disposed	Remaining
7	Gear Oil	Litre	86	9	77
8	Chlorine Liquid	Litre	175	75	100
9	HA Cut AF	Litre	3,925	0	3,925
10	HA Cut Cat AF	Litre	373	0	373
	Type of Hazardous Waste				
11	Used Oil (Hydraulic + Engine)	Litre	335.3	0	335.3
12	Used oil mixed with water	Litre	0	0	0
13	Empty used oil drum/container (drum 200L)	Unit	53	0	53
14	Use Oil Filter	Unit	31	0	31
15	Contaminated soil, sawdust and textile material	m ³	1.2	0	1.2
16	Used tyre	Drum	5	0	5
17	Empty used chemical drum/container (drum 20L)	Unit	153	0	153
18	Lead acid batteries	Unit	6	0	6
19	Empty paint and spray cans	Can	164	0	164
20	Halogen/fluorescent bulbs	Unit	571	560	11
21	Empty cartridge (Ink)	Piece	140	0	140
22	Clinic Waste	Kg	17	0	17
23	Expired Chlorine Powder	Kg	65	0	65

2.5.3 Animal Fodder (Pig Feed) Collection Programme

During Q3 2025, local villagers collected **323 kg** of food waste from the Owner's Site Office and Village (OSOV1's canteen) for feeding their animals. Additionally, food waste management was conducted by the new canteen service provider FTS (Fortune Service) routinely.



As part of the company's effort to reduce food waste at the canteen, aiming to maximize resource use and minimize disposal at the project landfill. EMO's waste management team interviewed the new canteen service provider and ADM on 13 February 2025 to identify the causes of increased food waste. The key factors identified were:

- The new provider, operating since January 2025, is still adjusting meal preparation to match actual staff demand.
- According to ADM, around 40% of staff did not pre-book meals in January and February 2025, resulting in unplanned walk-ins. This uncertainty led the canteen operator to prepare extra meals, increasing food waste.
- To address food waste, EMO issued an internal notice on 19 February 2025 urging staff to pre-book meals. Food waste from the canteen is routinely monitored, and Q3 2025 meal bookings decreased compared to Q2 2025. This slightly helped to reduce food waste generation in Q3 2025, as shown in **Table 2.5-3**.

Table 2.5-3: Food waste generated in the canteen

Month	Pre-book meals (A)	Walk in for meals (B)	Total Food waste generation (kg) (C)	Food waste for Villagers (kg) (D)	Food waste disposed of at the project Landfill (C) - (D)
Jan 2025	2,047	878	1002.2	192	810.2
Feb 2025	2,657	801	946	210.5	735.5
Mar 2025	2,556	788	913	167	746
April 2025	3,184	939	717	128	589
May 2025	3,110	829	903	170	733
June 2025	3,027	868	541	87	454
July 2025	2,184	1,155	497	128	369
August 2025	2,148	1,099	500	107	393
September 2025	3,043	1,271	535	88	447

2.5.4 Community Solid Waste Management and Recycling Programme

NNP1-EMO has collaborated with Bolikhan EMU on the handover of the Houay Soup Landfill and community waste management. It was agreed that villagers from Thahuea, Hat Gniun, and Phouhomxay could use NNP1PC's landfill, with NNP1PC committing to repair the Houay Soup landfill for shared use once NNP1PC's landfill is full. This agreement was reported to the Department of Natural Resources and Environment Inspection, Ministry of Natural Resources

and Environment (DNREI-MONRE), which raised no objections. Both EMU and EMO will continue to guide communities on proper waste disposal at the NNP1PC landfill.

On 27 Feb 2025, the EMO-EC&WM team held a community consultation meeting with representatives from 3 villages regarding the shared use of the NNP1PC landfill. Key messages on the Landfill operation schedule and waste handling procedures were communicated. This is to ensure proper waste separation by the villagers prior to disposing of the waste at the landfill.

- **Landfill Operational Schedule:**
 - Open three times a week (Mon, Wed, Fri) from 08:00 to 16:00
 - Managed by a local waste collection contractor
 - Contact numbers for inquiries: Tel: 020 76249274 and 020 99888747
- **Waste Handling Procedures:**
 - Detailed explanation provided on waste separation, storage, and transfer to the landfill.



Phouhomxay Village



Hat Gnuin Village



Thaheua Village

2.6 RESERVOIR OPERATIONS

Based on information about the trajectory of Typhoon Bualoi, NNP1PC arranged and conducted water level monitoring upstream of the main reservoir and in Nam Ngiep River downstream of the Re-regulation Dam every three hours starting on 28 September 2025, with real-time updates and warnings issued to downstream villages via WhatsApp in advance of the arrival of the typhoon.

On 29 September 2025, heavy rainfall from Typhoon Bualoi caused a sharp rise in reservoir levels, the Technical Division (TD) has prepared a reservoir buffer before the typhoon, but the sudden high inflow required spillway gate operation following the Flood Management Plan (the amount of water discharge is equal or less than water inflow). Two alerts were sent to all downstream villages at 19:45 and 21:55 regarding gate operations and the need to move belongings to higher ground. By 23:30, rapid water level increases led Hat Gniun authorities and project staff to initiate evacuation of vulnerable groups. A full village evacuation was announced at 00:30, with other downstream communities following shortly thereafter. NNP1PC supported the evacuation of Hat Gniun villagers to OSOV1 and OSOV2 accommodation facilities and maintained essential services including hygiene, sanitation, and waste management. Lives were lost, and villagers returned home safely after two days. Post-typhoon, food and relief packs were distributed to affected families in five villages (Thahuea, Hat Gniun, Nampa, Somsen, and Thongnoy villages). Some property damage was reported and is still being finalized. The designated evacuation point was not accessible due to water blocking the lower section of the access road. NNP1PC is working with government agencies to assess the flood impacts, and the findings will be included in the

upcoming report. A separate report from the Technical Division and SMO will be submitted once completed.

2.6.1 Main Reservoir

The water level in and inflow to the main reservoir since January 2024 are displayed in the graphs in **Figure 2.6-1** and **Figure 2.6-2**.

During Q3 2025, the mean daily inflow to the main reservoir was 392 m³/s. The minimum daily inflow was 210 m³/s, maximum daily inflow was recorded at 2,607 m³/s, and 25th percentile of 263 m³/s and 75th percentile of 404 m³/s. The peak inflow happened during Typhoon Bualoi on 29 September 2025. It triggered spillway gate operations and evacuation of downstream villages. The detailed flood event is still being finalised and will be shared once completed. As indicated in **Figure 2.6-1**, the inflow during Q3 2025 was higher compared to the same period in 2024.

The water level in the main reservoir increased with 18.21 m from El. 301.78 m asl (01 July 2025) to 319.99 m asl (02 September 2025) and then decreased to 319.80 m asl (30 September 2025).

FIGURE 2.6-1: INFLOW TO THE MAIN RESERVOIR

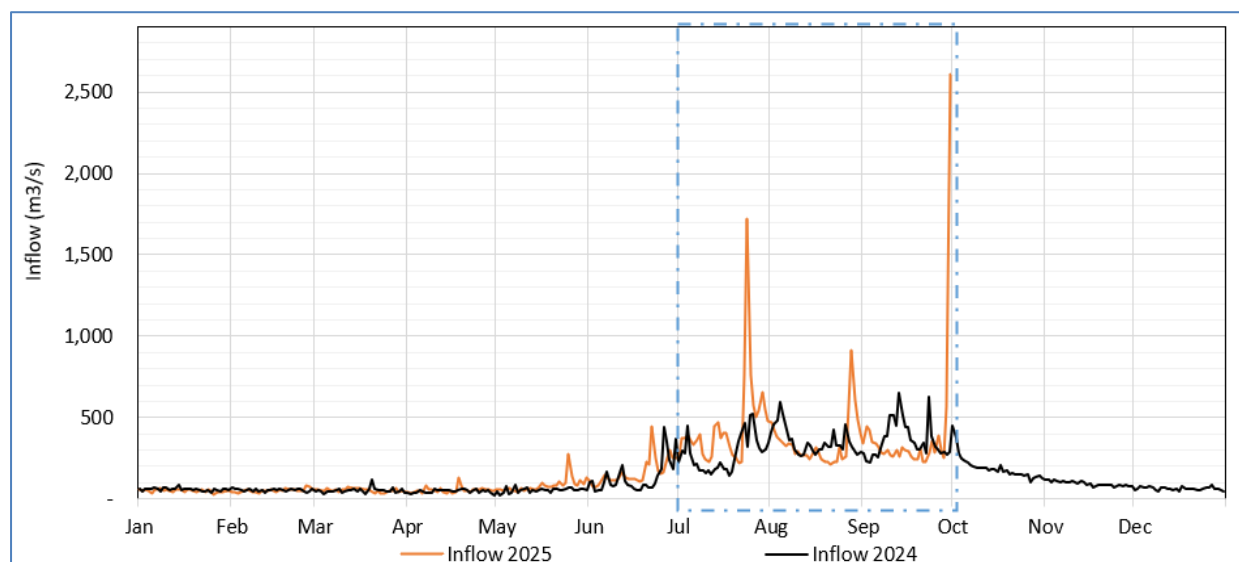
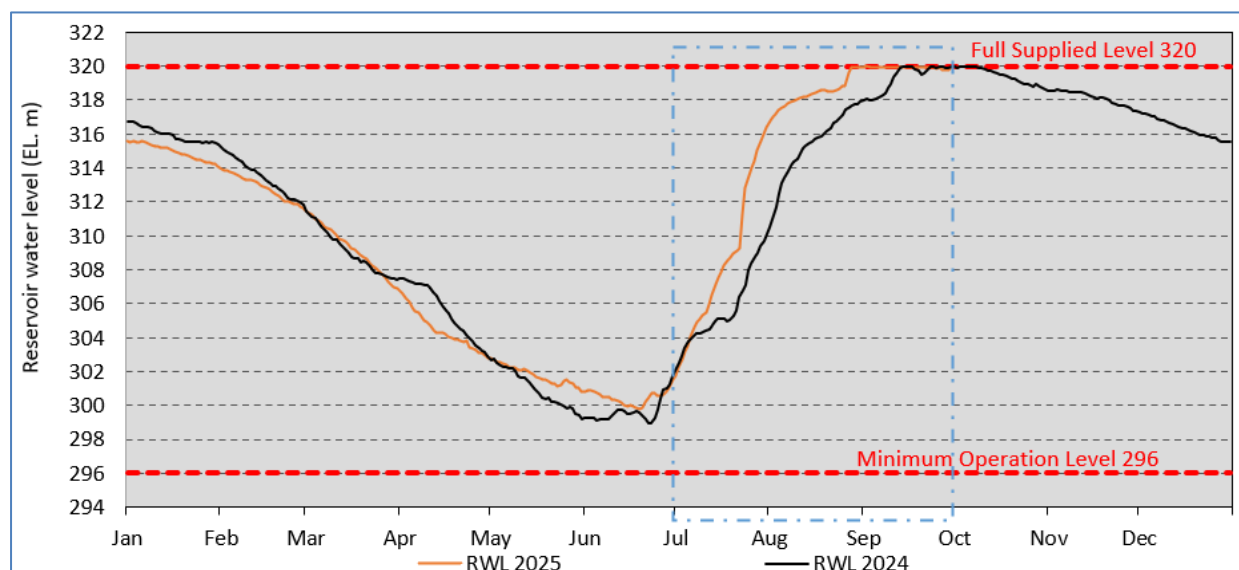


FIGURE 2.6-2: WATER LEVEL OF THE MAIN RESERVOIR



2.6.2 Environmental Flow Requirements for the Operation Phase

NNP1PC has monitored compliance with the Environmental Flow Requirements (EFRs) stipulated in the CA, Annex C, Clause 53 (g) and as further modified in the Environmental Flow Assessment Report of July 2014 approved by MONRE. The EFRs have been monitored in accordance with the monitoring programme outlined in the ESMMP-OP 2019 (Vol. II, Part 2 on Subplan 1 on Reservoir and River Health Management), except with respect to thalweg water depth monitoring.

The results of the EFR compliance monitoring during Q3 2025 are summarized in **Table 2.6-1**.

TABLE 2.6-1: SUMMARY OF EFRs COMPLIANCE MONITORING IN Q3 2025

No	EFRs in the Downstream of the Re-regulation dam	EFRs compliance
1	Min flow 27 m ³ /s at all times	100% of observations comply
2	Thalweg water depth at least 0.5 m in the entire reach from immediately downstream of the Re-regulation dam until 4.3 km downstream the dam (measured at cross-sections where visual observations or boat navigation indicate shallow waters)	The Q3 2025 monthly thalweg monitoring missions included monitoring of navigation difficulties. Water depth measurements were not carried out due to the discharge from the re-regulation dam was greater than 30 m³/s. The results of previous monitoring missions, as also confirmed by the LTA, have documented that when the discharge is 30 m³/s or greater, the water depth requirements are met and there are no problems with navigating the river. Furthermore, in Q4 2024, at the beginning of the dry season, to gather and assess any complaints about boat navigation difficulties NNP1PC conducted interviews with inhabitants who use boats. There were no complaints from inhabitants, and no damages have been reported or observed. NNP1PC has consulted with the Environmental and social specialist who recommended that revisions to the monitoring programme should be made as part of ESMMP-OP update which is expected to be proposed in Q1 2026.
3	Maximum rate of change (both rise and fall, separately) in stage of 0.6 m per hour	Eleven instances where the maximum rate of change was exceeded. These instances were caused by flood conditions necessitating the operation of the spillway gates of the Main Dam. According to the Concession Agreement, Annex C, during floods, NNP1PC is exempted from complying with this rule. NNP1PC is working with government agencies to assess the flood impacts, and the findings will be included and a separate report from the Technical Division and SMO will be submitted once completed.

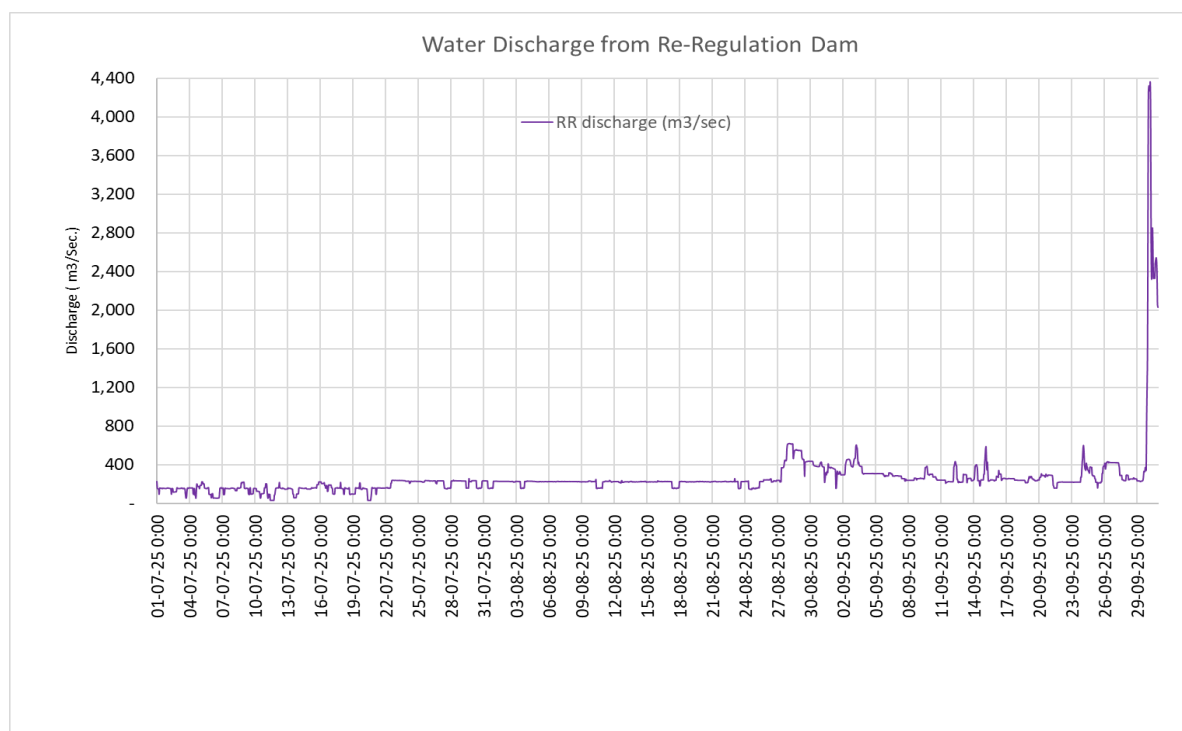
No	EFRs in the Downstream of the Re-regulation dam	EFRs compliance
		To mitigate potential risks, TD, in coordination with ESD, issued an advance notification via WhatsApp to all downstream villages, the water supply operator, and relevant local government offices.
4	Maximum fluctuation in stage of 1.7 m over 24-hour (this requirement is about range and determines the maximum difference in stage height over 24-hour periods)	One instance of non-compliance due to Typhoon Bualoi necessitating rapid increases in spillway discharges to ensure that the water level in the main reservoir would not exceed the full supply level of 320 m a.s.l. According to the Concession Agreement, Annex C, during floods, NNP1PC is exempted from complying with this rule. An advance notification via WhatsApp was sent to all downstream villages, the water supply operator, and relevant local government offices.
5	Maximum fluctuation in stage of 1.7 m over 7-days (this requirement is about range and determines the maximum difference in stage height over 7-day periods)	Two instances of non-compliance. One case on 01 September 2025 due to flood condition which could not be controlled and another case on 29 September 2025 due to Typhoon Bualoi necessitating rapid increases in spillway discharges to ensure that the water level in the main reservoir would not exceed the full supply level of 320 m a.s.l. According to the Concession Agreement, Annex C, during floods, NNP1PC is exempted from complying with this rule. Advance notifications via WhatsApp were given to all downstream villages, the water supply operator, and relevant local government offices.

2.6.2.1 Minimum Flow Requirements

The discharge monitoring data for the re-regulation dam during Q3 2025 indicates that the minimum flow requirement of 27 m³/s has been met at all times. The Re-regulation Dam discharge graph can be found in **Figure 2.6-3**.

During Q3 2025, the mean discharge from the re-regulation dam was about 160 m³/s in July 2025 and about 244 m³/s and 374 m³/s in August and September 2025 respectively.

The changes in the discharge from the re-regulation dam were informed in advance to the RMU and to the heads of the downstream villages, who then announced the changes to the communities over the village speaker systems. There were no complaints related to the flow discharges or fluctuation levels downstream the Re-regulation dam during the reporting period.

FIGURE 2.6-3: DISCHARGE FROM THE RE-REGULATION DAM DURING Q3 2025

2.6.2.2 Minimum Water Depth

Since 18 July 2018, NNP1PC has carried out weekly monitoring of river depths at 19 locations downstream the re-regulation dam as shown on **Figure 2.6-4**. These locations represent cross-sections with possible shallow water depths at low discharge rates.

The monitoring is undertaken to confirm compliance with the water depth requirements in the Concession Agreement, Annex C, and the approved Environmental Flow Assessment (Thalweg water depth at least 0.5 m in the entire reach from immediately downstream of the Re-regulation dam until 4.3 km downstream the re-regulation dam).

Starting in December 2020, the water depths have been measured across the river channel where visual observations or boat navigation indicate shallow waters to ensure that the measurements represent the river thalweg.

According to the recommendations by the Lenders' Technical Advisor (LTA) during the virtual site visit on 21 to 26 November 2021, NNP1PC has continued to monitor the situation at the critical sites under conditions with discharge of less than 30 m³/s for detecting any navigation problems and also monitor whether any complaints have been raised to consider how to solve the problems, if any. The results of these monitoring missions have documented that when the discharge is 30 m³/s or greater, the water depth requirements are met and there are no problems with navigating the river.

NNP1PC carried out three boat monitoring missions in Q3 2025. However, the discharges during all three missions were greater than 30 m³/s. Therefore, no thalweg water depth measurements were carried out.

NNP1PC has consulted with the Environmental and social specialist who recommended that revisions to the monitoring programme should be made as part of the currently ongoing updating of the ESMMP-OP which is scheduled to be completed within Q1 2026.

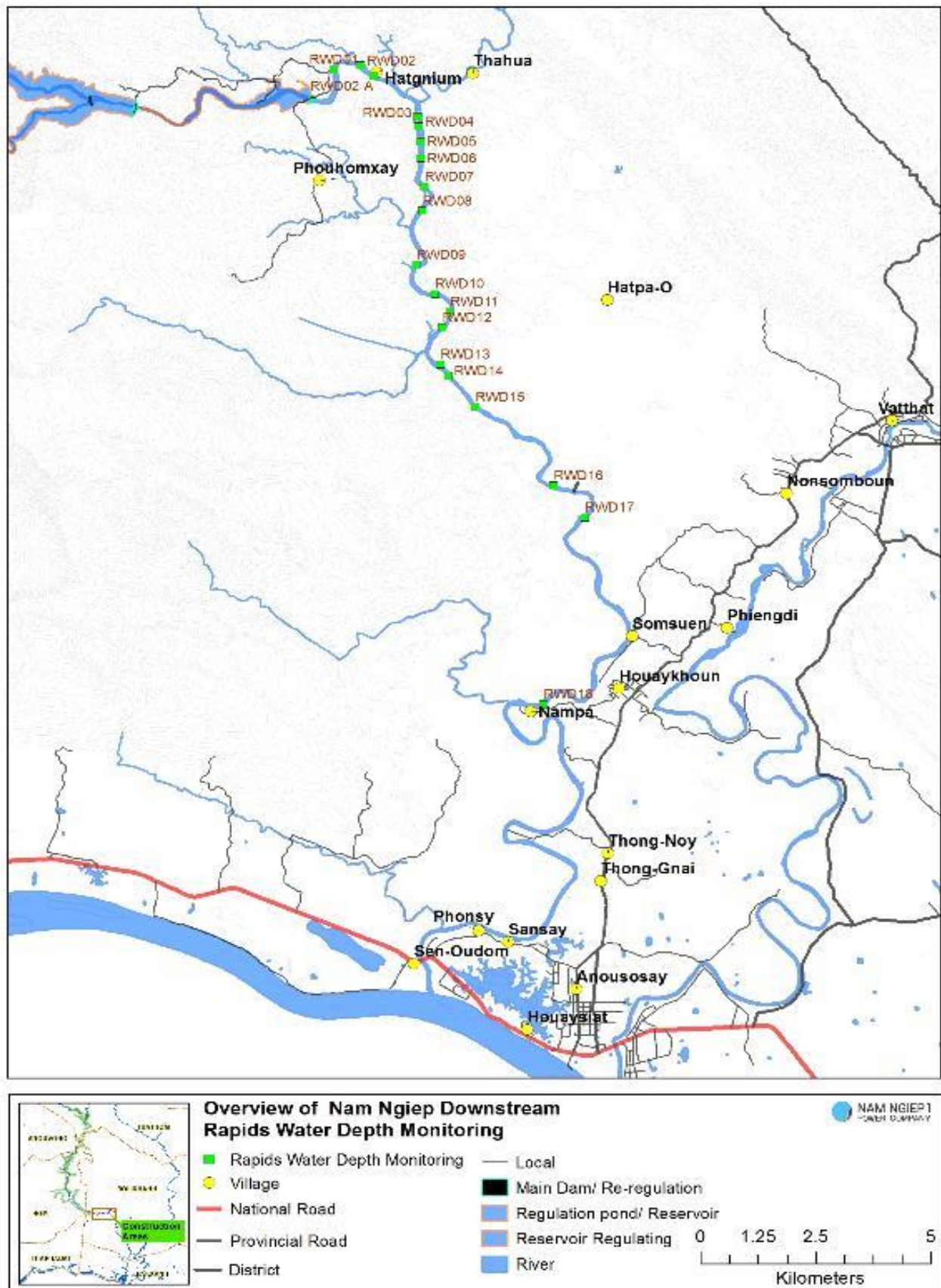


FIGURE 2.6-4: LOCATION MAP OF RIVER DEPTH MONITORING POINTS

2.6.2.3 Stage Height Fluctuations

The requirements on stage height fluctuations constitute a rise or a fall in water elevation and include two aspects:

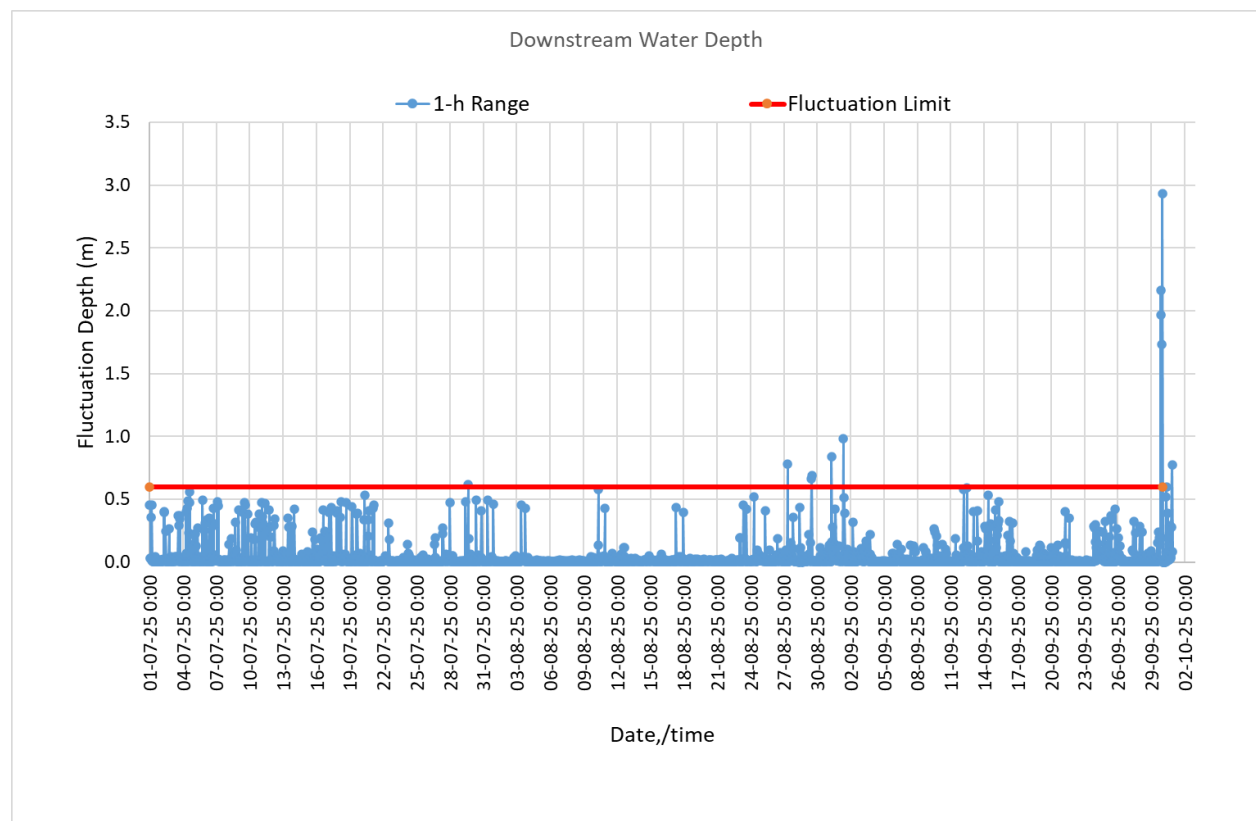
1. A requirement on the rate of change which is set at a maximum of 0.6 m per hour (calculated from the hourly water level recordings).
2. Requirements on the range in fluctuations over 24-hour periods and 7-day periods respectively, which is set at a maximum of 1.7 m for both periods. In other words, the range requirements determine the maximum difference in stage height over 24-hour periods and 7-day periods respectively.

Compliance with the 24-hour maximum fluctuation EFR is determined by calculating the difference between the maximum and the minimum stage height over each 24-hour period. In the same way, the 7-day maximum fluctuation EFR, is determined by calculating the difference between the maximum and the minimum stage height over each 7-day period. There is no compulsion for the Company to meet the stage height fluctuation requirements after a high flow event passes over the Re-regulation dam spillway.

In practice, meeting stage height fluctuation EFRs are managed through controlling the rate of change in discharge from the re-regulation dam/powerhouse. This is done using established rating relationships between stage height and discharge, as set out in the Re-regulation dam operation manual. These relationships are regularly checked and revised as necessary, as they would change whenever the channel morphology changes due to significant erosion or deposition.

During Q3 2025, the maximum allowed rate of change of 0.6 m over 1-hour was complied with for all hourly periods, except on 30-31 July 2025 (due to outage for cleaning the pellet air cooler and replacing the GEN air cooler in Main Powerhouse), on 27, 28 and 31 August 2025 during spillway gates operation at the Main Dam and on 29 and 30 September 2025 due to Typhoon Bualoi. An advance notification via WhatsApp was sent to all downstream villages, the water supply operator, and relevant local government offices. As of 30 September 2025, no complaints have been received, and no damage has been observed. The results are presented in **Figure 2.6-5**.

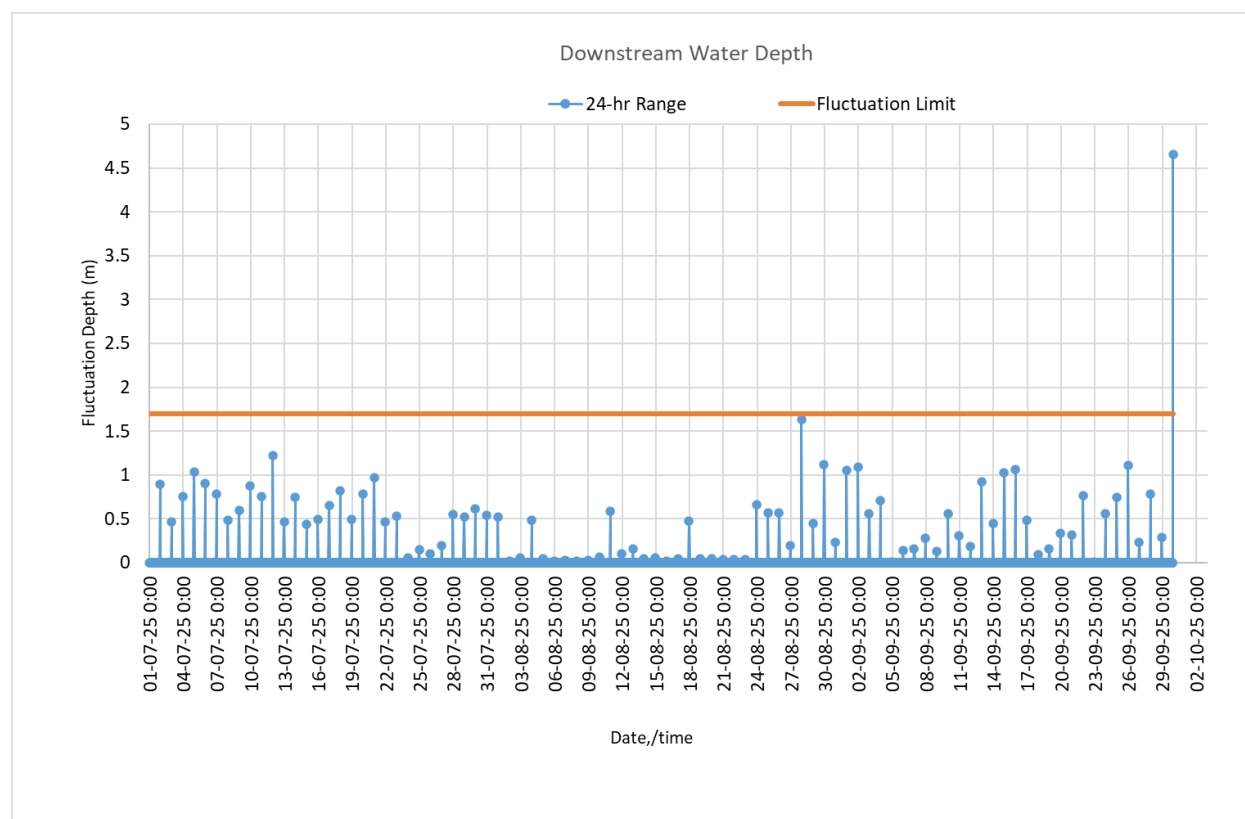
Note that according to the Concession Agreement, Annex C, during floods, NNP1PC is exempted from complying with the maximum allowed rate of change rule.

FIGURE 2.6-5: HOURLY STAGE HEIGHT FLUCTUATIONS DURING Q3 2025

During Q3 2025, the maximum allowed difference in stage height of 1.7 m over 24-hour was complied with for all 24-hour periods (00:00 – 23:59), except on 29 September 2025 where there was one instance of exceedance due to Typhoon Bualoi necessitating rapid increases in spillway discharges to ensure that the water level in the main reservoir would not exceed the full supply level of 320 m a.s.l.

The results of the monitoring are presented in **Figure 2.6-6**.

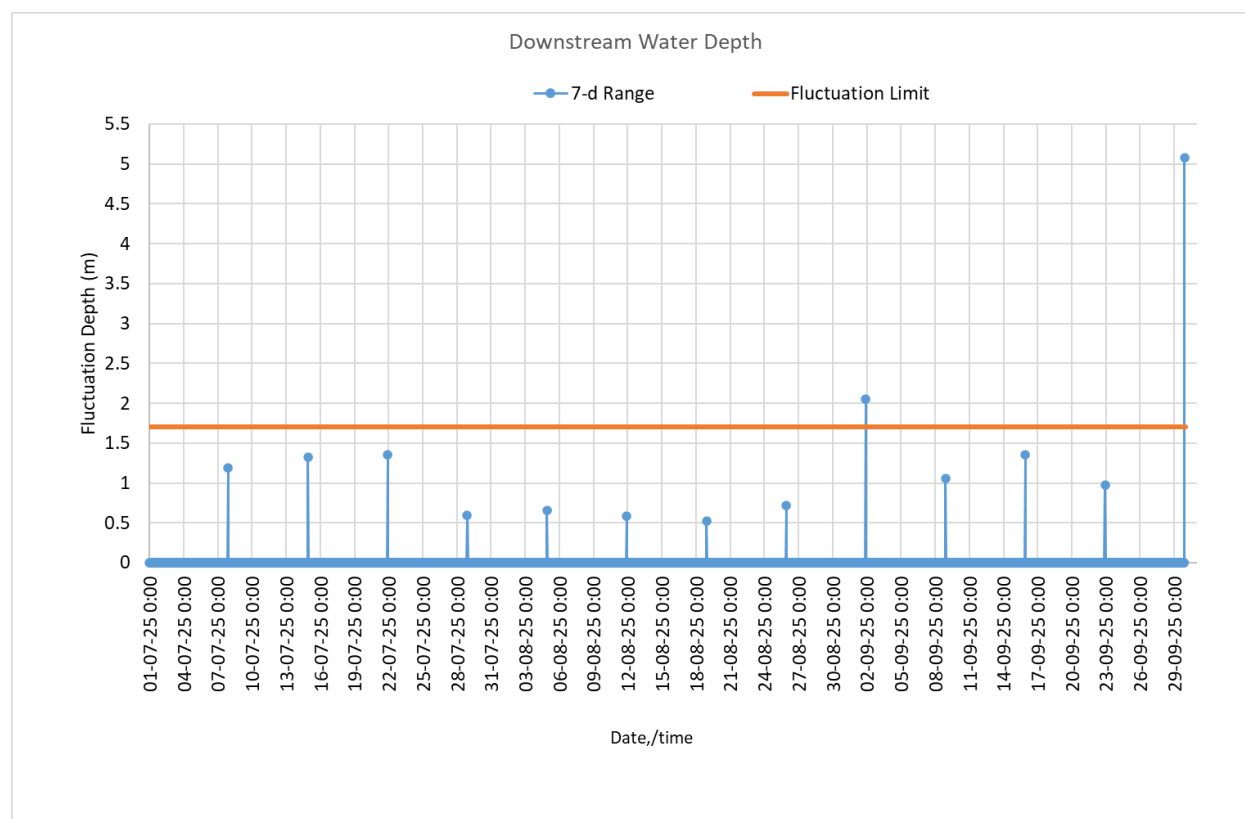
Note that according to the Concession Agreement, Annex C, during floods, NNP1PC is exempted from complying with the maximum allowed difference in stage height rule.

FIGURE 2.6-6: 24-HOUR STAGE HEIGHT DIFFERENCE (M) DURING Q3 2025

During Q3 2025, the maximum difference in stage height of 1.7 m over 7-days was complied with for all 7-day periods, except for two instances, one in the week of 01 September 2025 and one in the week of 29 September 2025, the latter due to Typhoon Bualoi necessitating rapid increases in spillway discharges to ensure that the water level in the main reservoir would not exceed the full supply level of 320 m a.s.l.

The results are presented in **Figure 2.6-7**.

Note that according to the Concession Agreement, Annex C, during floods, NNP1PC is exempted from complying with this maximum allowed difference in stage height rule.

FIGURE 2.6-7: 7-DAY STAGE HEIGHT DIFFERENCE (M) DURING Q3 2025

2.7 WATER QUALITY MONITORING

2.7.1 Surface Water (River) and Depth Profile Water Quality

Descriptions of each monitoring station, surface water and depth profile water quality monitoring parameters, and the location of sampling map can be found in **Appendix 3** and all surface water quality data for Q3 2025 are listed in **Appendix 5-1**.

Dissolved Oxygen (DO)

The results of DO measurements for the station immediately upstream of the main dam (R05 – intake at 276 m asl.) and immediately downstream of the re-regulation dam (NNG05) are presented in **Figure 2.7-1**, the DO long profile measurement as timeseries are presented in **Figure 2.7-2**, and the full set of DO surface water quality data are shown in **Table 2.7-1**.

The water temperature and DO depth profiles in the main reservoir at R05 during Q3 2024, Q2 2025 and Q3 2025 are presented in **Figure 2.7-4** to **Figure 2.7-6**.

FIGURE 2.7-1: DISSOLVED OXYGEN IMMEDIATELY UPSTREAM AND DOWNSTREAM OF THE MAIN DAM

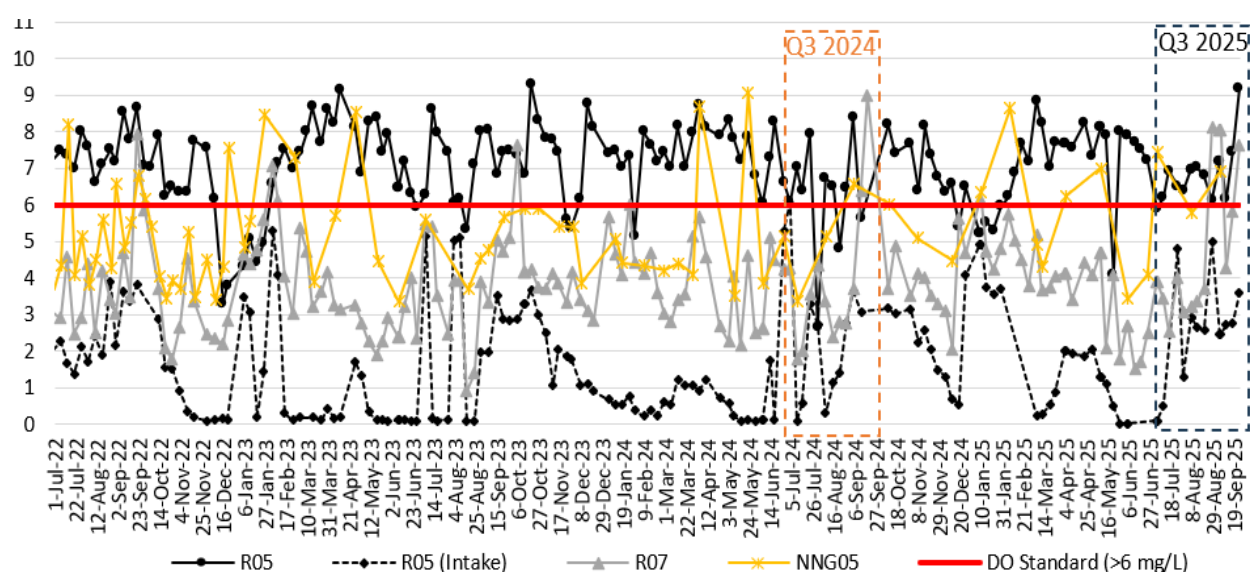
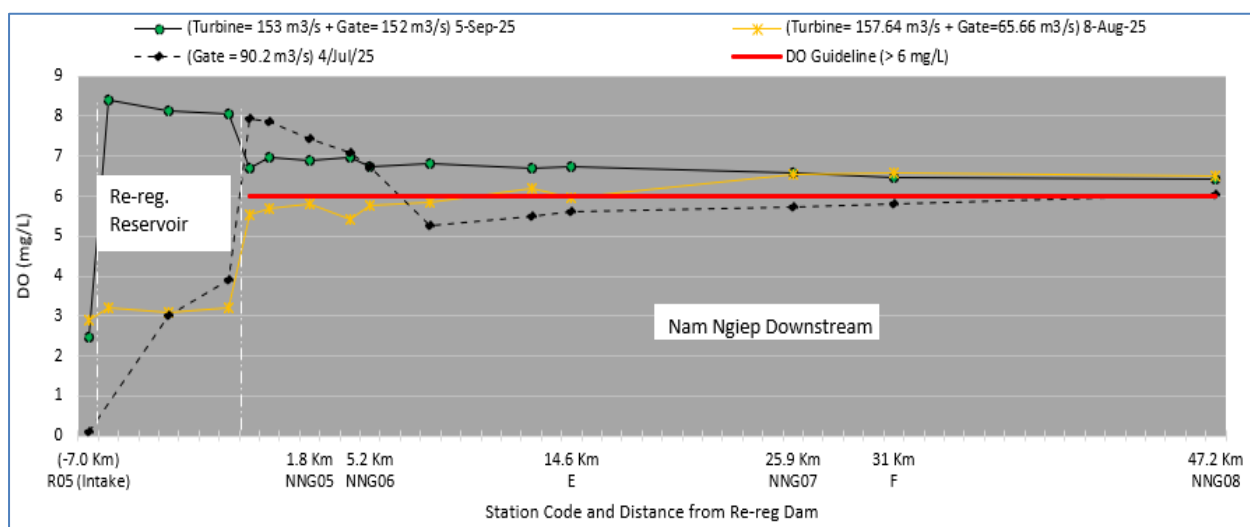
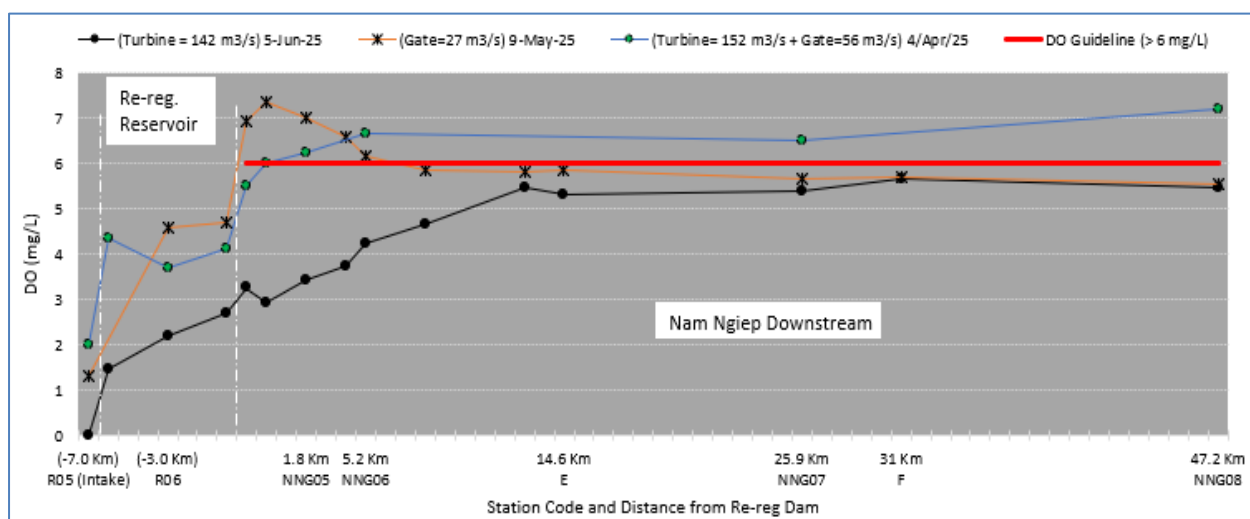


FIGURE 2.7-2: DISSOLVED OXYGEN LONG PROFILE MEASUREMENT FROM IMMEDIATELY UPSTREAM THE MAIN DAM TO LOWER NAM NGIEP (Q2 2025 AND Q3 2025)



Main Reservoir

Figure 2.7-6 and **Figure 2.7-7** present the DO and water temperature depth profile timeseries in the Main Reservoir (R04 and R05) from September 2018 to September 2025, the graphs clearly show seasonal variations in water temperatures and a deepening of the thermocline during periods with cooler water leading to a corresponding deepening of the oxycline.

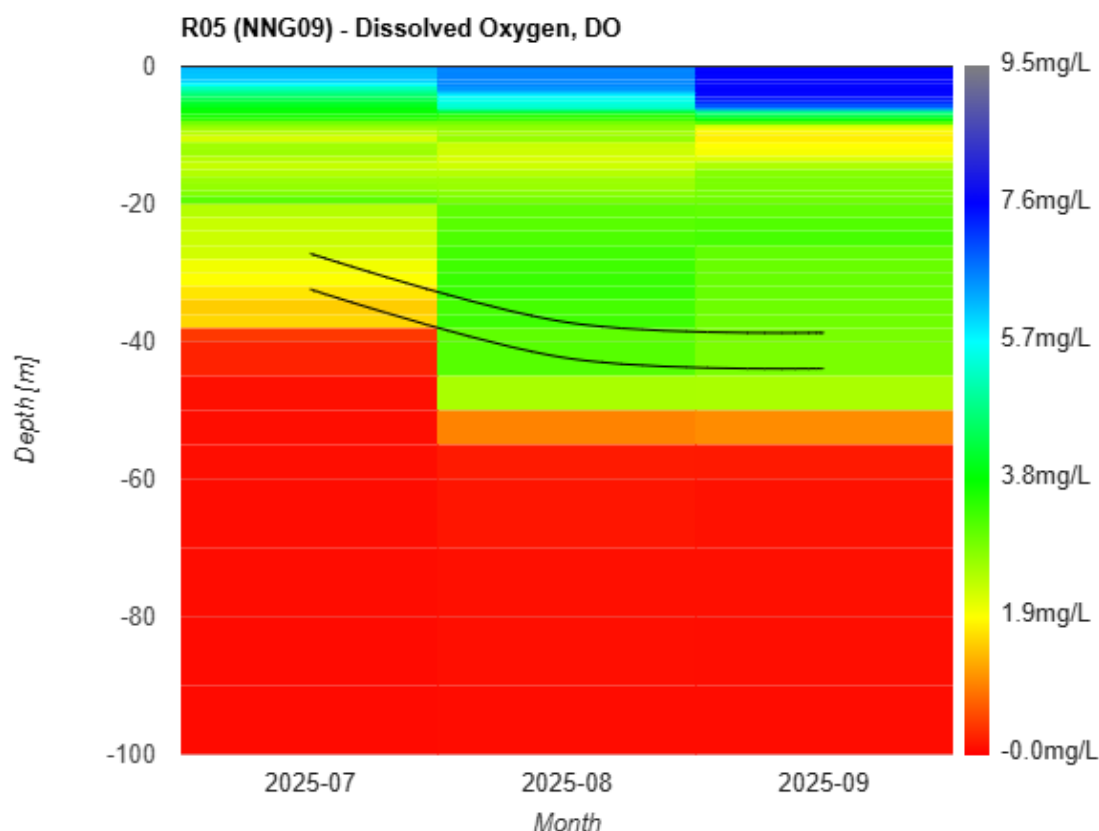
The depth profile monitoring during Q3 2025 indicates formation of thermoclines and oxyclines in the main reservoir at the monitored stations at different depths.

At R05, when comparing Q3 2025 with Q3 2024, the thermocline and oxycline show similar patterns.

Figure 2.7-5 shows the mean DO and water temperature depth profiles for Q3 2024, Q2 2025 and Q3 2025 at R05. The profiles for Q2 2025 and Q3 2025 show slightly increasing water temperatures, formation of an oxycline occurred at depths between 3.0 m and 12 m. The profiles for Q3 2025 indicate that oxygen depletion (about 2 mg/L DO) is found at about 32 m below surface in July 2025 and increasing to a depth of about 55 m in August and September 2025. Compared to Q3 2024, there are no obvious improvements in the DO levels.

The monthly mean DO concentration at the intake level increased from 1.52 mg/L in July 2025, to 3.16 mg/L in August 2025 and 2.89 mg/L in September 2025. Anoxic levels were found at increasing depths from about 40 m in July 2025 (about 6 m below the intake sill) to 60 m in August 2025 (about 18 m below the intake sill) and to a depth of about 60 m in September 2025 (about 16 m below the intake sill), with a peak in DO of 1 mg/L to 3 mg/L at about 38 m depth followed by a drop in DO down to anoxic levels at 60 m depth (about 16 m below the intake sill) (see **Figure 2.7-3**).

The DO concentrations at R04 showed a similar pattern to R05.

FIGURE 2.7-3 MONTHLY MEAN CONCENTRATIONS OF DISSOLVED OXYGEN IN R05

At R03, during Q3 2025, DO concentrations varied between 4.0 mg/L and 9.4 mg/L with an average of 7.8 mg/L in the upper 5.0 m and at depths from 5.5 m to about 60 m below surface the DO varied between 0.01 mg/L and 7.8 mg/L. Anoxic conditions were only found at the bottom and only in August and September.

At R02, during Q3 2025, DO concentrations varied between 3.1 mg/L and 9.7 mg/L with an average of 7.0 mg/L in the upper 5.0 m and at depths from 5.5 m to about 38 m below surface the DO varied between 2.6 mg/L and 6.8 mg/L. There were no anoxic conditions during Q3 2025.

At R01, the mean DO concentration throughout the quarter was about 6.7 mg/L over the entire water column with no measurements below 5.6 mg/L.

Re-regulation Reservoir (R06 and R07)

The depth profiles at R06 and R07 in the Re-regulation Reservoir showed no indications of a thermocline, because the Re-regulation Reservoir behaves more like a river than a lake.

The mean monthly DO concentrations at R06 over the entire water column increased from 2.8 mg/L in July, 4.5 mg/L in August to 6.1 mg/L in September 2025. A similar pattern was found at R07. The DO concentrations in R06 and R07 are likely linked to the DO concentrations at the intake level in the main reservoir. It should be noted that the actual flow patterns and movements of water from R05 to the intake is not known and is likely rather complex with circulation patterns or other complex water movements near the intake, which adds uncertainties to correlating water quality data at or near the intake depth at R05 in the main reservoir with water quality data in the Re-regulation Reservoir.

Nam Ngiep Upstream and Tributaries

The Nam Ngiep Upstream station (NNG01), the station in Nam Chian (NCH01) a left bank tributary and the station in Nam Phouan (NPH01) a right bank tributary at the upper part of the reservoir had DO concentrations above 6 mg/L during Q3 2025.

Downstream Stations

During Q3 2025, a total of three monitoring missions were conducted. All three monitoring missions were undertaken during discharges greater than 27 m³/s (complied with the minimum environmental flow requirement).

As indicated in **Figure 2.7-2**, during gate discharges in July 2025, the DO concentrations were above the National Surface Water Quality Standard of 6 mg/L for the first 5.2 km downstream the re-regulation dam and then dropped to between 5.3 mg/L and 5.8 mg/L over the reach from 8.3 km to 31 km below the dam and reached 6 mg/L near the confluence with the Mekong River (NNG08). Note that gate discharges during the July 2025 sampling had just started one hour ahead of the mission. This indicates that the effect of gate discharge aeration had not reached the further downstream stations at the time of the measurements.

In August 2025, during periods with combined turbine and gate discharges, DO concentrations were about 5.8 mg/L for the first 5.2 km increasing to above 6 mg/L further downstream. In September 2025, also during combined turbine and gate discharges, all stations had DO concentrations above 6 mg/L in compliance with the Standard.

No dead fish was observed in Nam Ngiep downstream during Q3 2025.

NNP1PC continues to carefully compile and assess all monitoring data to determine if any additional water aeration measures may be necessary to improve the DO levels in Nam Ngiep River downstream the Re-regulation Dam.

FIGURE 2.7-4: MAIN RESERVOIR DISSOLVED OXYGEN AT THE END OF Q3 2025

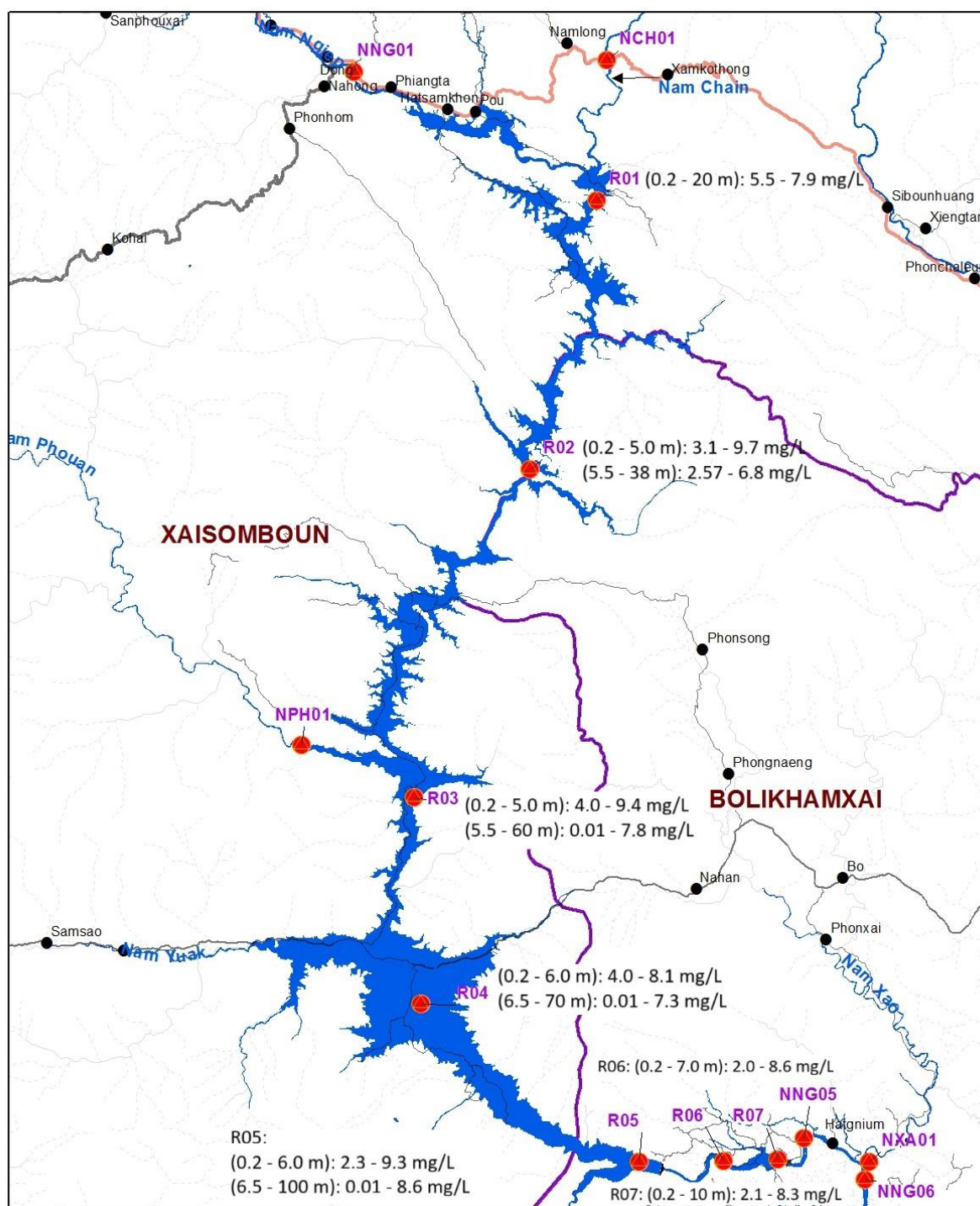


FIGURE 2.7-5: MEAN WATER TEMPERATURE AND DISSOLVED OXYGEN – DEPTH PROFILES IN THE MAIN RESERVOIR IMMEDIATELY UPSTREAM OF THE MAIN DAM (R05)

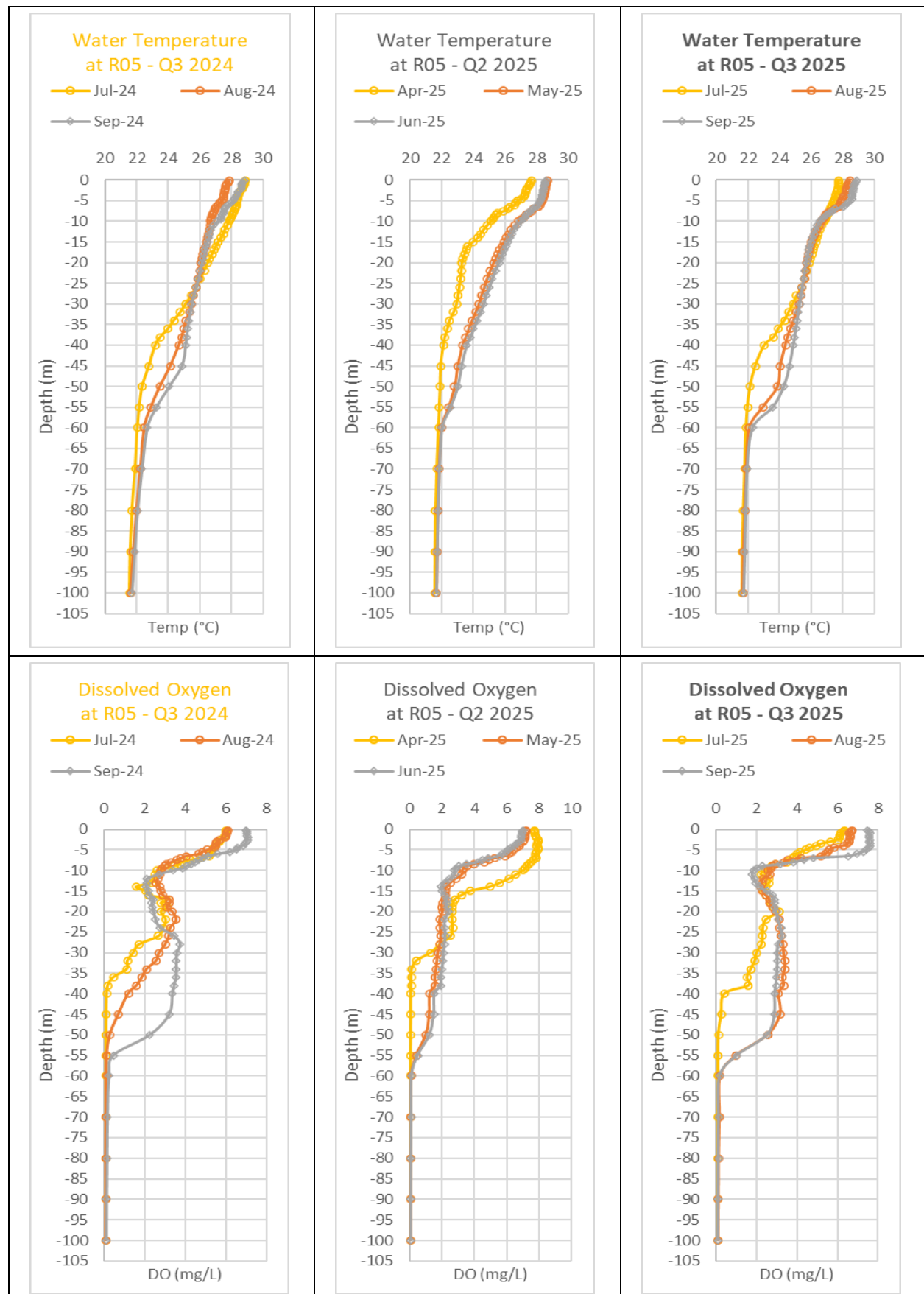


FIGURE 2.7-6: WATER TEMPERATURE AND DO DEPTH PROFILES IN THE MAIN RESERVOIR (R04 - R05), WITH POSITION OF INTAKE AT THE ACTUAL WATER LEVEL DURING SEPTEMBER 2018 – SEPTEMBER 2025

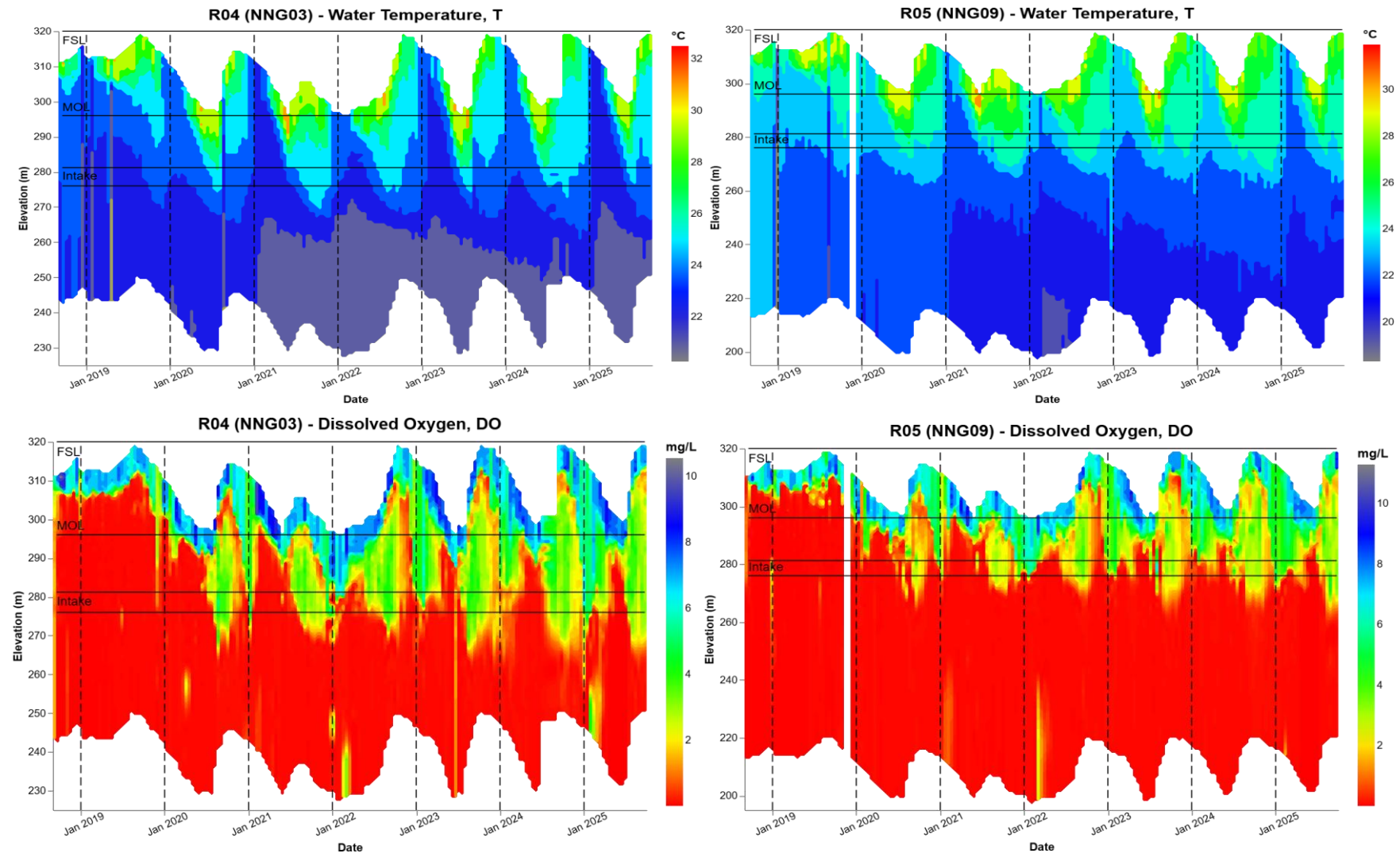


FIGURE 2.7-7: THE STRAIGHT-LINE GRAPH OF MONTHLY AVERAGED DO AND WATER TEMPERATURE AT R04 AND R05

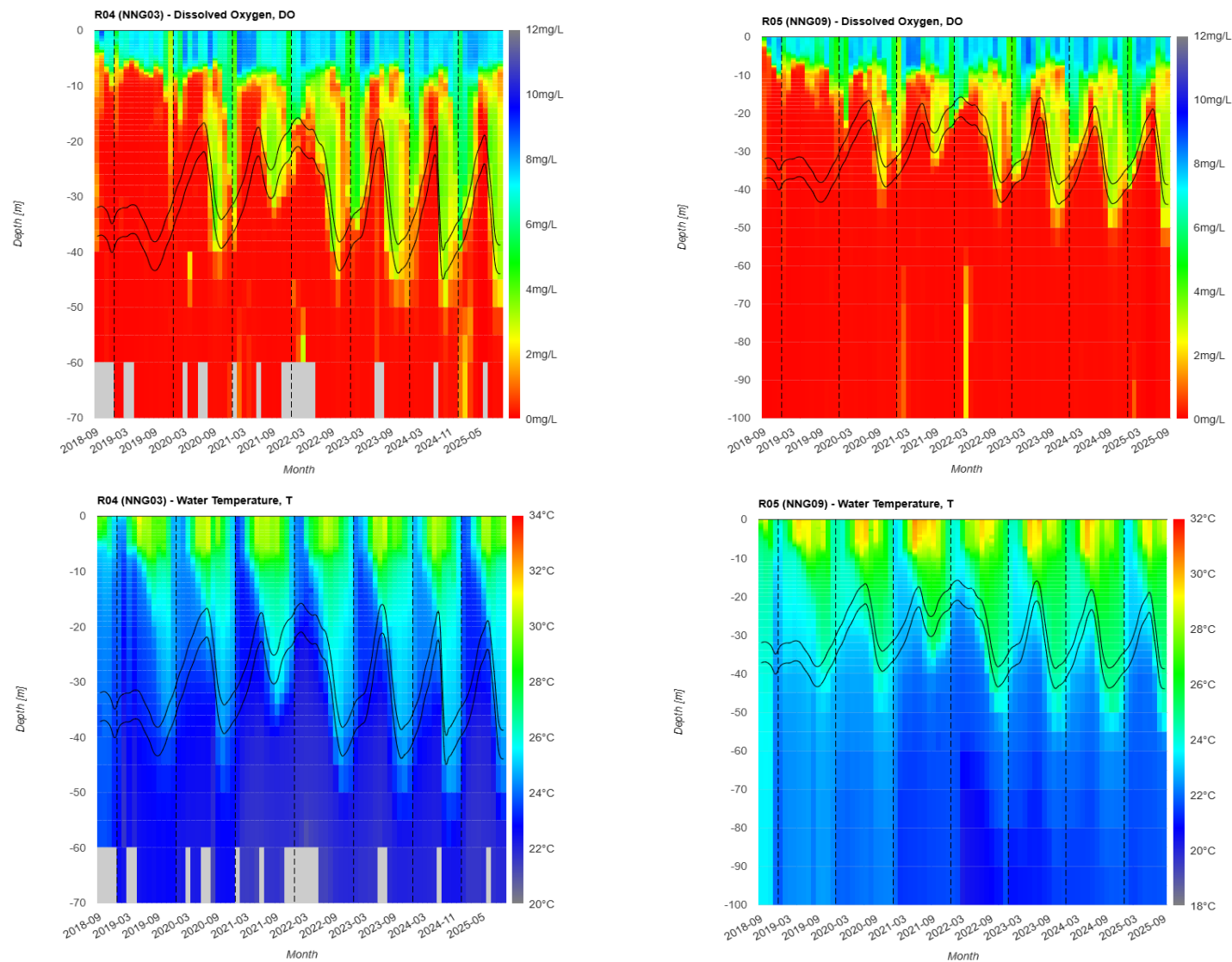


TABLE 2.7-1: DO (MG/L) RESULTS OF SURFACE WATER IN MAIN RESERVOIR, DO (MG/L) RESULTS OF R05 AT INTAKE DEPTH, RE-REGULATION RESERVOIR, NAM NGIEP AND ITS MAIN TRIBUTARIES MONITORED IN Q3 2025**(NATIONAL SURFACE WATER QUALITY STANDARD FOR DISSOLVED OXYGEN: ≥ 6 MG/L)**

Station Code	NNG01	R01	R02	R03	R04	R05 Intake	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
1-Jul-25	7.42													8.22			
2-Jul-25		7.27	6.4	7.62											8.63		
3-Jul-25					7.53	0.09	5.9	3	3.9								
4-Jul-25										7.42	6.75	5.71	6.03			7.33	6.77
8-Jul-25		7.39	7.8	8.61	7.81												
10-Jul-25						0.49	6.19	2.5	3.44								
15-Jul-25		7.01	6.93	7.82	7.1												
16-Jul-25							6.92	2.37	2.54								
23-Jul-25		7.66	6.22	7.01	6.64												
24-Jul-25						4.81	6.51	4.1	4.01								
29-Jul-25		6.87	7.38	8.06	7.39												
30-Jul-25						1.31	6.37	2.83	3.06								
5-Aug-25	9.29													9.56			
6-Aug-25		7.11	9.42	9.25													
7-Aug-25					7.4	2.9	6.95	3.08	3.21								
8-Aug-25										5.79	5.75	6.54	6.5			7.16	6.81
12-Aug-25		6.84	8.27	8.38	7.65												

Station Code	NNG01	R01	R02	R03	R04	R05 Intake	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
13-Aug-25						2.64	7.02	3.4	3.36								
19-Aug-25		6.85	6.91	7.3	7.01												
20-Aug-25						2.57	6.79	2.97	3.71								
27-Aug-25		7.24	6.24	6.93	6.37												
28-Aug-25						4.99	6.12	8.34	8.1								
3-Sep-25		6.99	7.63	7.52													
4-Sep-25					7.51	2.47	7.16	8.12	8.05								
5-Sep-25										6.91	6.75	6.57	6.42			6.23	6.12
9-Sep-25	6.6													7.27			
10-Sep-25		7.61	8.52	8.33	7.46												
11-Sep-25						2.72	6.15	3.98	4.26								
16-Sep-25		7.64	7.92	8.29	7.36												
17-Sep-25						2.77	7.45	5.77	5.81								
23-Sep-25		7.62	7.44	6.97	7.02												
24-Sep-25						3.59	9.18	7.38	7.62								

Ammonia Nitrogen

In Q3 2025, Ammonia Nitrogen complied with the National Surface Water Quality Standard (<0.2 mg/L) in all monitored stations.

TABLE 2.7-2: AMMONIA NITROGEN (MG/L) RESULTS FOR THE SURFACE WATER IN NAM NGIEP AND ITS MAIN TRIBUTARIES MONITORED IN Q3 2025

(NATIONAL SURFACE WATER QUALITY STANDARD FOR AMMONIA NITROGEN: <0.2 MG/L)

Station Code	NN G01	R01	R02	R03	R04	R05	R06	R07	NN G05	NN G06	NN G07	NN G08	NC H01	NP H01	NX A01	NHS 01
1-Jul-25	<0.1												<0.1			
2-Jul-25		<0.1		<0.1										<0.1		
3-Jul-25					<0.1	<0.1										
5-Aug-25	<0.1												<0.1			
6-Aug-25		<0.1		<0.1												
7-Aug-25					<0.1	<0.1										
3-Sep-25		<0.1		<0.1												
4-Sep-25					<0.1	<0.1										
9-Sep-25	<0.1												<0.1			

Biochemical Oxygen Demand (BOD₅)

Since 2014, the Biochemical Oxygen Demand (BOD₅) values in the Nam Ngiep River and its tributaries have generally been below the detection limit (< 1 mg/L). The results for Q3 2025 indicate that the BOD₅ levels are compliant with the standard at all stations.

In addition, NNP1PC continues to carefully compile and assess all monitoring data to determine if any additional water aeration measures may be necessary to improve the DO levels in Nam Ngiep River downstream the Re-regulation Dam.

TABLE 2.7-3: BOD₅ (MG/L) RESULTS FOR THE SURFACE WATER IN NAM NGIEP AND ITS MAIN TRIBUTARIES MONITORED IN Q3 2025**(NATIONAL SURFACE WATER QUALITY STANDARD FOR BOD₅: <1.5 MG/L)**

Station Code	NN G01	R01	R02	R03	R04	R05	R06	R07	NN G05	NN G06	NN G07	NN G08	NC H01	NPH 01	NXA 01	NHS 01
1-Jul-25	<1												<1			
2-Jul-25		<1		<1										<1		
2-Jul-25 Bottom				5.1												
3-Jul-25					<1	<1	<1	<1								
3-Jul-25 Bottom					4.3	6.1										
4-Jul-25									<1	<1	<1	<1			<1	<1
5-Aug-25	<1												<1			
6-Aug-25		<1		<1												
6-Aug-25 Bottom				4.7												
7-Aug-25					<1	<1	<1	<1								
7-Aug-25 Bottom					3.9	<1										
8-Aug-25									<1	<1	<1	<1			<1	<1
3-Sep-25		<1		<1												
3-Sep-25 Bottom				3.5												
4-Sep-25					<1	<1	<1	<1								
4-Sep-25 Bottom					5.2	<1										
5-Sep-25									<1	<1	<1	<1			<1	<1
9-Sep-25	1.2												<1			

Chemical Oxygen Demand (COD)

The COD measurements in Q3 2025 are presented in **Table 2.7-4**.

TABLE 2.7-4: COD (MG/L) RESULTS FOR THE SURFACE WATER IN NAM NGIEP AND ITS MAIN TRIBUTARIES IN Q3 2025**(NATIONAL SURFACE WATER QUALITY STANDARD FOR COD: < 5 MG/L)**

Station Code	NNG 01	R01	R02	R03	R04	R05	R06	R07	NNG 05	NNG0 6	NNG 07	NNG 08	NCH 01	NPH 01	NXA 01	NHS 01
1-Jul-25	32.6												16.0			
2-Jul-25														18.6		
3-Jul-25							13.4	10.9								
4-Jul-25									5.8	10.9	17.3	8.3			16.0	14.7
5-Aug-25	10.2												20.5			
7-Aug-25							16.0	8.3								
8-Aug-25									1.9	8.3	11.0	13.4			12.2	12.2
4-Sep-25							3.8	9.0								
5-Sep-25									14.1	12.8	6.4	14.1			3.8	12.8
9-Sep-25	11.5												3.8			

Faecal Coliform Bacteria

The results of the faecal coliform analyses in Q3 2025 are presented in **Table 2.7-5**.

During the Q3 2025, the surface water quality standard for Faecal coliform was complied with in all stations, except in NNG01, NCH01 and NXA01.

The data indicates that the concentrations of faecal coliform bacteria in the re-regulation reservoir (R06 and R07) and at R05 in the main reservoir are well below the surface water quality standard (and within typical standards for excellent inland bathing waters¹).

TABLE 2.7-5: FAECAL COLIFORMS (MPN/100 ML) RESULTS IN NAM NGIEP AND ITS MAIN TRIBUTARIES IN Q3 2025**(NATIONAL SURFACE WATER QUALITY STANDARD FOR TOTAL COLIFORMS: <1,000 MPN/100 ML)**

Station Code	NNG0 1	R0 1	R0 2	R0 3	R0 4	R0 5	R0 6	R0 7	NN G05	NNG 06	NNG07	NNG0 8	NCH0 1	NPH 01	NXA 01	NHS 01
1-Jul-25	1,600												1,600			
2-Jul-25														920		
3-Jul-25						2	23	350								
4-Jul-25									540	540	220	920			1,600	920
5-Aug-25	1,600												920			
7-Aug-25						2	2	2								

¹ E. Coli < 500 cfu/100 mL, <https://environment.data.gov.uk/bwq/profiles/help-understanding-data.html>

Station Code	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
8-Aug-25									13	49	130	130			920	350
4-Sep-25						0	2	5								
5-Sep-25									240	240	79	240			1,600	170
9-Sep-25	1600												1600			

Total Coliform Bacteria

The results of measurements for total coliform bacteria are presented in **Table 2.7-6**. The results indicate a similar pattern and same tendency as for faecal coliform bacteria. There were no exceedances of the National Surface Water Quality Standard (<5,000 MPN/100 mL) for total coliform bacteria.

TABLE 2.7-6: TOTAL COLIFORM (MPN/100 ML) RESULTS IN NAM NGIEP AND ITS MAIN TRIBUTARIES IN Q3 2025
(NATIONAL SURFACE WATER QUALITY STANDARD FOR TOTAL COLIFORMS: <5,000 MPN/100 ML)

Station Code	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
1-Jul-25	1,600												1,600			
2-Jul-25														1,600		
3-Jul-25						13	280	920								
4-Jul-25									1,600	1,600	1,600	1,600			1,600	1,600
5-Aug-25	1,600												1,600			
7-Aug-25						8	27	170								
8-Aug-25									33	540	1,600	920			1,600	1,600
4-Sep-25						0	33	240								
5-Sep-25									540	540	1,600	1,600			1,600	350
9-Sep-25	1,600												1,600			

2.7.2 Compliance Monitoring of Effluents from Camps

A total of 03 sites discharged effluents in Q3 2025, including 02 camps (OSOV1 and OSOV2) and at the Wastewater Treatment System of the Main Powerhouse. The effluent monitoring location sites can be found in **Figure 2.7-8**.

The results are described in **Table 2.7-7** and the full data set is in **Appendix 5-2**.

The status of compliance as of 30 September 2025 can be summarized as follows:

- Non-compliance with total nitrogen for the wastewater treatment systems in the Main Powerhouse (EF19) and OSOV2 Camp (EF13);
- Non-compliance with total phosphorus, faecal coliform and total coliform at Main Powerhouse (EF19), OSOV1 (EF01) and OSOV2 (EF13).

FIGURE 2.7-8: LOCATION OF EFFLUENT MONITORING POINTS

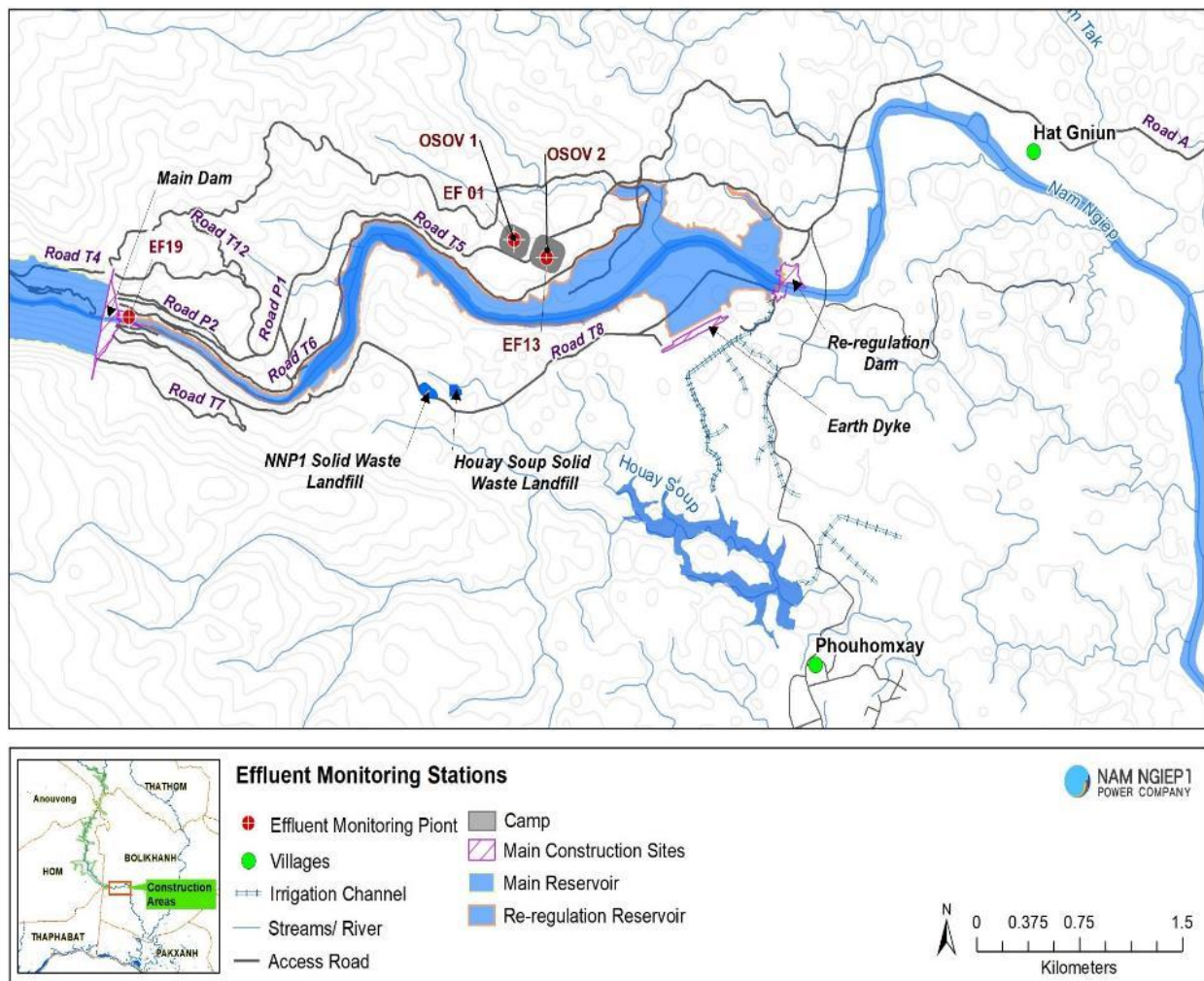


TABLE 2.7-7: RESULTS OF THE EFFLUENT WATER QUALITY MONITORING OF THE CAMPS IN Q3 2025 (NON-COMPLIANCE PARAMETERS ONLY)

		Site Name	OSOV1 (Owner's Site Office and Village)	OSOV2 (ESD Camp)	Main Powerhouse
		Station Code	EF01	EF13	EF19
Date	Parameters (Unit)	Guideline in the CA			
1-Jul-25	Total Nitrogen (mg/L)	<10.0	2.00	7.00	16.0
14-Jul-25	Total Nitrogen (mg/L)	<10.0	2.00	8.00	16.0
4-Aug-25	Total Nitrogen (mg/L)	<10.0	2.00	8.00	7.00
18-Aug-25	Total Nitrogen (mg/L)	<10.0	3.00	11.00	12.00
1-Sep-25	Total Nitrogen (mg/L)	<10.0	3.0	9.0	34.0
15-Sep-25	Total Nitrogen (mg/L)	<10.0	3.0	9.0	37.0
1-Jul-25	Total Phosphorus (mg/L)	<2	0.95	0.70	5.7
14-Jul-25	Total Phosphorus (mg/L)	<2	0.87	0.61	5.5
4-Aug-25	Total Phosphorus (mg/L)	<2	0.92	0.54	5.18
18-Aug-25	Total Phosphorus (mg/L)	<2	1.39	0.81	5.68
1-Sep-25	Total Phosphorus (mg/L)	<2	1.14	0.5	4.9
15-Sep-25	Total Phosphorus (mg/L)	<2	0.76	0.5	4.8
1-Jul-25	Total coliform (MPN/100 mL)	<400	1,600	16,000	1,600
14-Jul-25	Total coliform (MPN/100 mL)	<400	1,600	540	1,600
4-Aug-25	Total coliform (MPN/100 mL)	<400	1,600	16,000	0
18-Aug-25	Total coliform (MPN/100 mL)	<400	920	16,000	0
1-Sep-25	Total coliform (MPN/100 mL)	<400	79	2	0
15-Sep-25	Total coliform (MPN/100 mL)	<400	22	32	240
1-Jul-25	Faecal Coliform (MPN/100 mL)	<400	1,600	9,200	540
14-Jul-25	Faecal Coliform (MPN/100 mL)	<400	540	5	1,600
4-Aug-25	Faecal Coliform (MPN/100 mL)	<400	540	16,000	0
18-Aug-25	Faecal Coliform (MPN/100 mL)	<400	350	9,200	0
1-Sep-25	Faecal Coliform (MPN/100 mL)	<400	49	2	0
15-Sep-25	Faecal Coliform (MPN/100 mL)	<400	7	26	79

TABLE 2.7-8: COMPLIANCE STATUS OF EFFLUENT DISCHARGE FROM THE CAMPS IN Q3-2025

Site	ID	WWTS	Key Non-Compliance Issues ² in Q3-2025	Corrective Actions
OSOV 1 (Owner's Site Office and Village)	EF01	- Septic tanks (kitchen and black water) and wetland (grey water), discharge: 70 m³/day. - The effluent from this site flows into the Re-regulation Reservoir.	- Faecal coliform (<400 MPN/100 mL): Non-compliance in 3 out of 6 samplings. Q3 mean 514 MPN/100 mL. - Total coliform (<400 MPN/100 mL): Non-compliance in 4 out of 6 samplings. Q3 mean 970 MPN/100 mL.	The wastewater overflowed from OSOV1's 1st wetland pond due to blockage issues. The camp maintenance team promptly stopped wastewater overflow by clearing the blockage at the first wetland outfall. An Observation of Non-Compliance (ONC) was issued for ADM to inspect and take corrective action by end of September 2025. The two samplings in September 2025 show compliance with the standards
OSOV 2 (ESD Camp)	EF13	- Septic tanks (kitchen and black water) and SBR with chlorination system.	- Total nitrogen (<10 mg/L): Non-compliance in 1 out of 6 samplings. Q3 mean 8.7 mg/L.	A malfunction in OSOV2's WWTS control panel. The camp team is manually operating the system short-term. Due to

² The values in brackets indicate the applicable standard

Site	ID	WWTS	Key Non-Compliance Issues ² in Q3-2025	Corrective Actions
		- The effluent from this site is led into a ditch connected to the Re-regulation reservoir, however, due to low quantities of effluent, the liquid is absorbed in the soil before reaching the reservoir.	- Faecal coliform (<400 MPN/100 mL): Non-compliance in 3 out of 6 samplings. Q3 mean 5,739 MPN/100 mL. - Total coliform (<400 MPN/100 mL): Non-compliance in 3 out of 6 samplings. Q3 mean 8,096 MPN/100 mL.	delayed response, the ONC was escalated to NCR1 and submitted to ADM for full inspection and repair by end of September 2025. The two measurements in September 2025 show compliance with the standards
Main Powerhouse	EF19	- Septic tanks (grey and black water), biofilm tank and chlorination tank. - The effluent from this site flows into the tailrace of the Main Powerhouse and then into the Re-regulation Reservoir.	- Faecal coliform (<400 MPN/100 mL): Non-compliance in 2 out of 6 samplings. Q3 mean 370 MPN/100 mL. - Total coliform (<400 MPN/100 mL): Non-compliance in 2 out of 6 samplings. Q3 mean 573 MPN/100 mL. - Total nitrogen (<10 mg/L): Non-compliance in 5 out of 6 samplings. Q3 mean 20.3 mg/L. - Total Phosphorus (<2 mg/L): Non-compliance in all 6 samplings. Q3 mean 5.3 mg/L.	Cleaning all septic tanks and closely monitoring the residual chlorine content and chlorination dosage adjustment. Compliance with coliform bacteria was achieved in August and September 2025

2.7.3 Groundwater Quality Monitoring

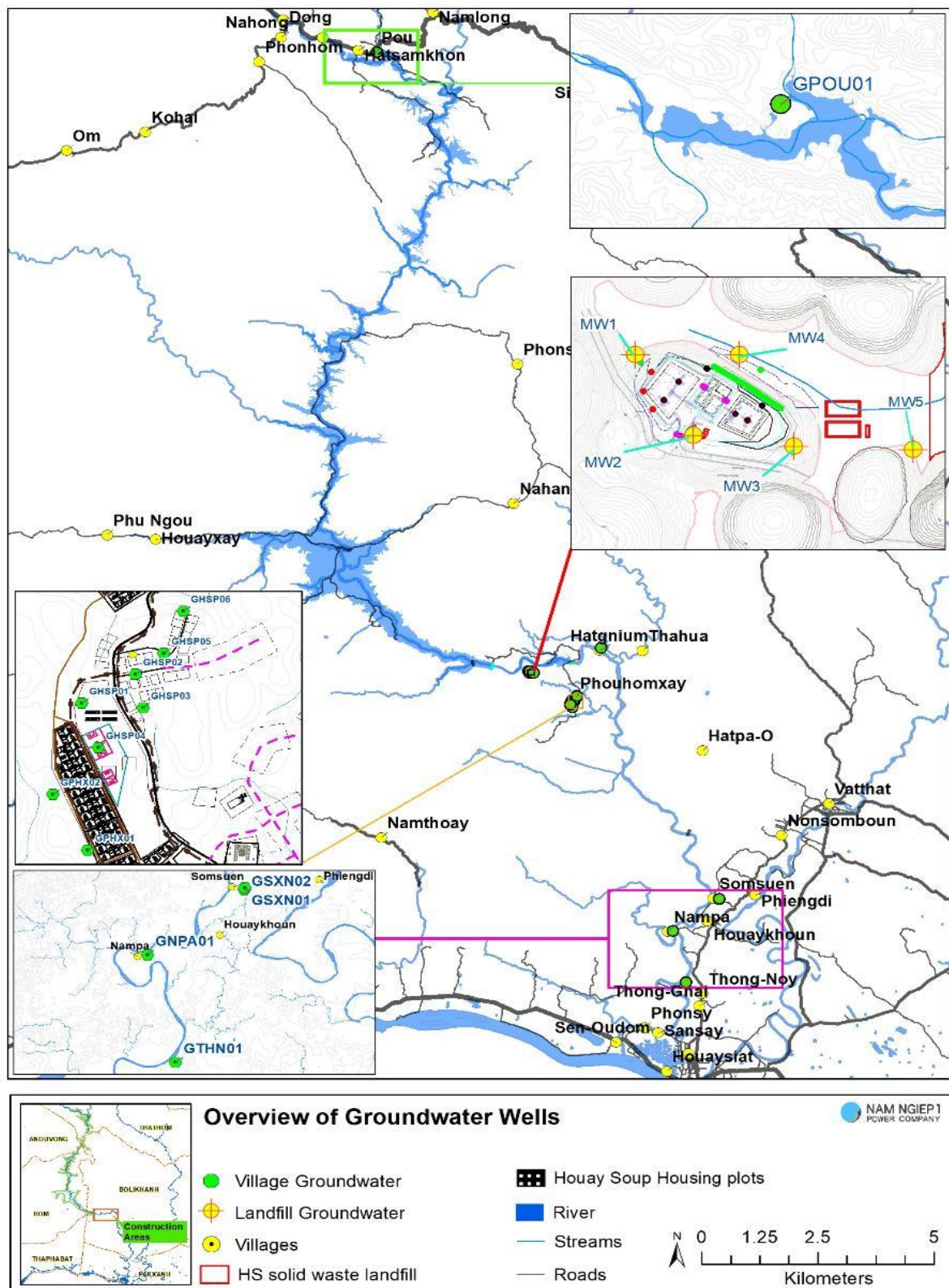
During Q3 2025, five boreholes at Somseun, Nam Pa and Thong Noy and Pou Villages (two boreholes) have been monitored for the following parameters:

- a. *Monthly*: pH, DO (%), DO (mg/L), Conductivity ($\mu\text{S}/\text{cm}$), Temperature ($^{\circ}\text{C}$), Turbidity (NTU), Faecal Coliform (MPN/100 mL) and *E. coli* (MPN/100 mL);
- b. *Annually (Not This Quarter)*: Arsenic (mg/L), Total Iron (mg/L), Magnesium (mg/L), Fluoride (mg/L), Total Hardness (mg/L), Nitrate (mg/L), Nitrite (mg/L) and Lead (mg/L).

Note that the water pumps of two boreholes (GPHX01 and GPHX02) in Phouhomxay Village were out of operation as they were broken and Social Management Office (SMO) informed the EMO that these two boreholes will no longer be used, as villagers rely on gravity-fed water supply as their primary source. Therefore, the GPHX01 and GPHX02 have been removed from EMO's routine monitoring since January 2025.

The groundwater sampling locations are displayed in **Figure 2.7-9** and the groundwater monitoring data is presented in **Appendix 5-3**.

FIGURE 2.7-9: GROUNDWATER SAMPLING LOCATIONS



Key findings from the groundwater quality monitoring are summarized as the follows:

Thong Noy Village: all monitored parameters complied with the standard, except faecal coliform and *E.coli* bacteria.

Somseun Village: all monitored parameters complied with the standard.

Nampa Village: all monitored parameters complied with the standard, except faecal coliform and *E.coli* bacteria in July and September 2025.

Pou Village: all monitored parameters complied with the standard, except faecal coliform and *E.coli* bacteria.

The villagers were advised to boil water before drinking. This advice is in accordance with the Law on Hygiene, Disease Prevention and Health Promotion No 01/NA of 10 April 2001, which states that domestic water supply for daily use is not required to be readily drinkable but would normally have to be boiled or otherwise treated before it would be suitable for drinking.

There are two types of water supply systems in Lao PDR:

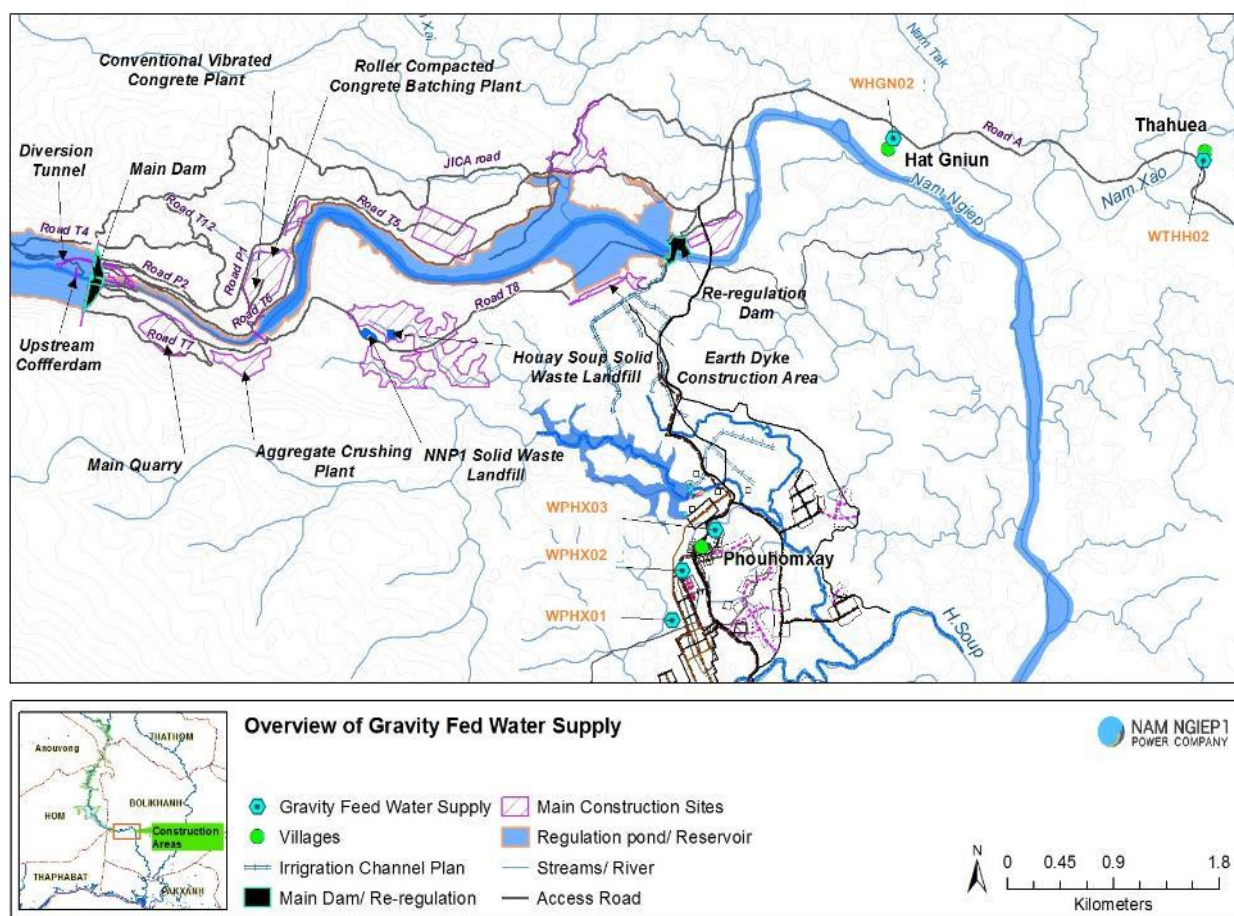
- (A) **Nam Papa systems (water supply)** – water from natural water sources that has gone through a treatment process to become clean and safe water in compliance with the drinking water quality standards. These systems are managed by the Department of Water Supply, Ministry of Public Works and Transport; and
- (B) **Nam Sa-at Systems (domestic water supply)** – provide water to rural areas that are not connected to Nam Papa systems. Nam Sa-at systems include gravity fed systems and boreholes with motorised pumps or hand pumps. These systems are managed by the Centre for Environmental Health and Water Supply (Nam Sa-at) under the Department of Hygiene and Health Promotion, Ministry of Health.

The community water supply systems related to the NNP1 hydropower project are under Nam Sa-at system with the monitoring requirements identify in the Minister's Decision on the Water Quality Standard Management for Drinking and Domestic Use, No. 561/MoH dated 27 February 2014.

The issue of bacterial contamination in the communities' water supply has been investigated by ESD team together with the respective local authorities and the villagers to find the likely root causes. A series of actions have been taken to prevent the contamination according to the Water Safety Plans (WSP); however, the Project, Nam Sa-at (GOL) and the villagers considered that disinfection treatment processes (e.g., chlorination, ceramic filtration) would not be sustainable and cost effective in a long run. It is well understood and agreed with the villagers that the water shall be boiled before drinking as mentioned above. It is also noted that boiling of water from domestic water supply (Nam Sa-at) systems before drinking is a general practice in the rural areas of Lao PDR.

2.7.4 Gravity Fed Water Supply (GFWS) Monitoring

The monitoring of the GFWS aims to assess the quality of water that is being used for bathing and washing by villagers at Hat Gniun, Thahuea and Phouhomxay villages. The gravity fed water supply system at Phouhomxay Village has been in use since December 2017.

FIGURE 2.7-10: OVERVIEW OF GRAVITY FED WATER SUPPLY

Water samples were taken from the taps for analysis during the reported period and selected results are shown in **Table 2.7-9**. The full set of data is presented in **Appendix 5-4**.

TABLE 2.7-9: THE GFWS MONITORING RESULT IN Q3 2025

Date	Parameter (Unit)	Site Name	Tha Heua Village	Hat Gnuin Village	Phouhomxay Village	
		Station	WTHH02	WHGN02	WPHX02	WPHX03
		Guideline				
22-Jul-25	Faecal Coliform (MPN/100 mL)	0	39	33	21	26
14-Aug-25		0	13	79	49	33
18-Sep-25		0	7	6.8	160	220
22-Jul-25	E. Coli Bacteria (MPN/100 mL)	0	8	13	7.8	7.8
14-Aug-25		0	2	6.8	4.5	4.5
18-Sep-25		0	7	2	120	140

Thahuea Village (WTHH02): all parameters complied with the standard, except for faecal coliform and *E. coli*.

Hat Gniun Village (WHGN02): all parameters complied with the standard, except for faecal coliform and *E. coli*.

Phouhomxay Village (WPHX02-tap water at primary school; and **WPHX03**-tap water at a villager's house): all parameters complied with the standard, except faecal coliform and *E. coli* in the Q3 2025 samples. Note here that during sampling of tap water in Phouhomxay Village, surface water from Houay Soup Stream was still supplied into the system.

As observed in the field during water sample collection, livestock is roaming around in the water intake areas which may have contributed to the presence of Faecal Coliform Bacteria and *E. coli* in GFWS samples. According to the 2019 site condition survey, it is not feasible to fence off the upstream water course due to cattle having access from all directions along the stream. The villagers generally use tap water for washing and cleaning. They were informed about the monitoring results and were advised to prevent the bacterial contamination by removing livestock from the intake areas and boil water before drinking. The advice to boil the water is in accordance with the Law on Hygiene, Disease Prevention and Health Promotion No 01/NA of 10 April 2001, which states that domestic water supply for daily use is not required to be readily drinkable but would normally have to be boiled or otherwise treated before it would be suitable for drinking.

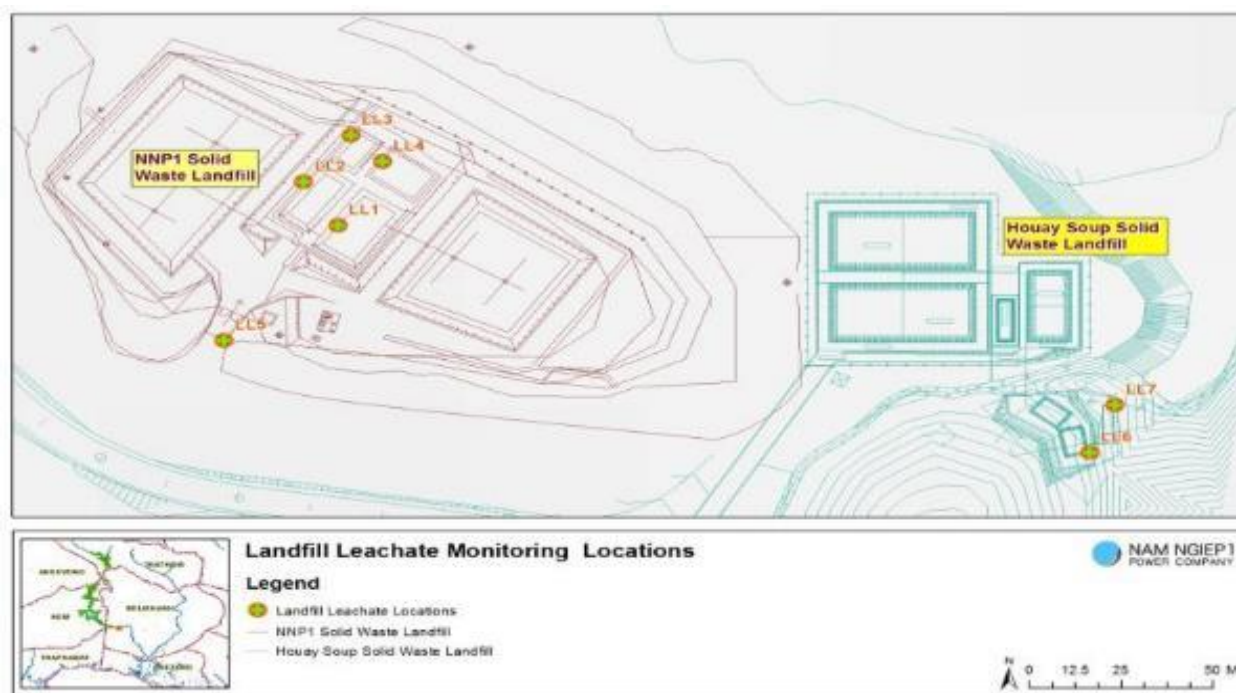
As mentioned in **section 2.7.3**, the gravity fed system is a domestic water supply managed by the Centre for Environmental Health and Water Supply (Nam Sa-at) under the Department of Hygiene and Health Promotion, Ministry of Health. It is well understood and agreed with the villagers that the water shall be boiled before drinking.

For Phouhomxay Village, the villagers requested NNP1PC and the District Water Supply Office during a meeting in March 2022 to reuse the Gravity Fed System (GFS) as a main supply and reserve the existing ground water supply system for times when the GFS would have to be repaired. The water from the gravity fed system needs to be boiled before drinking but may be used directly for other purposes such as washing, feeding animals, watering the garden, and other households' activities.

In addition, to ensure sufficient water quantity, the ESD will work with the District Water Supply Office to improve the water intake of the GFS under NNP1PC's Corporate Social Responsibility (CSR). For the presence of bacteria, the community confirmed that they will boil water before drinking. It is also noted that boiling domestic water supply (Nam Sa-at) before drinking is a general practice in the rural areas of Lao PDR.

2.7.5 Landfill Leachate Monitoring

The landfill leachate treatment systems at NNP1 Project landfill and Houay Soup landfill are monitored to control the functioning of the treatment process and ensure compliance with effluent standards. The monitoring locations are presented in the **Figure 2.7-11**.

FIGURE 2.7-11: LANDFILL LEACHATE MONITORING LOCATION

The monitoring results in Q3 2025 indicate compliance with the applicable standards for all monitored parameters, except for faecal coliform and total coliform for both NNP1 Project Landfill leachate and Houay Soup Landfill leachate in July and August 2025. However, there was no discharge or overflow of leachate to the environment. The monitoring data can be found in **Appendix 5-5**.

2.7.6 Water Quality Compliance Monitoring

The water quality non-compliance issues in Q3 2025 are summarized in **Table 2.7-10**.

TABLE 2.7-10: NON-COMPLIANCES RELATING TO WATER QUALITY MONITORING IN Q3 2025

No	Non-compliance Issues	Corrective Actions	Status
1	During gate discharge (July 2025), Dissolved Oxygen (DO) in the Nam Ngiep River downstream the Re-regulation Dam was lower than the National Surface Water Quality Standard (6 mg/L)	- NNP1PC has continued implementing the water quality monitoring program and discussed the results with the LTA during the May 2023 visit; - LTA recommended to maintain the monitoring program, and concluded that other measures aiming at an improvement, like e.g. the possibility of artificial re-aeration of the water in the re-regulation pond for increasing oxygen content, are not required.	- Closely monitoring
2	Effluents discharged from the Wastewater Treatment Systems	In July, August and September 2025, EMO, ADM and TD conducted a monthly joint	- Closely monitoring the system

No	Non-compliance Issues	Corrective Actions	Status
	(WWTS) at OSOV1, OSOV2 and the Main Dam exceeded the National Effluent Standard Guideline for some parameters	inspection for the operation and maintenance of the WWTS: - All 17 septic tanks and air blowers at OSOV1 were checked on monthly basis by the ADM staff and they are functioning properly. The sludge in these tanks are cleaned up yearly. - Wetland maintenance at OSOV1 including weeding and replacing dead reeds was recommended with ONC. - The malfunction in OSOV2's WWTS control panel was observed in August 2025. The camp team is manually operating the system short-term. Due to delayed response, the ONC was escalated to NCR1 and submitted to ADM for full inspection and repair by end of September 2025 - Closely monitor the residual chlorine content and chlorination dosage adjustment for the effluents of the Main Powerhouse WWTS.	operation and maintenance.
3	Groundwater quality monitored for the communities (Pou, Nam Pa and Thong Noy Villages) were not in compliance with the National Groundwater Quality Standard for drinking purpose on Faecal Coliform and <i>E.coli</i> parameters	- A full inspection of the water supply systems in Som Seun, Nam Pa and Thong Noy Village was conducted in September 2020 by NNP1PC team including consultations with the Village Water Use Committee (VWUC) and also interviews with some consumers (detailed in Q4 2020 Report). - Potential contamination sources of coliform were identified and recommendations on operation and maintenance of the water supply system were provided to the involved parties. - The villagers were informed about the monitoring results and were advised to boil water before drinking in accordance with the Law on Hygiene, Disease Prevention and Health Promotion No 01/NA of 10 April 2001, which states that domestic water supply for daily use is not required to be readily drinkable but would normally have to be boiled or otherwise treated before it would be suitable for drinking.	- The villagers were advised and encouraged to boil water before drinking. - Continue to monitor.

No	Non-compliance Issues	Corrective Actions	Status
4	Gravity Fed Water Supply monitored for the communities (Thahuea, Hat Gniun, and Phouhomxay Village) were not complied with the National Drinking Water Quality Standard on Faecal Coliform and <i>E.coli</i> parameters.	- Site observations were conducted during the routine water sampling; it was observed that livestock was roaming around the water intake areas and faeces from livestock and birds may contribute to the presence of bacterial contamination. It is not feasible to fence off the upstream water course due to cattle having access from all directions along the stream. - The villagers were informed about the monitoring results and were advised to boil water before drinking.	- The villagers generally use tap water for washing and cleaning, and were encouraged to boil water before drinking. - Continue monitoring.
5	Landfill Leachate Monitoring for both NNP1 and Houay Soup Landfills were not complied with the Effluent Standard for faecal coliform and total coliform.	- The leachate is still contained in the leachate ponds without being discharged to the environment. - Continue monitoring.	- Continue monitoring.

3 WATERSHED AND BIODIVERSITY MANAGEMENT

3.1 WATERSHED MANAGEMENT

3.1.1 Implementation of Watershed Management Plan

3.1.1.1 Xaysomboun Watershed and Reservoir Protection Office (WRPO)

a) Fishery Co-Management Plan (FCMP):

On 01 July 2025, XSB WRPO in collaboration with key offices held a consultation meeting to finalize the Fishery Co-Management Regulation (FCMR). On 03 July 2025, FCMP booklets were distributed to the key offices including XSB WRPO, Hom, Anouvong and Thathom DAFOs. On 23 July 2025, XSB WRPO reported to NNP1 EMO that FCMR was endorsed by the Head of XSB Provincial Justice Office and submitted to the XSB Provincial Governor and Provincial Assembly for approval on 24 July 2025. On 24 September 2025, XSB WRPO reported to NNP1 EMO that FCMR was signed by the XSB Provincial Governor, but had not yet been reviewed by the Provincial Assembly.

b) NNP1 Watershed TPZs Encroachment Resolution

On 19 November 2024, the Vice Governor of Xaysomboun Province as head of XSB WRPC assigned XSB PAFO in collaboration with Vice Governors of Hom, Anouvong and Thathom District, along with DAFOs to discuss strategies for resolving forest encroachment related

with agricultural activities inside NNP1 watershed TPZs. The key outcome of the discussions included:

- Agreed to utilize remaining patrol budget under the previous AIPs for campaigns, education, information gathering and prosecuting violators starting from December 2024 to January 2025;
- Hom, Anouvong and Thathom districts to submit their workplan and budget to XSB WRPO for XSB Vice Governor' for review and approval by the first week of December 2024.

In Q3 2025, XSB WRPO, Anouvong District Vice Governor, DAFO and Transport offices inspected the construction of an access road from Thamlo Village to NNP1 watershed TPZ1 boundary and held a consultation meeting to discuss measures against violators and to minimize forest encroachment and poaching of wildlife within the NNP1 watershed TPZ1. The key outcome of consultation concluded that the Anouvong District Agriculture and Environment Office will collaborate with relevant district offices and village authority to verify whether the land use falls within the NNP1 TPZ; XSB WRPO will report findings to the XSB Vice Provincial Governor for acknowledgement and guidance, and request to NNP1 consider and support the review and revision of village participatory land use plan in Thamlo, Om and Korhai villages.

In Q3 2025, Hom District Agriculture and Environment Office received funds from XSB WRPO and scheduled to carry out outreach campaign and education activities in Q4 2025.

Thathom District Agriculture and Environment Office have not implemented any activities in Q3 2025. NNP1 EMO will follow up on this in Q4 2025.



Field inspection for the access road construction from Thamlo village to NNP1 watershed TPZ1 boundary on 30 July 2025



A consultation meeting to plan measures against violator and to minimize impacts on the forest and biodiversity within the NNP1 watershed TPZ1 on 31 July 2025

c) Construction of Reservoir Checkpoints:

The construction of two reservoir checkpoints began on 6 December 2024, and the upstream reservoir checkpoint was completed in Q2 2025. The head of XSB WRPO reported that the construction of the downstream checkpoint had been delayed due to slippery road conditions and internal organization restructure and that the construction and staff deployment to both checkpoints might be started in Q4 2025.

d) Patrolling:

XSB WRPO did not conduct TPZ, forest, or reservoir patrols. due to delays in submitting the 2025 activity plan to NNP1PC-EMO and BSP-WCS, as well as the financial report to XSB-WRPC.

3.1.1.2 Bolikhamxay Watershed and Reservoir Protection Office (WRPO)

In Q3 2025, BLX WRPO resumed forest and reservoir patrols within the NNP1 watershed and reservoir in July 2025. However, the forest and reservoir patrols were temporarily paused in August and September 2025 as funds for the patrolling activities allocated in the AIP 2025 had not yet been disbursed by FPF-DoF-MAF.

3.1.1.3 NNP1PC EMO

In Q3 2025, Hom District Management Committee distributed fertilizers and vaccines to the pineapple and cattle production groups in PhouNgou and Houayxay villages in Hom District. The committee also handed over funds to the pineapple production groups of PhouNgou and Houayxay villages, with a total amount of 40 million kip.

For Thathom District in Q3 2025, Thathom District Management Committee held a consultation meeting with Thaviengxay village authority and weaving group members to review and finalize the management regulation. The committee also facilitated the Nahong Village Handicraft Group participation in the XSB Provincial Exhibition Events and subsequently handed over funds to the handicraft group. Additionally, the committee provided training on greenhouse vegetable cultivation to the members of the greenhouse vegetable production groups in Nahong and Phonhom villages. This is part of the skills development in the greenhouse vegetable practice to maximize their productions.



Hom District Committee distributed fertilizers and vaccines to the members of production groups in PhouNgou and Houayxay villages



Fund handover to the pineapple production groups in PhouNgou and Houayxay villages



Cattle vaccination in PhouNgou and Houayxay villages



A consultation meeting with Thaviengxay Village Authority and Weaving Group Members (left side) and Funds handover to Nahong Village Handicraft Group (right side)



A training on the greenhouse vegetable cultivation in Nahong and Phonehom villages

3.1.2 Preparation of Annual Implementation Plan (AIP)

TABLE 3.1-1 provides an overview of the progress in preparing the Annual Implementation Plans (AIP) for 2025 by Xaysomboun WRPO and Bolikhamxay WRPO and highlights of fund preparation, approvals, and transfer status.

TABLE 3.1-1 ANNUAL IMPLEMENTATION PLAN PREPARATION STATUS

Watershed and Reservoir Protection Office (WRPO)	Preparation of Annual Implementation Plan (AIP) 2025
Xaysomboun WRPO	Note: AIP 2025 preparation is suspended due to the prolonged delay in submission of the financial report as instructed by XSB provincial vice governor. Status: The remaining budget from the previous AIPs was allocated for some other activities to be carried out in 2025.
Bolikhamxay WRPO	– AIP 2025 preparation was discussed on 27 February 2025 – BLX WRPO submitted the first draft to NNP1 EMO for review on 4 March 2025. – Agreed to adjust the six last month fund of AIP 2024 to align with policy of MoF 0012, dated January 3, 2025. – BLX WRPO submitted the adjusted plan to NNP1 EMO for review on 7 May 2025. – NNP1 EMO returned comments to BLX WRPO for further improvements on 9 May 2025. – BLX WRPO submitted a funds request letter along with full plan to the Department of Forestry (DoF), Ministry of Agriculture and Environment (MAE) on 16 May 2025. – NNP1 EMO received an official funds disbursement request letter to from EFPP-DoF-MAE on 10 Jun 2025. – NNP1PC transferred funds to EFPP-DoF-MAE account on 23 June 2025. Status: BLX WRPO has not yet received funds from EFPP-DoF-MAF.

3.2 BIODIVERSITY OFFSET MANAGEMENT

3.2.1 Implementation of Biodiversity Offset Management Plan

Progresses on the implementation of activities by component in Q3 2025 are described as below:

a. Component 1 - Spatial Planning and Regulation

BSP-WCS shared the revised Participatory Land Use Plan (PLUP) of Sopkhone, Meungcham and Phonmeung villages, Xaychamphone district to NNP1-EMO and BOMU on 11 September 2025, NNP1-EMO has reviewed and reverted to BSP-WCS on 15 September 2025 with some comments for improvement. BSP-WCS continued working on the drafts as of the end of September 2025 and is expected to share the updated version with NNP1-EMO and BOMU in October 2025. The PLUP are expected to be approved by Xaychamphone District Governor in early Q4 2025.

b. Component 2 – Law Enforcement

There were no forest patrols in Q3 2025 due to continued heavy rains, which pose high safety risks and also due to limited budget availability, as BOMU has not yet received the AIP2025 funds from the Environment and Forestry Protection Fund, Ministry of Agriculture and Environment.

However, the patrol teams conducted the patrol sub-stations guarding and access control in July, August and September 2025.

c. Component 3 – Conservation Outreach

School outreach program: BOMU shared the improved Kamishibai storytelling materials (illustrations) with BSP-WCS and NNP1-EMO on 27 May 2025. However, the implementation of the activity will be further postponed to Q4 2025 due to poor access road conditions to NC-NX villages and recent internal organizational changes within BSP-WCS.

d. Component 4 – Conservation linked livelihood

Community Conservation Agreement (CCA): BSP-WCS shared the draft CCAs of six NC-NX villages with BOMU and NNP1-EMO on 3 September 2025. The NNP1-EMO reviewed and reverted to BSP-WCS on 5 September 2025 with some comments for improvement. BSP-WCS re-shared the revised versions on 15 September 2025, and the NNP1-EMO finalized the CCAs on 26 September 2025.

Village Fish Conservation Zone (FCZ): BOMU is preparing documents to obtain approval from the district level including the establishment of FCZs, management committee and regulation. While the NNP1-EMO is assisting the design of FCZ signboards.

Community Development Plan (CDP): BSP-WCS shared the draft livestock vaccine monitoring report with BOMU and NNP1-EMO on 2 September 2025. The NNP1-EMO reverted to BSP-WCS on 5 September 2025 with comments for improvement. The report was finalized on 26 September 2025.

3.2.2 Preparation of Annual Implementation Plan (AIP) 2025

NNP1PC received the NC-NX AIP2025 funds disbursement request letter from DoF-MAE on 8 September 2025 with a total amount of 5,708,907,000 LAK (2,783,061,000 LAK under CA and 2,925,846,000 LAK under>NNL). NNP1PC disbursed the funds to the bank account of the Environment and Forestry Protection Fund, Ministry of Agriculture and Environment (EFPF-MAE) on 17 September 2025. BOMU has not received the funds from the EFPF-MAE as of the end of September 2025.

4 FISHERY MONITORING

Two species groups and three species dominated the fish catch by weight in Q3 2025 as listed in **Table 4-1**. All species are classified as Least Concern (LC) according to the IUCN Red List of Threatened Species¹ and *Oreochromis niloticus* is an exotic species.

TABLE 4-1: FISH SPECIES DOMINATING THE FISH CATCH IN Q3 2025

Species	Lao Name	Fish Catch (kg)	IUCN Red List Classification
<i>Oreochromis niloticus</i>	ປານິນ	800	LC (Exotic)
<i>Hampala dispar</i> , <i>Hampala macrolepidota</i>	ປາສູດ	387.3	LC
<i>Cyprinus carpio</i>	ປາໄນ	240	LC
<i>Poropuntius normani</i> , <i>Poropuntius laoensis</i> , <i>Poropuntius carinatus</i>	ປາຈາດ	264.4	LC
<i>Clarias batrachus</i>	ປາດຸກ	115.3	LC

The recorded catch of Threatened species (IUCN Red List classification) in Q3 2025 are presented in **Table 4-2**. The list includes three species which are classified as Vulnerable (VU).

TABLE 4-2: THREATENED SPECIES OF Q3 2025 FISH CATCH

Species	Lao Name	Fish Catch (kg)	IUCN Red List Classification
Scaphognathops bandanensis	ປາປ່ຽນ/ປາວຽນໄຟ	65.1	VU
Tor sinensis	ປາແດງ	17.8	VU

Species abundance and occurrence is based on the 7-day reported catch from the DCL survey in Q3 2025. The catch is divided in 4 areas including upstream, above the main dam³, below the main dam and Mekong area. Main biodiversity indicators in Q3 2025 for upstream, above dam, below dam and Mekong area are presented in **Table 4-3** and the Shannon biodiversity index has been calculated (the higher the value, the higher the diversity of species).

TABLE 4-3: MAIN BIODIVERSITY INDICATORS FOR Q3 2025

Biodiversity Indicators	Mekong	Below dam	Above dam	Upstream
Total species and groups	34	51	38	18
Single species	29	36	26	11
Species groups	5	15	12	7
Top 15 species (% total catch weight)	91.20%	77.56%	90.18%	98.34%
Proportion for species groups	25.21%	48.37%	27.29%	45.28%
Diversity index (Shannon)	2.7376	3.1630	2.5153	2.4924

Figure 4-1 shows fish diversity index (Shannon) for upstream, above dam, below dam and Mekong area from July 2015 to September 2025.

³ Above dam includes lower reservoir and upper reservoir zones.

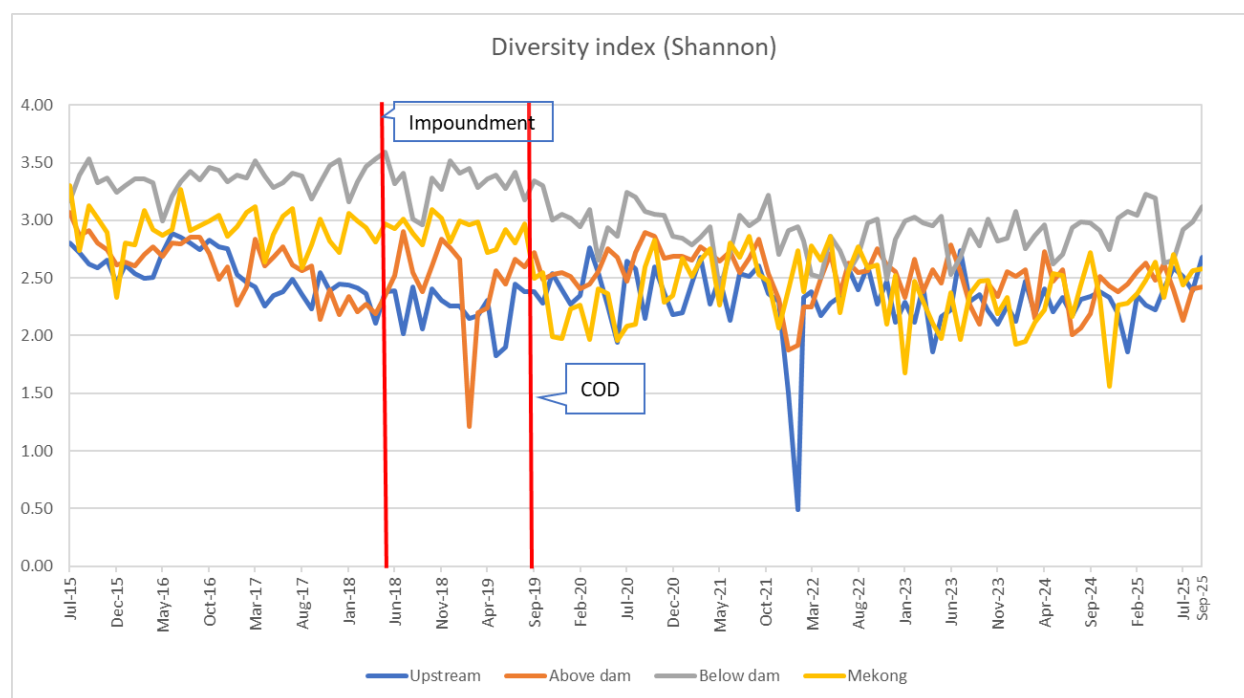


FIGURE 4-1: FISH DIVERSITY INDEX (SHANNON) BY FISHING ZONE FROM JULY 2015 TO SEPTEMBER 2025

The mean daily fish catch per household from July 2015 to September 2025 is displayed in **Figure 4-2** and the mean fish catch per household per fishing day for Q3 from 2015 to 2025 are shown in **Table 4-4**.

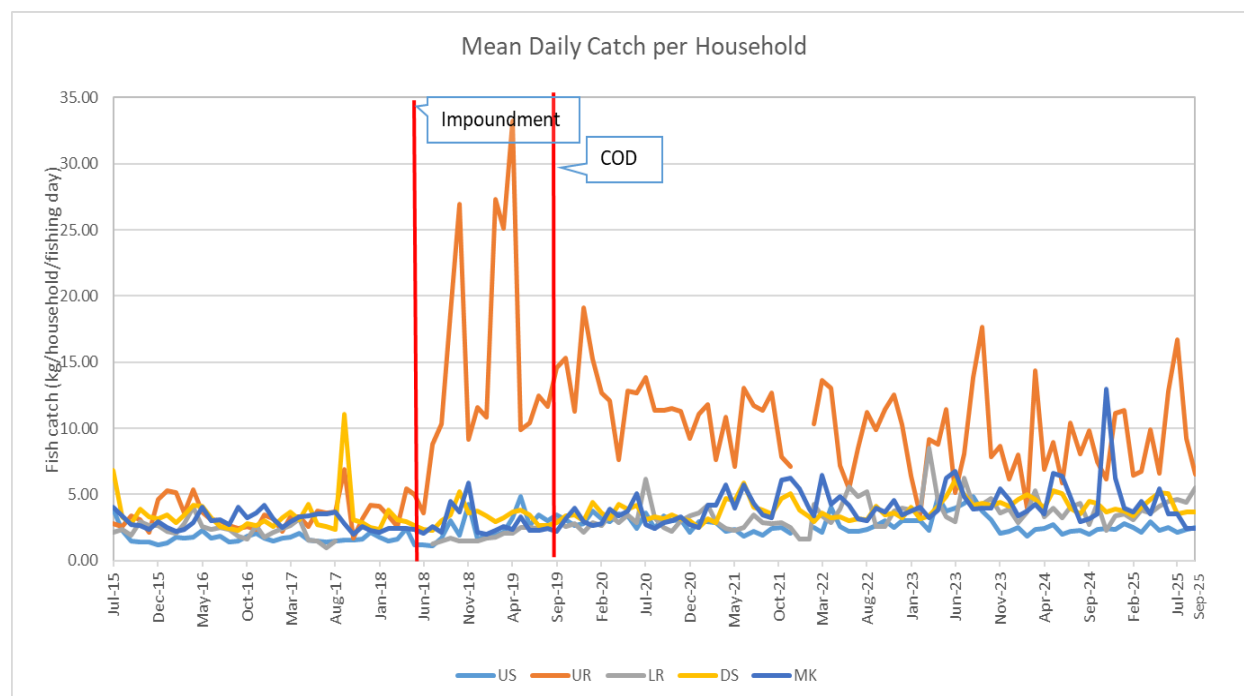


FIGURE 4-2: MEAN DAILY FISH CATCH PER HOUSEHOLD FROM JULY 2015 TO SEPTEMBER 2025

TABLE 4-4: MEAN DAILY FISH CATCH PER HOUSEHOLD FOR Q3 FROM 2015 TO 2025

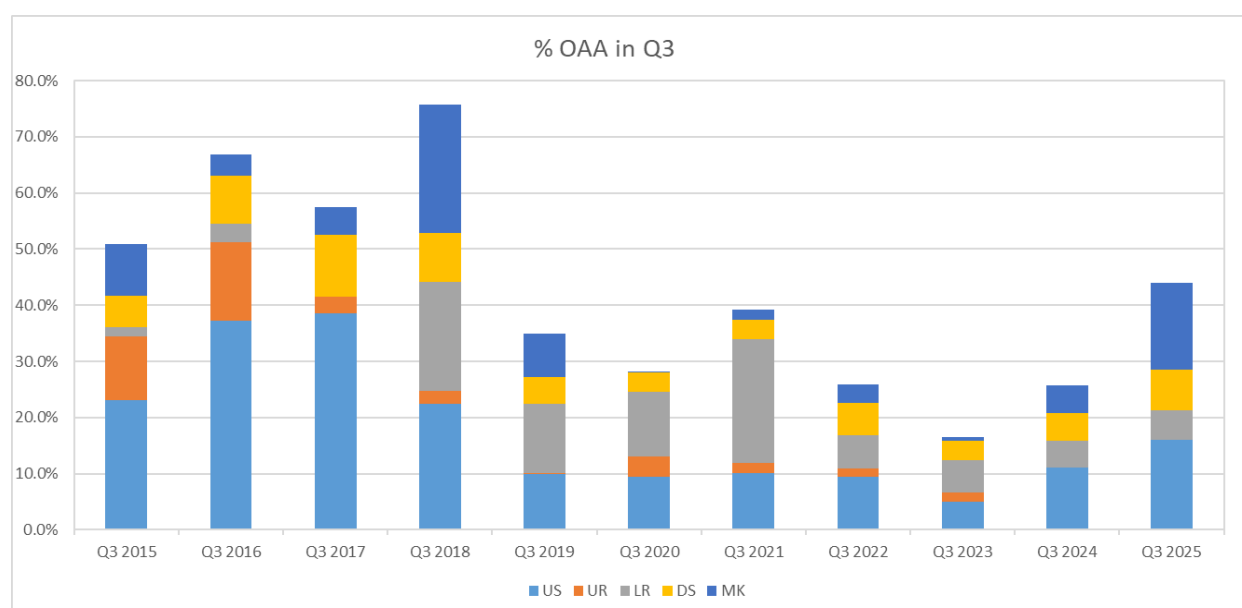
Fishing Zone	Q3 2015 (kg)	Q3 2016 (kg)	Q3 2017 (kg)	Q3 2018 (kg)	Q3 2019 (kg)	Q3 2020 (kg)	Q3 2021 (kg)	Q3 2022 (kg)	Q3 2023 (kg)	Q3 2024 (kg)	Q3 2025 (kg)
Upstream	2.56	1.59	1.49	1.94	3.31	3.12	2.21	2.40	4.31	2.16	2.33
Upper reservoir	2.94	2.71	4.71	12.64	12.90	12.20	11.92	9.87	13.18	9.43	10.83
Lower reservoir	2.16	2.24	1.24	1.49	2.67	3.97	3.05	4.21	4.89	3.73	4.83
Downstream	4.32	2.42	5.31	2.93	2.73	3.20	3.79	3.46	4.51	4.00	3.64
Mekong	3.38	3.30	3.32	3.08	2.30	2.67	3.70	3.40	4.24	3.67	2.80

The survey results in Q3 2025 indicate that Nam Ngiep are the main fishing habitat for upstream and downstream zones, while the main fishing habitat for the upper reservoir, lower reservoir and Mekong zones is reservoir, tributary and stream, and Mekong respectively. The proportion of fishing habitats in Q3 2025 are displayed in **Table 4-5**.

TABLE 4-5: PROPORTION OF THE CATCH REPORTED BY MAIN HABITATS (%) IN Q3 2025

Habitats	US	UR	LR	DS	MK
Mekong	0.0%	0.0%	0.0%	3.9%	86.0%
Nam Ngiep	54.8%	7.0%	0.0%	49.0%	4.5%
Nam Xan	0.0%	0.0%	0.0%	0.0%	0.0%
Reservoir	23.7%	88.0%	41.7%	0.0%	0.0%
Tributary and stream	16.9%	2.9%	54.7%	46.8%	0.0%
Wetland	4.6%	2.0%	3.5%	0.3%	9.5%
Others	0.0%	0.0%	0.0%	0.0%	0.0%

The proportions of other aquatic animal (OAA) in the total catch for the same 7-day period in Q3 from 2015 to 2025 are shown in **Figure 4-3**.

**FIGURE 4-3: PROPORTION OF OAA TO THE TOTAL REPORTED KILOGRAM (KG) OF FISH AND OAA FOR A 7-DAY PERIOD BY FISHING ZONE IN Q3 FROM 2015 TO 2025**

5 HEALTH AND SAFETY

5.1 RELATED TO NNP1PC HEALTH AND SAFETY

A summary of the safety incidents reported during the Construction Phase (up to the end of August 2019) are provided in the *Q4 2020 Environmental Monitoring Report (October to December 2020)*.

A summary of the safety incidents reported during the Operation Phase (September 2019 to September 2025) are provided in **TABLE 5.1-1**.

TABLE 5.1-1: SAFETY INCIDENTS REPORTED DURING THE OPERATION PHASE (SEPTEMBER 2019 TO SEPTEMBER 2025)

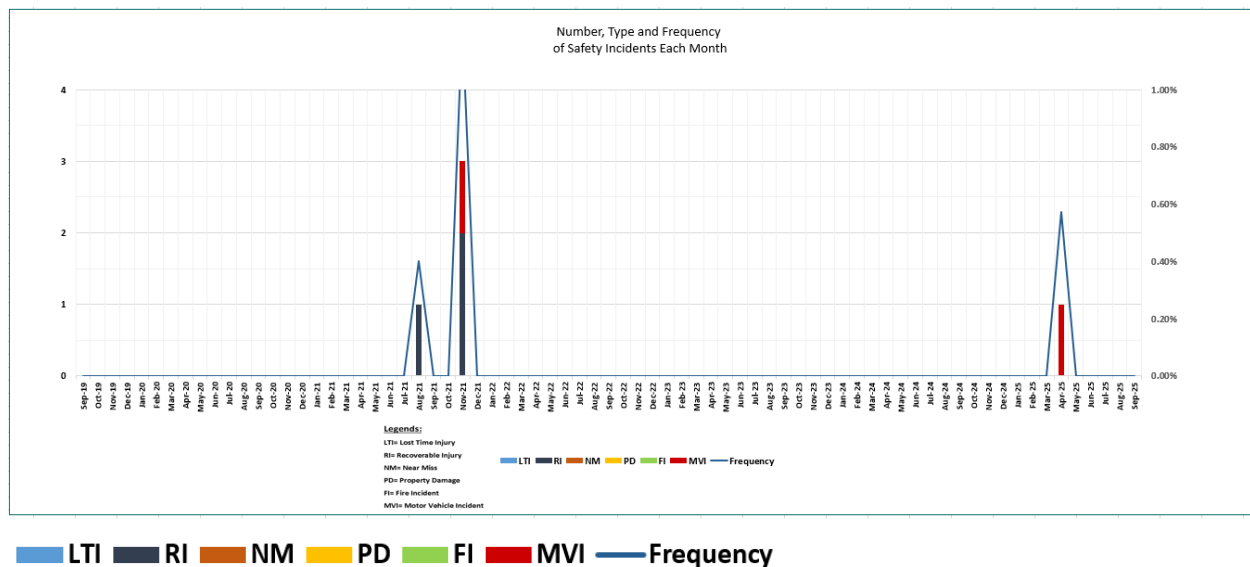
Type of Incidents	LTI	RI	NM	PD	FI	MVI	Total
No. of Incidents in Q3 2025	0	0	0	0	0	0	0
Cumulative Total Incidents to 30 September 2025	0	3	0	0	0	2	5

LTI: Lost Time Incident; **RI:** Recordable Injury; **NM:** Near Miss; **PD:** Property Damage; **FI:** Fire Incident; **MVI:** Motor Vehicle Incident

There was no incidents or accident reported in Q3 2025.

The histogram below in **Figure 5.1-1** shows the number of reported incidents in each month since the start of the Operation Phase (September 2019) with the colour indicating the type of incident including near misses. The graph superimposed on the histogram shows the frequency of incidents, including reported near misses, with the number of incidents occurring each month expressed as a percentage of the total number of Project workers employed in each month being the total man-months.

All reported incidents that have involved the Owner and its Contractors and Subcontractors are included in the histogram and shown graphically below.



LTI: Lost Time Incident; **RI:** Recordable Injury; **NM:** Near Miss; **PD:** Property Damage; **FI:** Fire Incident; **MVI:** Motor Vehicle Incident

FIGURE 5.1-1: NUMBER, TYPE AND FREQUENCY OF SAFETY INCIDENTS FROM SEPTEMBER 2019 TO 30 SEPTEMBER 2025

The second histogram in **Figure 5.1-1** shows the number of persons who were injured, or lost their lives in the reported Lost Time Incidents.

In Q3 and Q4 of 2021, there were two cases of Recordable Injury (RI) and in Q4 2021 and Q2 2025 two cases of Motor Vehicle Incident (MVI) have been recorded.

5.1.1 Health and Safety Training and Emergency Drills in the Project site

During Q3 2025, Health and Safety and Environmental (HSE) inductions were conducted for new contractors and visitors. The primary objective of these inductions was to ensure that all new personnel including staffs, contractors and local labours understand the HSE policy, measures and practices. An emergency training and drill for flooding event was carried out on 10 July 2025. HSE refresher training was conducted for NNP1 staffs and contractors on 30 July 2025.





FIGURE 5.1-2: REPRESENTATIVE PHOTOS OF THE SAFETY INDUCTION AND REFRESHING TRAINING, EMERGENCY TRAINING AND DRILL FOR FLOODING EVENT DURING Q3 2025

5.2 RELATED TO COVID-19

- The pandemic-related measures remain in effect. No COVID-19 infections were reported in Q3 2025.

6 External missions and visits

There was no external mission during the reporting period.

APPENDICES

APPENDIX 1: THE SITE INSPECTION RESULTS DURING Q3 2025

No	Issue ID	Inspection Date	Site Name	Issue/Description	Action Required/Recommendation	Deadline	Latest Follow-up Date	Status
1	ON-TD-0025	23-Jul-25	LILAMA10	It was observed that the recommendation from the previous joint site inspection regarding to update the inventories hazardous materials and waste was not implemented yet.	TD was instructed to provide the updated inventories of hazardous materials and waste.	Within July 2025	28-Aug-25	Resolved (The corrective action was verified and accepted)
2	ON-ADM-0026	23-Jul-25	OSVO2	It was noted that the WWTS was malfunctioning for a few weeks. The electric control panel was unable to control the WWTS properly. lead to the wastewater being discharged to the environment without a treatment process.	ADM was instructed to check and repair the WWTS as soon as possible to ensure that the WWTS will function properly.	Within July 2025	28-Aug-25	Escalated to NCR level 1 (01-ADM/2025)
3	ON-ADM-0027	28-Aug-25	OSOV1	During this joint site inspection, wastewater overflow from the first wetland pond was observed, indicating a subsurface infiltration issue. This prevents the smooth flow of wastewater to the second wetland pond.	ADM was instructed to conduct weed clearance around the wetland ponds, and cutting reeds to prevent mosquito breeding grounds and reduce the risk of poisonous animals. ADM was instructed to check the filtration layers of the first wetland pond to identify the root cause of the wastewater filtration issue. the findings shall be further discussed with EMO's compliance and waste	Immediate Action	25-Sep-25	Resolved (The corrective action was verified and accepted)

No	Issue ID	Inspection Date	Site Name	Issue/Description	Action Required/Recommendation	Deadline	Latest Follow-up Date	Status
					management team prior to the next monthly inspection for further corrective actions.			
4	NCR Level 1 (01-ADM/2025)	03-Sep-25	OSOV2	It was observed that WWTS had been malfunctioning caused by a failure of the automatic control panel. This prevented proper operation of the aeration and chlorination processes - essential steps in wastewater treatment. As a result, approximately 15 m ³ of wastewater bypassed treatment and was discharged daily without adequate aeration and chlorination, posing a risk of environmental contamination.	- Short-Term Action: The ADM team has been instructed to manually operate the chlorination system and discharge control valve to ensure a chlorine contact time of 20 - 30 minutes prior to discharge. This measure is intended to prevent the release of untreated wastewater and maintain basic treatment standards. - Long-Term Solution: The ADM has been instructed to urgently inspect and repair the control panel to restore full functionality by the end of July 2025 (agreed timeline) to prevent further discharge of untreated wastewater and ensure compliance with environmental standards	Within Sep 2025		Expected to rectified by early of Oct 2025

APPENDIX 2: ENVIRONMENTAL MONITORING CORRECTIVE ACTIONS Q3 2025

No.	Aspects	Aspects and Observations from previous mission	Required Actions (April 2025 mission)	Delivery Timeline	NNP1 responses_31 September 2025
1	EAP	EAP is under revision and will be submitted to Government for comments and approval (in April 2025?). Dam Safety Panel is not included in the process.	NNP1 to share the copy of the EAP to ADB	July 2025	In Progress - The EAP was submitted to DESM in May 2025 and is currently under review. - The draft EAP was shared with ADB on July 31, 2025. - The relevant submission letter was also shared with ADB on July 31, 2025. - No progress update has been received in Q3
2.a	Houay Soup Dam	Houay Soup dam (irrigation reservoir): As per LTA's view, in the case of a dam break, the village would not be affected (on higher ground, protected by a small hill. However, people at the demonstration farm and people working in the fields would be at risk.	NNP1 to confirm if the dimension and sufficiency of the spillway.	August 2025	In Progress - Details will be provided in the Village Emergency Evacuation (VEE) Drill 2025 Report. - The 2025 Village Emergency Evacuation Workshop and Drill Report is currently being prepared in collaboration with the District Disaster Management Committees (DDMCs) of Bolikhan and Paksan Districts. The report is
2.b			Based on the outcome of the confirmation, a warning system should be established [e.g., ideally through a WhatsApp group].	August 2025	
3.a	Muster Points	Hat Gnuin Muster Point: The muster point is at 1.5 km from	Identify a closer hill to the village that can be an alternative	August 2025	

No.	Aspects	Aspects and Observations from previous mission	Required Actions (April 2025 mission)	Delivery Timeline	NNP1 responses_31 September 2025
3.b		the village => people will not have enough time to reach it.	Verify the elevation levels of both the current and alternative muster points.	August 2025	approximately 60% complete and is expected to be finalized in Q3 2025. - In Q4-2025, the report has been completed, the DDMC of both districts not yet signed, the completed version will share on Q1-2026 after DDMC signed.
3.c			Improve access and safety going to the muster point (e.g., maintain clear paths, access improvements due to steep terrain, install signages, ensure that gates can be opened during emergency) The gate has not yet installed due to the HGN village authorities not yet consult with the landowner. However, after the flooding incident occurred in Oct 2025, the HGN village authorities know the safe place and require to change the point start from 2026 onward.	August 2025	
4.a		Muster Point at Thahuea	Verify the elevation level of the muster point	August 2025	
4.b			Evaluate the community request to provide structure (e.g., toilets, drinking water storage) at the muster point	August 2025	

No.	Aspects	Aspects and Observations from previous mission	Required Actions (April 2025 mission)	Delivery Timeline	NNP1 responses_31 September 2025
5.a	Reporting of environmental incident	(a) Oil Leakage in Unit No. 1, Main Power House and (b) Part C of Unit 1 SF6 Switchyard was damaged due to lightning strike at tower No. 1	Include incidents in the periodic reports submitted to ADB	These incidents, as well as any that may arise, will be reported in the Environmental Quarterly Progress Report to be submitted to ADB, beginning with the Q1 2025 report, which is scheduled for submission in Q2 2025.	Ongoing In January 2025, NNP1 submitted an incident report on the oil leakage in Unit No. 1 of the Main Powerhouse and Part C of the Unit 1 SF6 Switchyard to the LTA for review and comments. - The LTA and NNP1 conducted a verification inspection during the ADB-IAP-LTA mission in early April 2025. - NNP1 followed up on the additional corrective actions and ensure that updates are reflected in the report. - The email exchanges between NNP1-EMO and LTA in 'RE: Q3 2024 Report' were shared with ADB on July 31, 2025, for reference. - The status of the oil leakage in Unit No. 1, Main Power House. Ref: Section 2.3 of this report.
5.b			Review the safeguards and social reporting event in the legal agreement	Q2 2025	Completed - The safeguards and social reporting provisions in the legal agreement have been reviewed. - The internal email to NNP1PC teams, titled "Review of ADB Safeguard Requirements and Required Reporting"

No.	Aspects	Aspects and Observations from previous mission	Required Actions (April 2025 mission)	Delivery Timeline	NNP1 responses_31 September 2025
					Actions, ” was shared with ADB on July 31, 2025, for reference.
6.a		Issues at the Contractor Workshop: - poor housekeeping - Spots showing sign of soil contamination with oil. Needs to be cleaned, contaminated soil to be removed and safely disposed. - has an underground fuel tank	Develop an action plan to address the site findings	Completed	In Progress - The SCI contractor’s workshop was decommissioned in early April 2025, one week after the ADB-IAP-LTA mission concluded. - The Site Inspection Report and the actions implemented for hazardous waste management were shared with ADB on July 31, 2025, with relevant information found on: (1) Site Name: SCI Contractor’s Workshop) – highlighting the ongoing rehabilitation work by TD. (2) Site Name: LILAMA10_Hazardous Material and Waste Storage Facility) – describing the corrective actions taken for hazardous waste. - NNP1-TD will carry out the rehabilitation works in accordance with the standards outlined in the SDRP. - While a specific completion date has not been set, both parties have agreed that
6.b			Implement the agreed action	Completed	

No.	Aspects	Aspects and Observations from previous mission	Required Actions (April 2025 mission)	Delivery Timeline	NNP1 responses_31 September 2025
					the rehabilitation activities will continue through the end of the 2025 wet season. - The NNP1-EMO will conduct monthly joint environmental site inspections and provide regular progress updates on a monthly basis.
7	Waste management	Poor housekeeping in waste storage and material storage areas	Conduct housekeeping in the waste storage and material storage areas	Ongoing	<u>Completed</u> Housekeeping of the temporary waste storage facility at OSOV1 has been completed. The relevant report (FR_S02_02-Site Inspection Report_21 May 2025_NNP1-ESD-EMO-SIR-ADM-TD_0021) was shared with ADB on July 31, 2025. - Housekeeping of the material storage facility is ongoing and is expected to be completed by mid-June 2025.

No.	Aspects	Aspects and Observations from previous mission	Required Actions (April 2025 mission)	Delivery Timeline	NNP1 responses_31 September 2025
8.a		Canteen food waste: Significant amounts of food waste. However, the reported figures only account for the portion collected by farmers and do not represent the full extent of food waste. A substantial amount is discarded as general waste and ends up in landfills, making the actual total much higher. Currently, surplus food is often given to farmers to feed pigs. However, this practice may become unacceptable in the future due to concerns such as African Swine Fever (ASF).	Raise awareness for the importance of pre-ordering meals.	July - August 2025	Ongoing On February 13, 2025, NNP1's waste management team interviewed the new canteen service provider and the NNP1 ADM team to identify the root causes of increased food waste. Key findings: 1. The new service provider, operational since January 2025, is still adjusting meal preparation to align with actual staff demand. 2. Approximately 40% of staff did not pre-book meals in January and February, resulting in a high number of unplanned walk-ins. Actions taken to address the issue: 1. On 19 February 2025, NNP1 issued an internal notice encouraging all staff to pre-book meals in order to reduce food waste. Evidence of this action was shared with ADB on July 31, 2025, for reference. 2. Awareness training was conducted during the annual training session in August 2025.

No.	Aspects	Aspects and Observations from previous mission	Required Actions (April 2025 mission)	Delivery Timeline	NNP1 responses_31 September 2025
8.b			Try to find out if persons from certain groups come unannounced especially often, if yes, go through the section head.	Ongoing monitoring	- NNP1 will continue its routine monitoring, follow up on record-keeping with the canteen operator and report findings on a monthly and quarterly basis. - The required actions have been confirmed and implemented.
8.c			Continue monitoring.	Ongoing monitoring	

Social Matters

9	E&S Capacity Unfilled E&S positions	Action from April 2024 and status Fast track appointment to vacant positions Status as of April 2025: Partially completed. TL-livelihood PHX/ Z4 & Z3 is still vacant.	Ensure appointment to key positions based on the Updated Livelihoods Development Plan (2025-2029).	Jul-25	<u>In Progress</u> - Since the consultant team is from the National Agriculture and Forestry Research Institute (NAFRI), Ministry of Agriculture and Environment (MAF), the Updated Livelihood Development Plan, LDP (2025–2029) has experienced delays due to the need to await structural changes within the Ministry of Agriculture and Environment and other relevant agencies. In July-August 2025, the consultant team developed the first draft of the livelihood development plan 2025-2029 and conducted the consultation workshop with GOL stakeholders and villagers of three Districts namely Bolikhan District, Bolikhamxay Province,
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No.	Aspects	Aspects and Observations from previous mission	Required Actions (April 2025 mission)	Delivery Timeline	NNP1 responses_31 September 2025
					Thathom and Hom District, Xaysomboun Province for validating the existing Livelihood Development Plan 2019-2024 and gathering inputs for the draft of new LDP, fostering local ownership and alignment, and enhancing transparency and collaboration among all implementing partners and affected communities. The draft plan is now expected to be completed in Q4 2025, after which it will be shared with ADB, IAP, and LTA for review and feedback - As a result, the discussion on filling the vacant position within the Livelihood Team will be postponed until the plan is finalized.
10	Fisheries Co-Management Plan (FCMP) Delay in the approval and implementation of the FCMP	Follow up and support the relevant GOL offices in reviewing and approving the FCMP (Status as of April 2025: Approved by XASB WRPC in Nov 2024.)	Follow up approval of FCMR with GOL and ensure implementation of FCMP	Jul-25	In Progress - The fisheries Co-management Plan was endorsed by the Xaysomboun Provincial Agriculture and Forestry Office on 23 May 2025. - On 23 July 2025, XSB WRPO reported to NNP1 EMO that FCMR was endorsed by the Head of XSB Provincial Justic Office and submitted to the XSB Provincial Governor and Provincial Assembly for approval on 24
		Start FCMP implementation (Pending. Awaiting approval of FCMR by Provincial Assembly			

No.	Aspects	Aspects and Observations from previous mission	Required Actions (April 2025 mission)	Delivery Timeline	NNP1 responses_31 September 2025
		Office and XSB Provincial Governor)			July 2025. On 24 September 2025, XSB WRPO reported to NNP1 EMO that FCMR was signed by the XSB Provincial Governor
11	Grievance Management Access restriction of 21 HH to 3 paddy fields when the reservoir reached FSL at 320 masl.	Resolve access restriction of 21 HHs (Status as of April 2025: Partially completed. 13 of 21 cases closed. Outstanding actions are related to (i) installing culverts to function as draining canal for paddy field of 4 HHS in Pou; (ii) building 1-km tractor road 4 HHs in Hatsamkhone.)	Fully resolve 8 outstanding cases	May-25	In Progress - The installation of culverts serving as drainage canals and an access road across Houay Pou Creek to the paddy fields of 4 households in Pou Village was completed and documented in July 2025. The payment to Pou Village is scheduled to be completed in early August 2025. - The construction of a 3-km tractor road for 4 households in Hatsamkhone Village has also been completed and documented in July 2025. The payment to the Contractor is scheduled to be completed in early August 2025.
12	BOMP No clear link of livelihood programs to conservation. High demand for rice land expansion	WCS to prepare ToR, identifying alternative sustainable economic activities and market chain analysis	Update NC-NX Livelihood Program (section 5 in CDP), through collaborative efforts of EMO and SMP	Sep-25	In Progress - BSP-WCS, BOMU, and NNP1-EMO will conduct a field visit to all NC-NX villages after the rainy season (October 2025) to confirm and update the CDP activities, as well as to engage in discussions regarding

No.	Aspects	Aspects and Observations from previous mission	Required Actions (April 2025 mission)	Delivery Timeline	NNP1 responses_31 September 2025
			Install community-managed irrigation system outside buffer zone to increase rice harvest frequency	Dec-25	the community-managed irrigation system located outside the buffer zone. - The updated plan is expected to be finalized by November 2025.
13	Encroachment into PHX land	Formalize 2nd generation land (not completed).	Conduct mapping of PHX land (including G2 and village lands) to determine encroached and unencroached lands for submission to GOL	Oct-25	In Progress Resolutions on land encroachment are being implemented in phases. Bolikhon District has returned three plots of encroached land to the Phouhomxay village authorities for use by the second generation of PAPs and for cemetery purposes.
14	Updated Livelihood Development Plan		Deliver to ADB the Updated Livelihood Development Plan (2025-2029) incorporating the following: ➤ Inputs from consultations with stakeholders including vulnerable households and lagging households ➤ Corrected income data ➤ Time-series data and analysis of occupational participation for each village ➤ Sub-plan for landless and near landless AHs on non-land-based livelihoods with	Jun-25	In Progress - Since the consultant team is from the GOL, the Updated Livelihood Development Plan (2025–2029) has experienced delays due to the need to await structural changes within the Ministry of Agriculture and Environment and other relevant agencies. The draft plan is now expected to be completed in Q3 2025, after which it will be shared with ADB, IAP, and LTA for review and feedback. - The requested information has been shared with the consultants and will be

No.	Aspects	Aspects and Observations from previous mission	Required Actions (April 2025 mission)	Delivery Timeline	NNP1 responses_31 September 2025
			comparable income streams ➤ Clear market linkages		incorporated into the updated plan accordingly.
15	E&S reporting		Submit the Jan-July 2024 Social Monitoring Report to ADB for disclosure	Apr-25	<u>Completed</u> Social report disclosed on ADB website
			Incorporate time series data on occupational participation		<u>Duly Noted</u> The requested information will be incorporated into the preparation of the next report.

APPENDIX 3: SITE CODES, LOCATIONS AND MONITORING PARAMETERS OF THE SURFACE WATER QUALITY MONITORING***SITE CODES AND LOCATION STATION FOR SURFACE WATER QUALITY MONITORING***

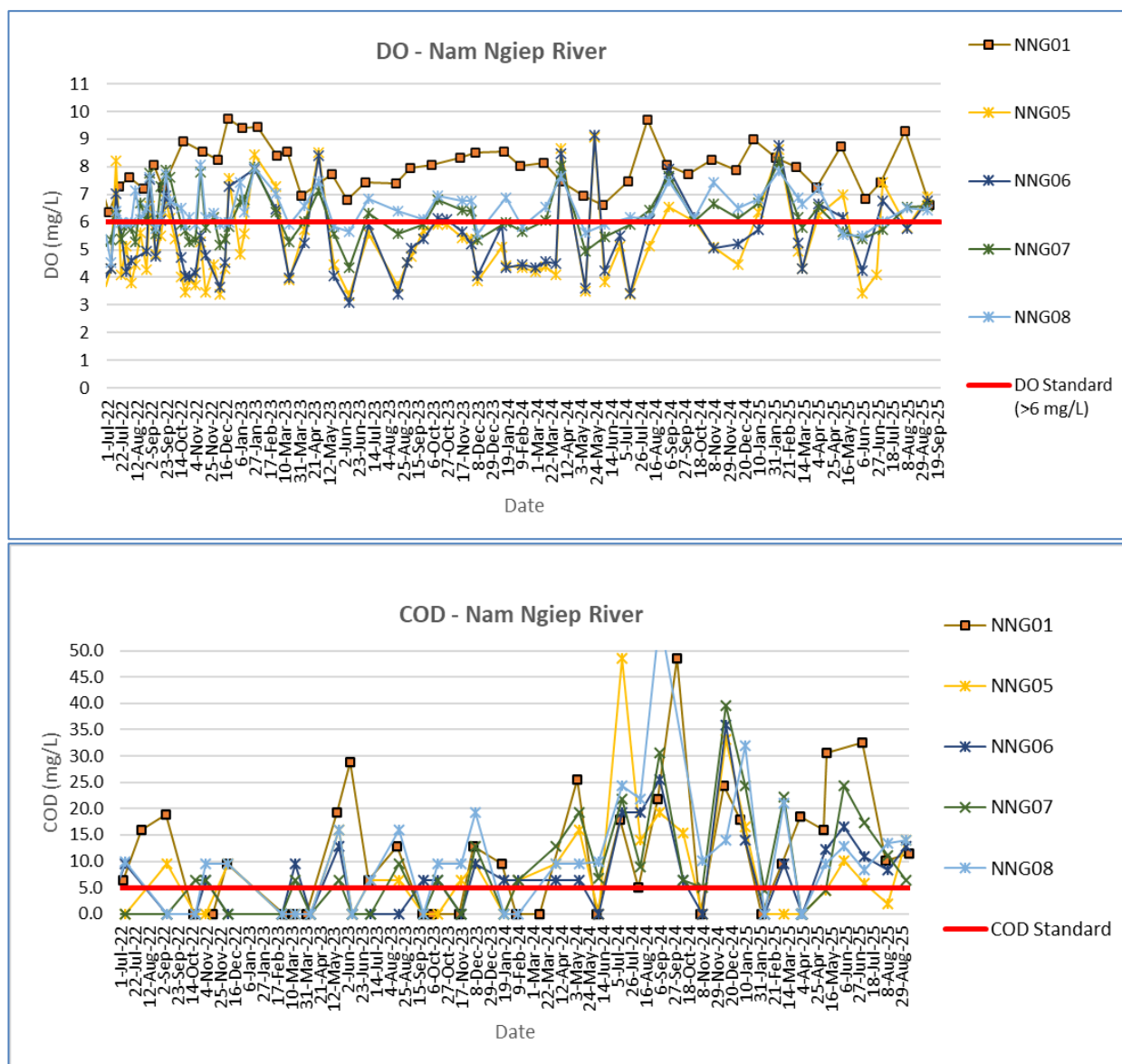
Site Code	Location station	Zone
NNG01	Nam Ngiep Upstream of Phiengta Village	Upstream Project Construction Site
R01	Main reservoir upstream main dam approx. 50 Km.	
R02	Main reservoir upstream main dam approx. 35 Km.	
NNG02/R03	Nam Ngiep Upstream of Nam Phouan Confluence / Main reservoir upstream main dam approx. 21 Km.	
NNG03/R04	Nam Ngiep Downstream of Sopyouak Village/ Main reservoir upstream main dam approx. 13 Km.	
NNG09/R05	Nam Ngiep Upstream Main Dam / Main reservoir upstream main dam approx. 0.5 Km	
NNG04/R06	Nam Ngiep Downstream RT Camp (Middle Re-regulation Reservoir)	Within Project Construction Site
R07	Reservoir Upstream Re-Regulation Dam	
NNG05	Nam Ngiep Upstream of Hat Gniun Village	Downstream Project Construction Site
NNG06	Nam Ngiep Downstream of Nam Xao Confluence	
NNG07	Nam Ngiep at Somsuen Village	
NNG08	Nam Ngiep at the Bridge of Road 13	
NCH01	Nam Chiane at the Bridge of Road 1D	Tributaries Upstream of Project Construction Site
NPH01	Nam Phouan Upstream of Nam Ngiep Confluence	
NXA01	Nam Xao Upstream of Nam Ngiep Confluence	Tributaries Downstream of Project Construction Site
NSH01	Nam Houay Soup Upstream Nam Ngiep Confluence	

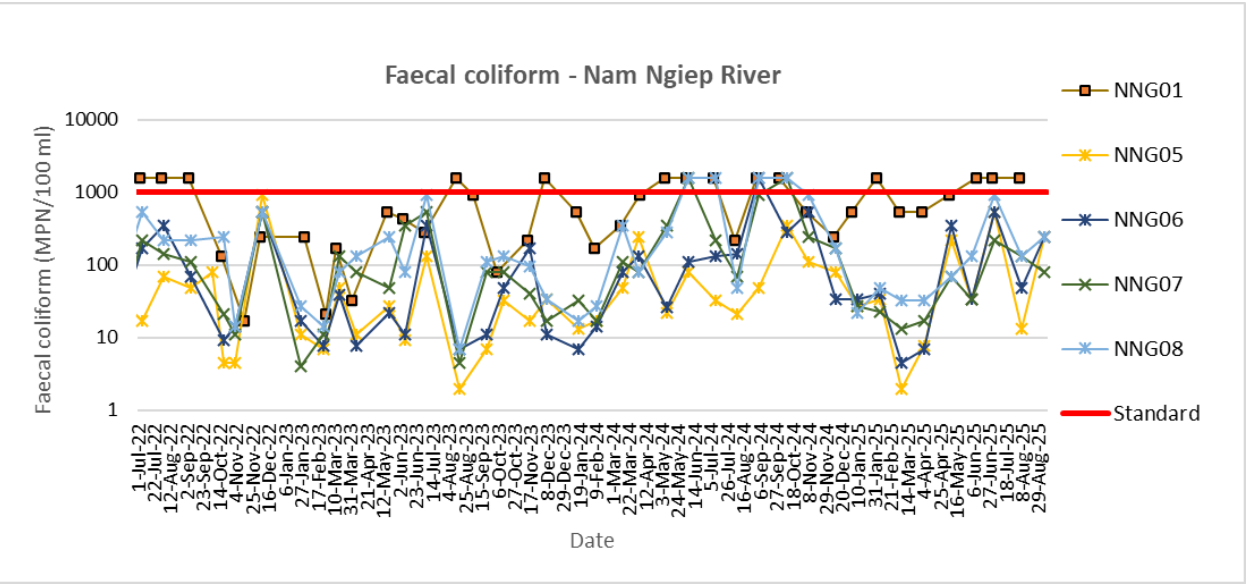
MONITORING FREQUENCY FOR SURFACE WATER QUALITY PARAMETERS

Frequency of Monitoring	Parameters (Unit)	Monitoring Sites
Weekly	pH, DO (%), DO (mg/L), Conductivity (µs/cm), Temperature (°C), Turbidity (NTU).	- Main Reservoir: R01, R02, R03, R04, R05; - Re-regulation Reservoir: R06 and R07.
Monthly	pH, DO (%), DO (mg/L), Conductivity (µs/cm), Temperature (°C), Turbidity (NTU).	- NNG01, NCH01, NPH01, NNG05, NNG06, NNG07, NNG08, NXA01 and NHS01
Monthly	TSS (mg/L), BOD ₅ (mg/L), COD (mg/L), NH ₃ -N (mg/L), NO ₃ -N (mg/L), total coliform (MPN/100 mL), faecal coliform (MPN/100 mL), Chlorophyll a, TOC and TKN.	As per ESMMP-OP. Noted: Hydrogen sulphide and Phytoplankton biomass remained in the analysis program for Q1 2023, but they were no longer monitored starting from Q2 2023.

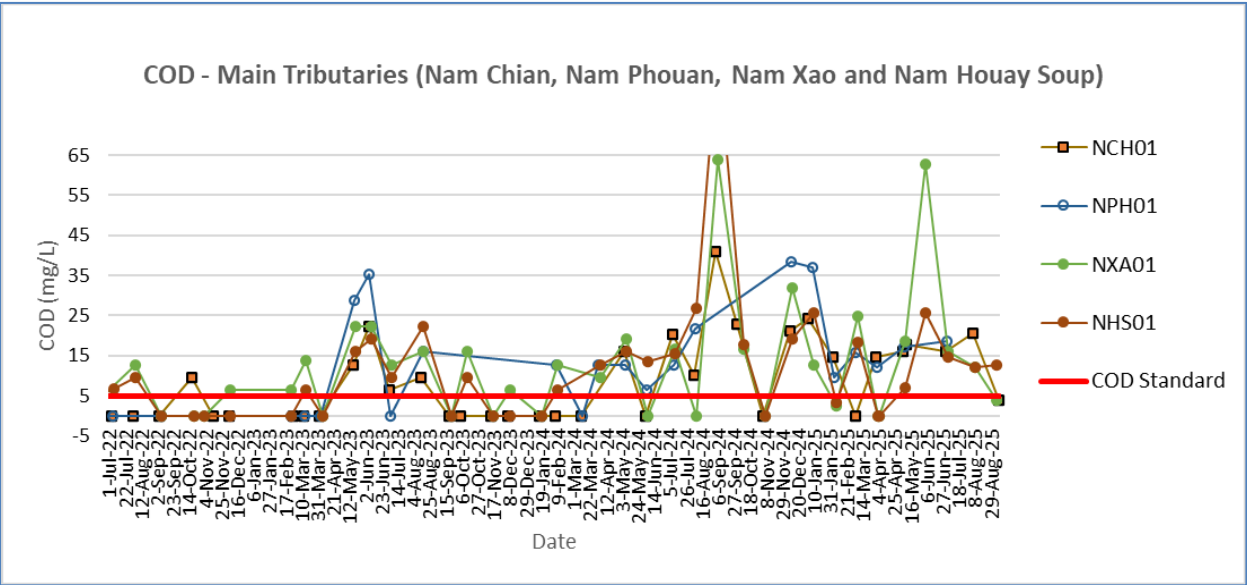
APPENDIX 4: KEY TRENDS OF WATER QUALITY MONITORING FROM JULY 2022 TO END OF SEPTEMBER 2025 (ONLY PARAMETERS THAT EXCEEDED THE STANDARDS)

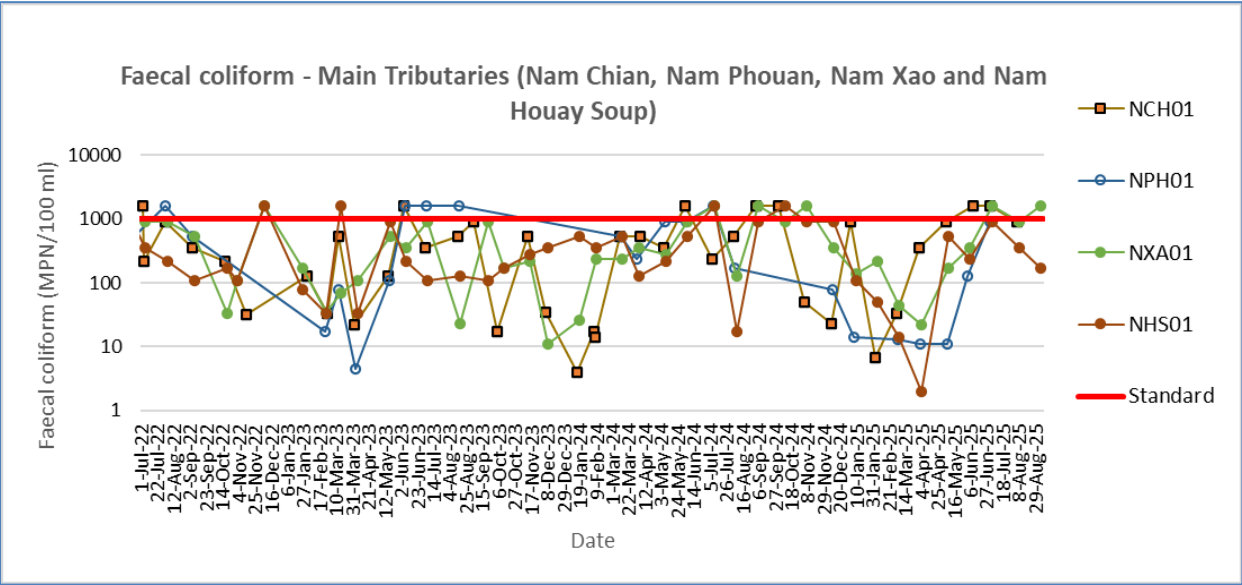
Nam Ngiep Surface Water



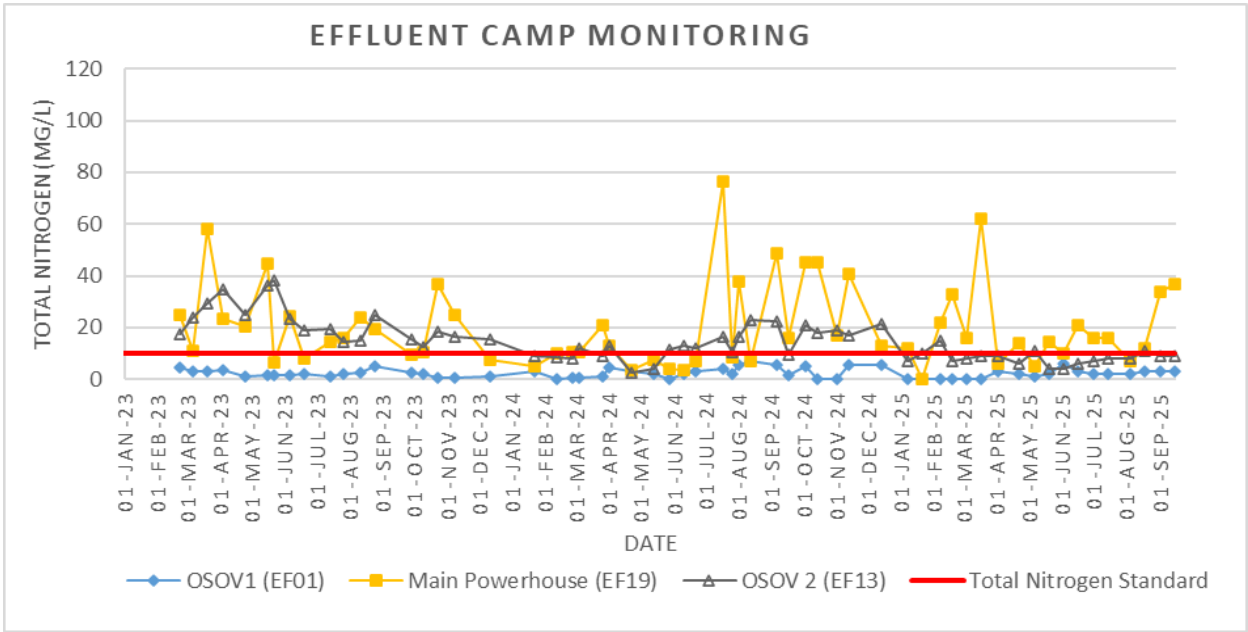


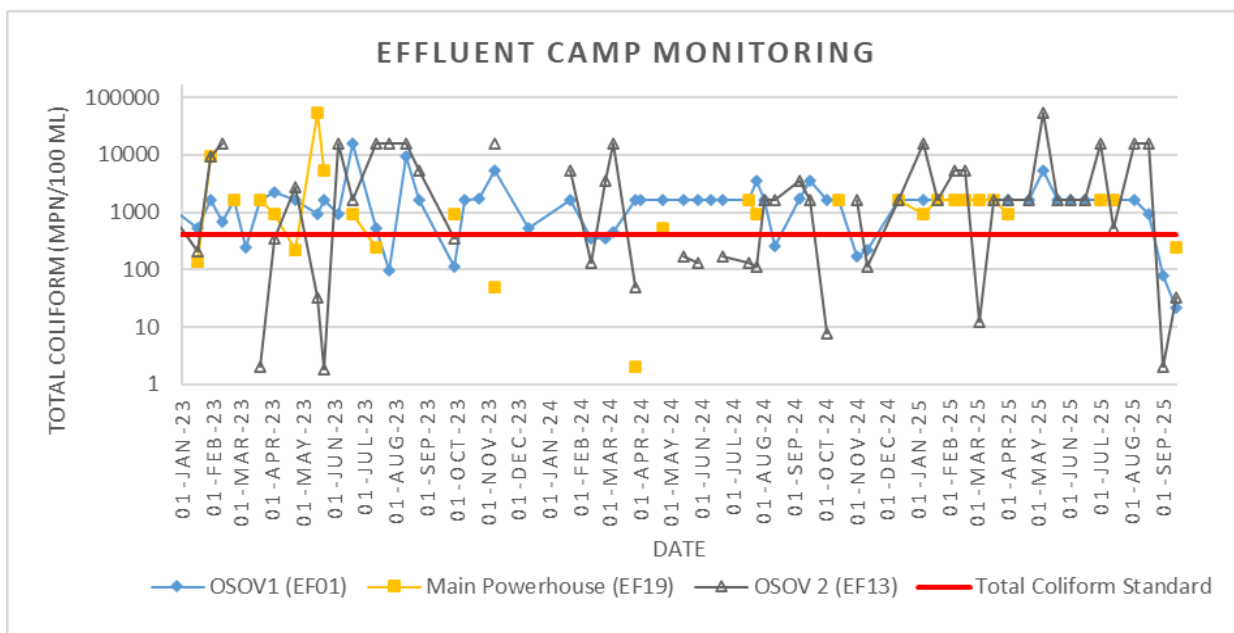
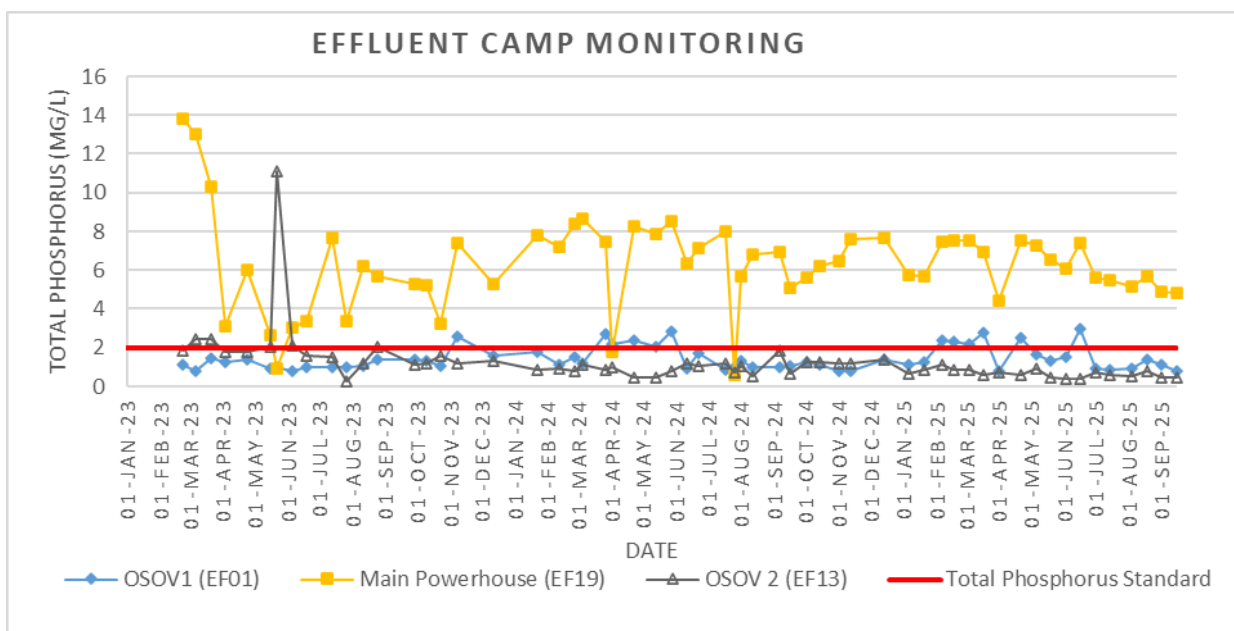
Key Water Quality Parameters for the Nam Ngiep Tributaries: Nam Chian, Nam Phouan, Nam Xao, Nam Houay Soup





Camps' Effluent Water Quality Trends (Since January 2022 to September 2025)





APPENDIX 5: WATER QUALITY MONITORING DATA**APPENDIX 5-1: SURFACE WATER QUALITY MONITORING – Q3 2025**

		River Name	Nam Ngiep												Nam Chain	Nam Phouan	Nam Xao	Nam Houay Soup
		Zone	Location Refer to Construction Sites												Location Refer to Construction Sites			
			Upstream/Main Reservoir						Re-Regulation Reservoir/Within		Downstream				Tributaries Upstream		Tributaries Downstream	
		Station Code	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
Date	Parameters (Unit)	Guideline																
1-Jul-25	pH	5.0 - 9.0	8.02											7.99				
2-Jul-25	pH	5.0 - 9.0		8.04	8.24	8.38									7.3			
3-Jul-25	pH	5.0 - 9.0					8.22	8.21	7.67	7.5								
4-Jul-25	pH	5.0 - 9.0									8.05	7.72	7.76	7.8		8.03	7.92	
8-Jul-25	pH	5.0 - 9.0		6.35	8.3	7.29	7.9											
10-Jul-25	pH	5.0 - 9.0						7.12	6.96	7.22								
15-Jul-25	pH	5.0 - 9.0		7.32	6.94	7.33	7.02											
16-Jul-25	pH	5.0 - 9.0						7.08	6.86	7.01								
23-Jul-25	pH	5.0 - 9.0		7.6	7.11	7.23	6.94											
24-Jul-25	pH	5.0 - 9.0						7.67	6.6	6.83								
29-Jul-25	pH	5.0 - 9.0		7.25	7.02	7.18	6.83											
30-Jul-25	pH	5.0 - 9.0						6.62	6.42	6.55								
5-Aug-25	pH	5.0 - 9.0	7.16											7.24				
6-Aug-25	pH	5.0 - 9.0		7.23	7.04	6.55												
7-Aug-25	pH	5.0 - 9.0					6.97	7.05	6.73	6.63								
8-Aug-25	pH	5.0 - 9.0									7.12	7.03	6.64	7		7.08	6.83	
12-Aug-25	pH	5.0 - 9.0		6.2	6.81	6.77	6.64											
13-Aug-25	pH	5.0 - 9.0						6.57	6.63	6.9								
19-Aug-25	pH	5.0 - 9.0		6.9	6.52	7.02	6.33											
20-Aug-25	pH	5.0 - 9.0						6.76	6.94	7.07								
27-Aug-25	pH	5.0 - 9.0		6.92	6.83	6.77	6.6											
28-Aug-25	pH	5.0 - 9.0						6.74	6.76	6.91								
3-Sep-25	pH	5.0 - 9.0		6.95	6.36	6.62												
4-Sep-25	pH	5.0 - 9.0					6.56	6.77	6.74	6.68								
5-Sep-25	pH	5.0 - 9.0									6.73	6.55				7.02	6.95	
9-Sep-25	pH	5.0 - 9.0	6.56											6.95				

		River Name	Nam Ngiep												Nam Chain	Nam Phouan	Nam Xao	Nam Houay Soup
		Zone	Location Refer to Construction Sites												Location Refer to Construction Sites			
			Upstream/Main Reservoir						Re-Regulation Reservoir/Within		Downstream				Tributaries Upstream		Tributaries Downstream	
		Station Code	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
Date	Parameters (Unit)	Guideline																
10-Sep-25	pH	5.0 - 9.0		6.93	6.79	6.81	6.68											
11-Sep-25	pH	5.0 - 9.0						6.72	6.94	6.89								
16-Sep-25	pH	5.0 - 9.0		7.09	6.82	6.69	6.52											
17-Sep-25	pH	5.0 - 9.0						6.57	6.95	6.98								
23-Sep-25	pH	5.0 - 9.0		6.6	6.4	6.52	6.25											
24-Sep-25	pH	5.0 - 9.0						6.48	6.84	6.81								
1-Jul-25	Sat. DO (%)		92.5											102.4				
2-Jul-25	Sat. DO (%)			90.3	81.6	102.8									106.2			
3-Jul-25	Sat. DO (%)						100.8	77.8	38.9	50.8								
4-Jul-25	Sat. DO (%)										94.7	86.2	73.4	77.6			94.3	85.8
8-Jul-25	Sat. DO (%)			93.2	104.51	118.54	106.72											
10-Jul-25	Sat. DO (%)							78.9	30.8	43.2								
15-Jul-25	Sat. DO (%)			83.9	87.8	104.6	93.7											
16-Jul-25	Sat. DO (%)							88.7	28.8	30.7								
23-Jul-25	Sat. DO (%)			89.7	73.9	90.8	85.3											
24-Jul-25	Sat. DO (%)							79.5	49.7	48.7								
29-Jul-25	Sat. DO (%)			81.7	94.2	104.7	95.1											
30-Jul-25	Sat. DO (%)							80.5	34.1	37.1								
5-Aug-25	Sat. DO (%)		111.4											113.6				
6-Aug-25	Sat. DO (%)			87.2	123.5	121.8												
7-Aug-25	Sat. DO (%)						96.5	89.8	37.1	38.5								
8-Aug-25	Sat. DO (%)										69.9	69.5	79.9	79.5			90.2	84.8
12-Aug-25	Sat. DO (%)			86.2	111.2	114.3	101.6											
13-Aug-25	Sat. DO (%)							91.2	40.9	40.6								
19-Aug-25	Sat. DO (%)			88.5	89.9	96.1	91.4											
20-Aug-25	Sat. DO (%)							87.3	35.9	45								
27-Aug-25	Sat. DO (%)			84.7	79.7	89.5	82.1											
28-Aug-25	Sat. DO (%)							77.8	102.7	99.2								
3-Sep-25	Sat. DO (%)			87.4	102.2	99.6												

		River Name	Nam Ngiep												Nam Chain	Nam Phouan	Nam Xao	Nam Houay Soup
		Zone	Location Refer to Construction Sites												Location Refer to Construction Sites			
			Upstream/Main Reservoir						Re-Regulation Reservoir/Within		Downstream				Tributaries Upstream		Tributaries Downstream	
		Station Code	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
Date	Parameters (Unit)	Guideline																
4-Sep-25	Sat. DO (%)						99.1	94.2	100.1	99.8								
5-Sep-25	Sat. DO (%)										84.8	83.4	81.4	79.7			78.6	77.2
9-Sep-25	Sat. DO (%)		78.2												85.9			
10-Sep-25	Sat. DO (%)			98.9	112.6	110.8	97											
11-Sep-25	Sat. DO (%)							78.3	48.3	51.8								
16-Sep-25	Sat. DO (%)			103.3	106.6	113.8	97.6											
17-Sep-25	Sat. DO (%)							97.4	70.4	71.2								
23-Sep-25	Sat. DO (%)			102.2	100.3	94.9	93.2											
24-Sep-25	Sat. DO (%)							119.1	89.9	93.6								
1-Jul-25	DO (mg/L)	>6.0	7.42												8.22			
2-Jul-25	DO (mg/L)	>6.0		7.27	6.4	7.62										8.63		
3-Jul-25	DO (mg/L)	>6.0					7.53	5.9	3	3.9								
4-Jul-25	DO (mg/L)	>6.0									7.42	6.75	5.71	6.03			7.33	6.77
8-Jul-25	DO (mg/L)	>6.0		7.39	7.8	8.61	7.81											
10-Jul-25	DO (mg/L)	>6.0						6.19	2.5	3.44								
15-Jul-25	DO (mg/L)	>6.0		7.01	6.93	7.82	7.1											
16-Jul-25	DO (mg/L)	>6.0						6.92	2.37	2.54								
23-Jul-25	DO (mg/L)	>6.0		7.66	6.22	7.01	6.64											
24-Jul-25	DO (mg/L)	>6.0						6.51	4.1	4.01								
29-Jul-25	DO (mg/L)	>6.0		6.87	7.38	8.06	7.39											
30-Jul-25	DO (mg/L)	>6.0						6.37	2.83	3.06								
5-Aug-25	DO (mg/L)	>6.0	9.29												9.56			
6-Aug-25	DO (mg/L)	>6.0		7.11	9.42	9.25												
7-Aug-25	DO (mg/L)	>6.0					7.4	6.95	3.08	3.21								
8-Aug-25	DO (mg/L)	>6.0									5.79	5.75	6.54	6.5			7.16	6.81
12-Aug-25	DO (mg/L)	>6.0		6.84	8.27	8.38	7.65											
13-Aug-25	DO (mg/L)	>6.0						7.02	3.4	3.36								
19-Aug-25	DO (mg/L)	>6.0		6.85	6.91	7.3	7.01											
20-Aug-25	DO (mg/L)	>6.0						6.79	2.97	3.71								

		River Name	Nam Ngiep												Nam Chain	Nam Phouan	Nam Xao	Nam Houay Soup
		Zone	Location Refer to Construction Sites												Location Refer to Construction Sites			
			Upstream/Main Reservoir						Re-Regulation Reservoir/Within		Downstream				Tributaries Upstream		Tributaries Downstream	
		Station Code	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
Date	Parameters (Unit)	Guideline																
27-Aug-25	DO (mg/L)	>6.0		7.24	6.24	6.93	6.37											
28-Aug-25	DO (mg/L)	>6.0						6.12	8.34	8.1								
3-Sep-25	DO (mg/L)	>6.0		6.99	7.63	7.52												
4-Sep-25	DO (mg/L)	>6.0					7.51	7.16	8.12	8.05								
5-Sep-25	DO (mg/L)	>6.0									6.91	6.75	6.57	6.42		6.23	6.12	
9-Sep-25	DO (mg/L)	>6.0	6.6											7.27				
10-Sep-25	DO (mg/L)	>6.0		7.61	8.52	8.33	7.46											
11-Sep-25	DO (mg/L)	>6.0						6.15	3.98	4.26								
16-Sep-25	DO (mg/L)	>6.0		7.64	7.92	8.29	7.36											
17-Sep-25	DO (mg/L)	>6.0						7.45	5.77	5.81								
23-Sep-25	DO (mg/L)	>6.0		7.62	7.44	6.97	7.02											
24-Sep-25	DO (mg/L)	>6.0						9.18	7.38	7.62								
1-Jul-25	Conductivity (µs/cm)		115											96				
2-Jul-25	Conductivity (µs/cm)			70.6	71.6	69.7									71.1			
3-Jul-25	Conductivity (µs/cm)						68.4	71.9	76.3	71.5								
4-Jul-25	Conductivity (µs/cm)										79	88	113	59		141	14	
8-Jul-25	Conductivity (µs/cm)			70	70	60	60											
10-Jul-25	Conductivity (µs/cm)							72	80	79								
15-Jul-25	Conductivity (µs/cm)			97	70	67	67											
16-Jul-25	Conductivity (µs/cm)							72	78	77								
23-Jul-25	Conductivity (µs/cm)			38	54	71	67											
24-Jul-25	Conductivity (µs/cm)							72	71	69								
29-Jul-25	Conductivity (µs/cm)			73	68	67	67											
30-Jul-25	Conductivity (µs/cm)							71	75	74								
5-Aug-25	Conductivity (µs/cm)		104											31				
6-Aug-25	Conductivity (µs/cm)			85	70	67												
7-Aug-25	Conductivity (µs/cm)						67	70	71	71								
8-Aug-25	Conductivity (µs/cm)										75	77	70	65		105	16	
12-Aug-25	Conductivity (µs/cm)			79	69	68	68											

		River Name	Nam Ngiep												Nam Chain	Nam Phouan	Nam Xao	Nam Houay Soup
		Zone	Location Refer to Construction Sites												Location Refer to Construction Sites			
			Upstream/Main Reservoir						Re-Regulation Reservoir/Within		Downstream				Tributaries Upstream		Tributaries Downstream	
		Station Code	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
Date	Parameters (Unit)	Guideline																
13-Aug-25	Conductivity (µs/cm)						70	71	69									
19-Aug-25	Conductivity (µs/cm)			79	68	66	67											
20-Aug-25	Conductivity (µs/cm)						68	72	71									
27-Aug-25	Conductivity (µs/cm)			53	68	65	65											
28-Aug-25	Conductivity (µs/cm)						66	64	63									
3-Sep-25	Conductivity (µs/cm)			86	69	66												
4-Sep-25	Conductivity (µs/cm)					66	65	71	70									
5-Sep-25	Conductivity (µs/cm)									70	72	71	68			98	20	
9-Sep-25	Conductivity (µs/cm)		86											28				
10-Sep-25	Conductivity (µs/cm)			83	72	65	65											
11-Sep-25	Conductivity (µs/cm)						61	71	70									
16-Sep-25	Conductivity (µs/cm)			76	70	64	65											
17-Sep-25	Conductivity (µs/cm)						64	70	69									
23-Sep-25	Conductivity (µs/cm)			75	71	64	64											
24-Sep-25	Conductivity (µs/cm)						62	70	69									
1-Jul-25	Temperature (°C)		24.36											23.81				
2-Jul-25	Temperature (°C)			24.24	26	28.77									23.57			
3-Jul-25	Temperature (°C)						28.37	27.8	27.57	27.5								
4-Jul-25	Temperature (°C)										26.62	26.62	26.91	27.04			27.02	26.41
8-Jul-25	Temperature (°C)			24.91	28.28	29.77	29.42											
10-Jul-25	Temperature (°C)							27.93	26.16	27.17								
15-Jul-25	Temperature (°C)			24.5	27.66	30.54	29.83											
16-Jul-25	Temperature (°C)							28.18	25.31	25.26								
23-Jul-25	Temperature (°C)			23.08	23.99	28.8	28.3											
24-Jul-25	Temperature (°C)							27.28	25.17	25.2								
29-Jul-25	Temperature (°C)			24.06	27.97	28.87	28.32											
30-Jul-25	Temperature (°C)							27.36	24.81	24.92								
5-Aug-25	Temperature (°C)		24.49											23.95				
6-Aug-25	Temperature (°C)			25.67	29.56	29.71												

		River Name	Nam Ngiep												Nam Chain	Nam Phouan	Nam Xao	Nam Houay Soup
		Zone	Location Refer to Construction Sites												Location Refer to Construction Sites			
			Upstream/Main Reservoir						Re-Regulation Reservoir/Within		Downstream				Tributaries Upstream		Tributaries Downstream	
		Station Code	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
Date	Parameters (Unit)	Guideline																
7-Aug-25	Temperature (°C)					29.13	28.67	24.62	25.01									
8-Aug-25	Temperature (°C)									24.91	25.18	25.44	25.89			27.17	26.66	
12-Aug-25	Temperature (°C)			27.29	30.9	31.18	30.2											
13-Aug-25	Temperature (°C)							28.89	24.75	24.98								
19-Aug-25	Temperature (°C)			28.39	28.97	29.74	29.07											
20-Aug-25	Temperature (°C)							28.32	24.87	25.06								
27-Aug-25	Temperature (°C)			23.14	27.98	28.53	28.5											
28-Aug-25	Temperature (°C)							27.91	25.96	25.88								
3-Sep-25	Temperature (°C)			27.01	30.74	30.11												
4-Sep-25	Temperature (°C)						29.83	29.58	25.83	26.25								
5-Sep-25	Temperature (°C)										25.75	26.1	26.21	26.32			28.33	27.9
9-Sep-25	Temperature (°C)		23.91												23.7			
10-Sep-25	Temperature (°C)			28.98	29.96	30.3	29.02											
11-Sep-25	Temperature (°C)							7.75	25.1	25.25								
16-Sep-25	Temperature (°C)			31.44	30.97	32.08	30.05											
17-Sep-25	Temperature (°C)							29.3	25.42	25.69								
23-Sep-25	Temperature (°C)			30.74	31.09	31.62	30.6											
24-Sep-25	Temperature (°C)							28.84	25.52	25.83								
1-Jul-25	Turbidity (NTU)		885												78.9			
2-Jul-25	Turbidity (NTU)			491	21.9	2.89										561		
3-Jul-25	Turbidity (NTU)						3.32	2.77	11.1	14.1								
4-Jul-25	Turbidity (NTU)										15.6	71.2	48.6	49.5			256	21.7
8-Jul-25	Turbidity (NTU)			222	37.2	2.52	2.92											
10-Jul-25	Turbidity (NTU)							3.3	12.3	8.68								
15-Jul-25	Turbidity (NTU)			130	57	3.64	2.36											
16-Jul-25	Turbidity (NTU)							2.68	16.1	14.8								
23-Jul-25	Turbidity (NTU)			6790	906	3.91	2.68											
24-Jul-25	Turbidity (NTU)							2.25	19.5	20.1								
29-Jul-25	Turbidity (NTU)			523	11	5.12	2.71											

		River Name	Nam Ngiep												Nam Chain	Nam Phouan	Nam Xao	Nam Houay Soup
		Zone	Location Refer to Construction Sites												Location Refer to Construction Sites			
			Upstream/Main Reservoir						Re-Regulation Reservoir/Within		Downstream				Tributaries Upstream		Tributaries Downstream	
		Station Code	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
Date	Parameters (Unit)	Guideline																
30-Jul-25	Turbidity (NTU)						2.44	25.7	23.5									
5-Aug-25	Turbidity (NTU)		270											58.2				
6-Aug-25	Turbidity (NTU)			179	2.83	2.48												
7-Aug-25	Turbidity (NTU)						2.45	1.88	98.5	101								
8-Aug-25	Turbidity (NTU)										97.5	93.5	86	76.6		49.7	8.18	
12-Aug-25	Turbidity (NTU)			53.1	2.53	2.73	3.33											
13-Aug-25	Turbidity (NTU)							1.95	88.2	81.1								
1-Jul-25	TSS (mg/L)		219.04											46.85				
2-Jul-25	TSS (mg/L)			183.33		5.5									277.35			
3-Jul-25	TSS (mg/L)						<5	<5	<5	<5								
4-Jul-25	TSS (mg/L)										10.58	38.96	27.31	27.22			136.6 9	8.37
5-Aug-25	TSS (mg/L)		142.77												40.4			
6-Aug-25	TSS (mg/L)			145.5		<5												
7-Aug-25	TSS (mg/L)						5.52	<5	74.07	77.3								
8-Aug-25	TSS (mg/L)										<5	23.57	15.51	20.38			77.03	5.2
3-Sep-25	TSS (mg/L)			85.95		<5												
4-Sep-25	TSS (mg/L)						<5	<5	10.4	11.18								
5-Sep-25	TSS (mg/L)										11.94	13.6	13.71	12.8			27.33	<5
9-Sep-25	TSS (mg/L)		375.33												9.18			
1-Jul-25	BOD ₅ (mg/L)	<1.5	<1												<1			
2-Jul-25	BOD ₅ (mg/L)	<1.5		<1		<1										<1		
3-Jul-25	BOD ₅ (mg/L)	<1.5					<	<1	<1	<1								
4-Jul-25	BOD ₅ (mg/L)	<1.5									<1	<1	<1	<1			<1	<1
5-Aug-25	BOD ₅ (mg/L)	<1.5	<1												<1			
6-Aug-25	BOD ₅ (mg/L)	<1.5		<1		<1												
7-Aug-25	BOD ₅ (mg/L)	<1.5					<1	<1	<1	<1								
8-Aug-25	BOD ₅ (mg/L)	<1.5									<1	<1	<1	<1			<1	<1
3-Sep-25	BOD ₅ (mg/L)	<1.5		<1		<1												
4-Sep-25	BOD ₅ (mg/L)	<1.5					<1	<1	<1	<1								

		River Name	Nam Ngiep												Nam Chain	Nam Phouan	Nam Xao	Nam Houay Soup
		Zone	Location Refer to Construction Sites												Location Refer to Construction Sites			
			Upstream/Main Reservoir					Re-Regulation Reservoir/Within		Downstream					Tributaries Upstream		Tributaries Downstream	
		Station Code	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
Date	Parameters (Unit)	Guideline																
5-Sep-25	BOD ₅ (mg/L)	<1.5									<1	<1	<1	<1			<1	<1
9-Sep-25	BOD ₅ (mg/L)	<1.5	1.22												<1			
1-Jul-25	COD (mg/L)	<5.0	32.6												16.0			
2-Jul-25	COD (mg/L)	<5.0														18.6		
3-Jul-25	COD (mg/L)	<5.0							13.4	10.9								
4-Jul-25	COD (mg/L)	<5.0									5.8	10.9	17.3	8.3			16.0	14.7
5-Aug-25	COD (mg/L)	<5.0	10.2												20.5			
7-Aug-25	COD (mg/L)	<5.0							16.0	8.3								
8-Aug-25	COD (mg/L)	<5.0									1.9	8.3	11.0	13.4			12.2	12.2
4-Sep-25	COD (mg/L)	<5.0							3.8	9.0								
5-Sep-25	COD (mg/L)	<5.0									14.1	12.8	6.4	14.1			3.8	12.8
9-Sep-25	COD (mg/L)	<5.0	11.5												3.8			
1-Jul-25	NH ₃ -N (mg/L)	<0.2	<0.1												<0.1			
2-Jul-25	NH ₃ -N (mg/L)	<0.2		<0.1		<0.1										<0.1		
3-Jul-25	NH ₃ -N (mg/L)	<0.2					<0.1	<0.1										
5-Aug-25	NH ₃ -N (mg/L)	<0.2	<0.1												<0.1			
6-Aug-25	NH ₃ -N (mg/L)	<0.2		<0.1		<0.1												
7-Aug-25	NH ₃ -N (mg/L)	<0.2					<0.1	<0.1										
3-Sep-25	NH ₃ -N (mg/L)	<0.2		<0.1		<0.1												
4-Sep-25	NH ₃ -N (mg/L)	<0.2					<0.1	<0.1										
9-Sep-25	NH ₃ -N (mg/L)	<0.2	<0.1												<0.1			
1-Jul-25	NO ₃ -N (mg/L)	<5.0	0.49												0.31			
2-Jul-25	NO ₃ -N (mg/L)	<5.0		0.49		0.28										0.21		
3-Jul-25	NO ₃ -N (mg/L)	<5.0																
5-Aug-25	NO ₃ -N (mg/L)	<5.0	0.37												0.21			
6-Aug-25	NO ₃ -N (mg/L)	<5.0		0.58		0.16												
7-Aug-25	NO ₃ -N (mg/L)	<5.0					0.1	0.13										
3-Sep-25	NO ₃ -N (mg/L)	<5.0		<0.01		0.44												
4-Sep-25	NO ₃ -N (mg/L)	<5.0					0.02	<0.01										

		River Name	Nam Ngiep												Nam Chain	Nam Phouan	Nam Xao	Nam Houay Soup
		Zone	Location Refer to Construction Sites												Location Refer to Construction Sites			
			Upstream/Main Reservoir						Re-Regulation Reservoir/Within		Downstream				Tributaries Upstream		Tributaries Downstream	
		Station Code	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
Date	Parameters (Unit)	Guideline																
9-Sep-25	NO ₃ -N (mg/L)	<5.0	0.28											0.14				
1-Jul-25	Faecal coliform (MPN/100 mL)	<1,000	1,600											1,600				
2-Jul-25	Faecal coliform (MPN/100 mL)	<1,000													920			
3-Jul-25	Faecal coliform (MPN/100 mL)	<1,000					2	23	350									
4-Jul-25	Faecal coliform (MPN/100 mL)	<1,000								540	540	220	920			1,600	920	
5-Aug-25	Faecal coliform (MPN/100 mL)	<1,000	1,600											920				
7-Aug-25	Faecal coliform (MPN/100 mL)	<1,000					2	2	2									
8-Aug-25	Faecal coliform (MPN/100 mL)	<1,000								13	49	130	130			920	350	
4-Sep-25	Faecal coliform (MPN/100 mL)	<1,000					0	2	5									
5-Sep-25	Faecal coliform (MPN/100 mL)	<1,000								240	240	79	240			1,600	170	
9-Sep-25	Faecal coliform (MPN/100 mL)	<1,000	1,600															
1-Jul-25	Total Coliform (MPN/100 mL)	<5,000	1,600											1,600				
2-Jul-25	Total Coliform (MPN/100 mL)	<5,000													1,600			
3-Jul-25	Total Coliform (MPN/100 mL)	<5,000					13	280	920									
4-Jul-25	Total Coliform (MPN/100 mL)	<5,000								1,600	1,600	1,600	1,600			1,600	1,600	
5-Aug-25	Total Coliform (MPN/100 mL)	<5,000	1,600											1,600				
7-Aug-25	Total Coliform (MPN/100 mL)	<5,000					8	27	170									
8-Aug-25	Total Coliform (MPN/100 mL)	<5,000								33	540	1,600	920			1,600	1,600	
4-Sep-25	Total Coliform (MPN/100 mL)	<5,000					0	33	240									
5-Sep-25	Total Coliform (MPN/100 mL)	<5,000								540	540	1,600	1,600			1,600	350	
9-Sep-25	Total Coliform (MPN/100 mL)	<5,000	1,600											1,600				
1-Jul-25	TKN		<1											<1				
2-Jul-25	TKN			1		1									1			
3-Jul-25	TKN						1	1										
5-Aug-25	TKN		<1											<1				
6-Aug-25	TKN			<1		1												
7-Aug-25	TKN						<1	<1										
3-Sep-25	TKN			2		1												
4-Sep-25	TKN						1	1										

		River Name	Nam Ngiep												Nam Chain	Nam Phouan	Nam Xao	Nam Houay Soup
		Zone	Location Refer to Construction Sites												Location Refer to Construction Sites			
			Upstream/Main Reservoir						Re-Regulation Reservoir/Within		Downstream				Tributaries Upstream		Tributaries Downstream	
		Station Code	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
Date	Parameters (Unit)	Guideline																
9-Sep-25	TKN		<1											<1				
1-Jul-25	TOC (mg/L)		2.85											1.66				
2-Jul-25	TOC (mg/L)														1.82			
3-Jul-25	TOC (mg/L)							1.49	1.66									
4-Jul-25	TOC (mg/L)									1.46	1.63	1.91	2.07			4.89	3.37	
5-Aug-25	TOC (mg/L)		8.4											4.73				
7-Aug-25	TOC (mg/L)							7.52	4.99									
8-Aug-25	TOC (mg/L)									4.94	6.15	6.85	9.2			5.79	11.24	
4-Sep-25	TOC (mg/L)							10.42	12.58									
5-Sep-25	TOC (mg/L)									9.37	7.57	8.65	9.3			8.65	9.9	
9-Sep-25	TOC (mg/L)		13.9											9.28				
1-Jul-25	Total Phosphorus (mg/L)		<0.05											<0.05				
2-Jul-25	Total Phosphorus (mg/L)			<0.05		0.05									<0.05			
3-Jul-25	Total Phosphorus (mg/L)						<0.05	<0.05										
5-Aug-25	Total Phosphorus (mg/L)		0.04											0.05				
6-Aug-25	Total Phosphorus (mg/L)		<0.05			<0.05												
7-Aug-25	Total Phosphorus (mg/L)						<0.05	<0.05										
3-Sep-25	Total Phosphorus (mg/L)			<0.05		<0.05												
4-Sep-25	Total Phosphorus (mg/L)						<0.05	<0.05										
9-Sep-25	Total Phosphorus (mg/L)		<0.05											<0.05				
1-Jul-25	Total Dissolved Phosphorus (mg/L)		0.05											<0.01				
2-Jul-25	Total Dissolved Phosphorus (mg/L)			0.06		0.06												
3-Jul-25	Total Dissolved Phosphorus (mg/L)						<0.01	<0.01										
5-Aug-25	Total Dissolved Phosphorus (mg/L)		<0.01											0.02				
6-Aug-25	Total Dissolved Phosphorus (mg/L)			0.05		0.01												

		River Name	Nam Ngiep												Nam Chain	Nam Phouan	Nam Xao	Nam Houay Soup
		Zone	Location Refer to Construction Sites												Location Refer to Construction Sites			
			Upstream/Main Reservoir						Re-Regulation Reservoir/Within		Downstream				Tributaries Upstream		Tributaries Downstream	
		Station Code	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
Date	Parameters (Unit)	Guideline																
7-Aug-25	Total Dissolved Phosphorus (mg/L)					<0.01	0.02											
3-Sep-25	Total Dissolved Phosphorus (mg/L)			0.03		0.03												
4-Sep-25	Total Dissolved Phosphorus (mg/L)						0.04	0.02										
9-Sep-25	Total Dissolved Phosphorus (mg/L)		<0.01											<0.01				
2-Jul-25	Turbidity (NTU)-bottom					5.32												
3-Jul-25	Turbidity (NTU)-bottom						2.34	1.76										
2-Jul-25	TSS (mg/L)-bottom					9.2												
3-Jul-25	TSS (mg/L)-bottom						8.66	<5										
6-Aug-25	TSS (mg/L)-bottom					30												
7-Aug-25	TSS (mg/L)-bottom						19.06	<5										
3-Sep-25	TSS (mg/L)-bottom					16.26												
4-Sep-25	TSS (mg/L)-bottom						<5	<5										
2-Jul-25	BOD ₅ (mg/L)-bottom					5.14												
3-Jul-25	BOD ₅ (mg/L)-bottom						4.28	6.12										
6-Aug-25	BOD ₅ (mg/L)-bottom					4.74												
7-Aug-25	BOD ₅ (mg/L)-bottom						3.96	<1										
3-Sep-25	BOD ₅ (mg/L)-bottom					3.52												
4-Sep-25	BOD ₅ (mg/L)-bottom						5.18	<1										
3-Jul-25	Total Coliform (MPN/100 mL)-bottom							7.8										
7-Aug-25	Total Coliform (MPN/100 mL)-bottom							4.5										
4-Sep-25	Total Coliform (MPN/100 mL)-bottom							0										
3-Jul-25	Faecal coliform (MPN/100 mL)-bottom							4.5										

		River Name	Nam Ngiep												Nam Chain	Nam Phouan	Nam Xao	Nam Houay Soup
		Zone	Location Refer to Construction Sites												Location Refer to Construction Sites			
			Upstream/Main Reservoir						Re-Regulation Reservoir/Within		Downstream				Tributaries Upstream		Tributaries Downstream	
		Station Code	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
Date	Parameters (Unit)	Guideline																
7-Aug-25	Faecal coliform (MPN/100 mL)-bottom						2											
4-Sep-25	Faecal coliform (MPN/100 mL)-bottom						0											
1-Jul-25	NH ₃ -N (mg/L)-bottom				<0.1													
2-Jul-25	NH ₃ -N (mg/L)-bottom					<0.1	<0.1											
6-Aug-25	NH ₃ -N (mg/L)-bottom				<0.1													
7-Aug-25	NH ₃ -N (mg/L)-bottom					<0.1	<0.1											
3-Sep-25	NH ₃ -N (mg/L)-bottom				<0.1													
4-Sep-25	NH ₃ -N (mg/L)-bottom					<0.1	<0.1											
1-Jul-25	NO ₃ -N (mg/L)-bottom				0.11													
2-Jul-25	NO ₃ -N (mg/L)-bottom					0.07	0.08											
6-Aug-25	NO ₃ -N (mg/L)-bottom				0.06													
7-Aug-25	NO ₃ -N (mg/L)-bottom					0.03	0.05											
3-Sep-25	NO ₃ -N (mg/L)-bottom				0.08													
4-Sep-25	NO ₃ -N (mg/L)-bottom					3	0.06											
1-Jul-25	TKN-bottom				1													
2-Jul-25	TKN-bottom					<1	1											
6-Aug-25	TKN-bottom				1													
7-Aug-25	TKN-bottom					1	1											
3-Sep-25	TKN-bottom				2													
4-Sep-25	TKN-bottom					1	1											
2-Jul-25	Total Dissolved Phosphorus (mg/L)-bottom				0.06													
3-Jul-25	Total Dissolved Phosphorus (mg/L)-bottom					<0.01	<0.01											
6-Aug-25	Total Dissolved Phosphorus (mg/L)-bottom				0.01													
7-Aug-25	Total Dissolved Phosphorus (mg/L)-bottom					0.03	0.04											

		River Name	Nam Ngiep												Nam Chain	Nam Phouan	Nam Xao	Nam Houay Soup
		Zone	Location Refer to Construction Sites												Location Refer to Construction Sites			
			Upstream/Main Reservoir						Re-Regulation Reservoir/Within		Downstream				Tributaries Upstream		Tributaries Downstream	
		Station Code	NNG01	R01	R02	R03	R04	R05	R06	R07	NNG05	NNG06	NNG07	NNG08	NCH01	NPH01	NXA01	NHS01
Date	Parameters (Unit)	Guideline																
3-Sep-25	Total Dissolved Phosphorus (mg/L)-bottom					0.03												
4-Sep-25	Total Dissolved Phosphorus (mg/L)-bottom						0.04	0.03										
2-Jul-25	Total Phosphorus (mg/L)-bottom					<0.05												
3-Jul-25	Total Phosphorus (mg/L)-bottom						<0.05	<0.05										
6-Aug-25	Total Phosphorus (mg/L)-bottom					<0.05												
7-Aug-25	Total Phosphorus (mg/L)-bottom						<0.05	<0.05										
3-Sep-25	Total Phosphorus (mg/L)-bottom					<0.05												
4-Sep-25	Total Phosphorus (mg/L)-bottom						<0.05	<0.05										
2-Jul-25	Chlorophyll-A-bottom					0.0009												
3-Jul-25	Chlorophyll-A-bottom						0.003	0.0014										
3-Sep-25	Chlorophyll-A-bottom					0.00137												
4-Sep-25	Chlorophyll-A-bottom						0.00203	0.00273										
2-Jul-25	Chlorophyll-A			0.0012		0.0028												
3-Jul-25	Chlorophyll-A						0.0026	0.0011										
3-Sep-25	Chlorophyll-A			0.00085		0.00102												
4-Sep-25	Chlorophyll-A						0.0017	0.0007										

APPENDIX 5-2: EFFLUENT CAMP MONITORING RESULTS – Q3 2025

		Site Name	OSOV1 (Owner's Site Office and Village)	OSOV2 (ESD Camp)	Main Powerhouse
		Station Code	EF01	EF13	EF19
Date	Parameters (Unit)	Guideline in the CA			
1-Jul-25	pH	6.0 - 9.0	7.47	7.64	7.97
14-Jul-25	pH	6.0 - 9.0	7.59	7.15	6.87
4-Aug-25	pH	6.0 - 9.0	6.76	6.8	7.01
18-Aug-25	pH	6.0 - 9.0	6.88	6.91	7.05
1-Sep-25	pH	6.0 - 9.0	6.7	6.98	6.62
15-Sep-25	pH	6.0 - 9.0	6.75	6.47	6.98
1-Jul-25	Sat. DO (%)		33.5	87.2	68.3
14-Jul-25	Sat. DO (%)		49.7	102.3	52.2
4-Aug-25	Sat. DO (%)		30.6	87.7	29.8
18-Aug-25	Sat. DO (%)		42.6	78.5	43.1
1-Sep-25	Sat. DO (%)		51.5	104.2	38.8
15-Sep-25	Sat. DO (%)		38.2	85.3	39.2
1-Jul-25	DO (mg/L)		2.61	6.85	5.24
14-Jul-25	DO (mg/L)		3.87	7.88	4.01
4-Aug-25	DO (mg/L)		2.36	6.72	2.26
18-Aug-25	DO (mg/L)		3.4	6.15	3.33
1-Sep-25	DO (mg/L)		4.06	7.91	3.06
15-Sep-25	DO (mg/L)		2.91	6.37	3.01
1-Jul-25	Conductivity (µs/cm)		253	334	765
14-Jul-25	Conductivity (µs/cm)		207	303	809
4-Aug-25	Conductivity (µs/cm)		282	327	1,025
18-Aug-25	Conductivity (µs/cm)		334	364	1,272
1-Sep-25	Conductivity (µs/cm)		265	285	766
15-Sep-25	Conductivity (µs/cm)		191	272	722
1-Jul-25	Temperature (°C)		26.22	25.94	27.35
14-Jul-25	Temperature (°C)		28.75	28.85	29.62
4-Aug-25	Temperature (°C)		29.09	29.15	30.01
18-Aug-25	Temperature (°C)		27.89	27.88	28.78
1-Sep-25	Temperature (°C)		27.91	29.62	27.81
15-Sep-25	Temperature (°C)		29.35	30.93	28.92

		Site Name	OSOV1 (Owner's Site Office and Village)	OSOV2 (ESD Camp)	Main Powerhouse
		Station Code	EF01	EF13	EF19
Date	Parameters (Unit)	Guideline in the CA			
1-Jul-25	Turbidity (NTU)		1.5	6.71	5.7
14-Jul-25	Turbidity (NTU)		1.6	11.7	6.57
4-Aug-25	Turbidity (NTU)		1.42	9.22	16.2
18-Aug-25	Turbidity (NTU)		2.32	13.7	14.0
1-Sep-25	Turbidity (NTU)		N/A	N/A	N/A
15-Sep-25	Turbidity (NTU)		N/A	N/A	N/A
1-Jul-25	TSS (mg/L)	<50	<5	7	10.2
14-Jul-25	TSS (mg/L)	<50	<5	9.8	9.6
4-Aug-25	TSS (mg/L)	<50	6	<5	<5
18-Aug-25	TSS (mg/L)	<50	<5	14.35	26.5
1-Sep-25	TSS (mg/L)	<50	<5	5.31	27.8
15-Sep-25	TSS (mg/L)	<50	<5	<5	25.3
1-Jul-25	BOD ₅ (mg/L)	<30	11.21	10.52	<6
14-Jul-25	BOD ₅ (mg/L)	<30	<6	<6	<6
4-Aug-25	BOD ₅ (mg/L)	<30	<6	<6	<6
18-Aug-25	BOD ₅ (mg/L)	<30	<6	10.86	<6
1-Sep-25	BOD ₅ (mg/L)	<30	<6	<6	<6
15-Sep-25	BOD ₅ (mg/L)	<30	<6	<6	<6
1-Jul-25	COD (mg/L)	<125	9.6	79	29
14-Jul-25	COD (mg/L)	<125	5.12	18	19
4-Aug-25	COD (mg/L)	<125	15.30	34.50	34.50
18-Aug-25	COD (mg/L)	<125	25.60	15.30	42.20
1-Sep-25	COD (mg/L)	<125	17.9	38	76
15-Sep-25	COD (mg/L)	<125	10.2	10	36
1-Jul-25	NH ₃ -N (mg/L)	<10.0	0.09	0.19	0.3
14-Jul-25	NH ₃ -N (mg/L)	<10.0	0.09	0.20	0.3
4-Aug-25	NH ₃ -N (mg/L)	<10.0	<0.1	0.17	0.10
18-Aug-25	NH ₃ -N (mg/L)	<10.0	0.08	0.12	0.23
1-Sep-25	NH ₃ -N (mg/L)	<10.0	<0.1	0.1	0.2
15-Sep-25	NH ₃ -N (mg/L)	<10.0	0.06	0.1	0.2
1-Jul-25	Total Nitrogen (mg/L)	<10.0	2.00	7.00	16.0

		Site Name	OSOV1 (Owner's Site Office and Village)	OSOV2 (ESD Camp)	Main Powerhouse
		Station Code	EF01	EF13	EF19
Date	Parameters (Unit)	Guideline in the CA			
14-Jul-25	Total Nitrogen (mg/L)	<10.0	2.00	8.00	16.0
4-Aug-25	Total Nitrogen (mg/L)	<10.0	2.00	8.00	7.00
18-Aug-25	Total Nitrogen (mg/L)	<10.0	3.00	11.00	12.00
1-Sep-25	Total Nitrogen (mg/L)	<10.0	3.0	9.0	34.0
15-Sep-25	Total Nitrogen (mg/L)	<10.0	3.0	9.0	37.0
1-Jul-25	Total Phosphorus (mg/L)	<2	0.95	0.70	5.7
14-Jul-25	Total Phosphorus (mg/L)	<2	0.87	0.61	5.5
4-Aug-25	Total Phosphorus (mg/L)	<2	0.92	0.54	5.18
18-Aug-25	Total Phosphorus (mg/L)	<2	1.39	0.81	5.68
1-Sep-25	Total Phosphorus (mg/L)	<2	1.14	0.5	4.9
15-Sep-25	Total Phosphorus (mg/L)	<2	0.76	0.5	4.8
1-Jul-25	Oil & Grease (mg/L)	<10.0	0.7	1	1
14-Jul-25	Oil & Grease (mg/L)	<10.0	1.3	2	<2
4-Aug-25	Oil & Grease (mg/L)	<10.0	<0.7	0.70	2.30
18-Aug-25	Oil & Grease (mg/L)	<10.0	<0.7	1.10	1.80
1-Sep-25	Oil & Grease (mg/L)	<10.0	<0.7	<0.7	<0.7
15-Sep-25	Oil & Grease (mg/L)	<10.0	2.4	<0.7	1
1-Jul-25	Total coliform (MPN/100 mL)	<400	1,600	16,000	1,600
14-Jul-25	Total coliform (MPN/100 mL)	<400	1,600	540	1,600
4-Aug-25	Total coliform (MPN/100 mL)	<400	1,600	16,000	0
18-Aug-25	Total coliform (MPN/100 mL)	<400	920	16,000	0
1-Sep-25	Total coliform (MPN/100 mL)	<400	79	2	0
15-Sep-25	Total coliform (MPN/100 mL)	<400	22	32	240
1-Jul-25	Faecal Coliform (MPN/100 mL)	<400	1,600	9,200	540
14-Jul-25	Faecal Coliform (MPN/100 mL)	<400	540	5	1,600
4-Aug-25	Faecal Coliform (MPN/100 mL)	<400	540	16,000	0
18-Aug-25	Faecal Coliform (MPN/100 mL)	<400	350	9,200	0
1-Sep-25	Faecal Coliform (MPN/100 mL)	<400	49	2	0

		Site Name	OSOV1 (Owner's Site Office and Village)	OSOV2 (ESD Camp)	Main Powerhouse
		Station Code	EF01	EF13	EF19
Date	Parameters (Unit)	Guideline in the CA			
15-Sep-25	Faecal Coliform (MPN/100 mL)	<400	7	26	79
1-Jul-25	Residual Chlorine (mg/L)	<1.0	N/A	0.05	0.10
14-Jul-25	Residual Chlorine (mg/L)	<1.0	N/A	0.27	0.24
4-Aug-25	Residual Chlorine (mg/L)	<1.0	N/A	0.05	0.68
18-Aug-25	Residual Chlorine (mg/L)	<1.0	N/A	0.05	0.96
1-Sep-25	Residual Chlorine (mg/L)	<1.0	N/A	0.34	0.14
15-Sep-25	Residual Chlorine (mg/L)	<1.0	N/A	0.09	0.21

APPENDIX 5-3: COMMUNITY GROUNDWATER QUALITY MONITORING RESULTS – Q3 2025

Month Year	Parameter (Unit)	Site Name	Somseun Village	NamPa Village	ThongNoy Village	Pou Village	
		Station	GSXN01	GNPA01	GTHN01	GPOU01	GPOU02
		Guideline					
01-Jul-25	pH	6.5 - 9.2				7.0	6.6
22-Jul-25	pH	6.5 - 9.2	7.11	6.91	6.86		
05-Aug-25	pH	6.5 - 9.2				6.66	6.93
14-Aug-25	pH	6.5 - 9.2	6.61	6.7	6.33		
09-Sep-25	pH	6.5 - 9.2				6.6	6.76
18-Sep-25	pH	6.5 - 9.2	6.35	6.47	6.9		
01-Jul-25	Sat. DO (%)					89.1	100.5
22-Jul-25	Sat. DO (%)		80.6	77.8	81.4		
05-Aug-25	Sat. DO (%)					101.9	108.8
14-Aug-25	Sat. DO (%)		92.9	98.9	81.1		
09-Sep-25	Sat. DO (%)					92.3	75.8
18-Sep-25	Sat. DO (%)		76.4	75	56.5		
01-Jul-25	DO (mg/l)					7.12	7.97
22-Jul-25	DO (mg/l)		6.47	6.21	6.66		
05-Aug-25	DO (mg/l)					8.21	8.66
14-Aug-25	DO (mg/l)		7.11	7.79	6.29		
09-Sep-25	DO (mg/l)					7.42	6.1
18-Sep-25	DO (mg/l)		5.92	5.86			
01-Jul-25	Conductivity (μS/cm)					25	89
22-Jul-25	Conductivity (μS/cm)		419	425	241		

Month Year	Parameter (Unit)	Site Name	Somseun Village	NamPa Village	ThongNoy Village	Pou Village	
		Station	GSXN01	GNPA01	GTHN01	GPOU01	GPOU02
		Guideline					
05-Aug-25	Conductivity (µS/cm)					26.36	27.07
14-Aug-25	Conductivity (µS/cm)		422	462	207		
09-Sep-25	Conductivity (µS/cm)					22	63
18-Sep-25	Conductivity (µS/cm)		424	443	170		
01-Jul-25	Temperature (°C)					24.4	24.8
22-Jul-25	Temperature (°C)		26.66	27.12	27.19		
05-Aug-25	Temperature (°C)					26.36	27.07
14-Aug-25	Temperature (°C)		29.21	27.76	28.54		
09-Sep-25	Temperature (°C)					26.49	26.72
18-Sep-25	Temperature (°C)		28.72	28	28.33		
01-Jul-25	Turbidity (NTU)	<20				2.31	1.54
22-Jul-25	Turbidity (NTU)	<20	0.91	1	1.81		
05-Aug-25	Turbidity (NTU)	<20				2.93	3.88
14-Aug-25	Turbidity (NTU)	<20	2.12	1.32	5.92		
01-Jul-25	Fecal coliform (MPN/100ml)	0				79	130
22-Jul-25	Fecal coliform (MPN/100ml)	0	0	4.5	240		
05-Aug-25	Fecal coliform (MPN/100ml)	0				24	13
14-Aug-25	Fecal coliform (MPN/100ml)	0	0	0	4.5		
09-Sep-25	Fecal coliform (MPN/100ml)	0				34	13
18-Sep-25	Fecal coliform (MPN/100ml)	0	0	4	17		
01-Jul-25	E.coli Bacteria (MPN/100ml)	0				2	2
22-Jul-25	E.coli Bacteria (MPN/100ml)	0	0	0	7.8		
05-Aug-25	E.coli Bacteria (MPN/100ml)	0				2	2
14-Aug-25	E.coli Bacteria (MPN/100ml)	0	0	0	4.5		
09-Sep-25	E.coli Bacteria (MPN/100ml)	0				4.5	4.5
18-Sep-25	E.coli Bacteria (MPN/100ml)	0	0	2	17		

APPENDIX 5-4: GRAVITY FED WATER SUPPLY QUALITY MONITORING RESULTS – Q3 2025

		Site Name	Thaheua Village	Hat Gnuin Village	Phouhomxay Village	
		Station	WTHH02	WHGN02	WPHX02	WPHX03
Date	Parameter (Unit)	Guideline				
22-Jul-25	pH	6.5 - 8.5	7.38	7.15	6.28	6.39
14-Aug-25	pH	6.5 - 8.5	7.02	6.93	6.49	6.55
18-Sep-25	pH	6.5 - 8.5	6.87	6.9	7.2	7.1
22-Jul-25	Sat. DO (%)		90.4	75.4	91.7	92.3
14-Aug-25	Sat. DO (%)		95.6	108.7	108.3	107.2
18-Sep-25	Sat. DO (%)		78.7	68.7	88	85.5
22-Jul-25	DO (mg/L)		7.21	6.02	7.3	7.43
14-Aug-25	DO (mg/L)		7.46	8.52	8.45	8.59
18-Sep-25	DO (mg/L)		6.15	5.27	6.82	6.55
22-Jul-25	Conductivity (µS/cm)	<1,000	47	270	19	12
14-Aug-25	Conductivity (µS/cm)	<1,000	36	62	11	10
18-Sep-25	Conductivity (µS/cm)	<1,000	44	328	8	7
22-Jul-25	Temperature (°C)	<35	26.83	27.3	26.31	26.59
14-Aug-25	Temperature (°C)	<35	28.2	27.96	28.16	26.74
18-Sep-25	Temperature (°C)	<35	27.98	29.04	28.4	29.21
22-Jul-25	Turbidity (NTU)	<10	2.28	3.2	4.21	4.14
14-Aug-25	Turbidity (NTU)	<10	6.26	5.18	4.56	3.36
22-Jul-25	Faecal Coliform (MPN/100 mL)	0	39	33	21	26
14-Aug-25	Faecal Coliform (MPN/100 mL)	0	13	79	49	33
18-Sep-25	Faecal Coliform (MPN/100 mL)	0	7	6.8	1600	220
22-Jul-25	E.coli Bacteria (MPN/100 mL)	0	8	13	7.8	7.8
14-Aug-25	E.coli Bacteria (MPN/100 mL)	0	2	6.8	4.5	4.5
18-Sep-25	E.coli Bacteria (MPN/100 mL)	0	7	2	220	140

APPENDIX 5-5: LANDFILL LEACHATED QUALITY MONITORING RESULTS – Q3 2025

			Site Name	NNP1 Landfill Leachate					Houay Soup Landfill	
			Location	Pond No.01	Pond No.02	Pond No.03	Pond No.04	Discharge Point	Last pond	Discharged Point
			Station	LL1	LL2	LL3	LL4	LL5	LL6	LL7
Date	Parameter (Unit)	Guideline								
9-Jul-25	pH	6.0-9.0					6.54		7.8	
13-Aug-25	pH	6.0-9.0					7.17		7.28	
1-Sep-25	pH	6.0-9.0					7.1		7.08	
9-Jul-25	Sat. DO (%)						132.4		94.3	
13-Aug-25	Sat. DO (%)						117.5		119.1	
1-Sep-25	Sat. DO (%)						134.6		138	
9-Jul-25	DO (mg/L)						9.81		7.16	
13-Aug-25	DO (mg/L)						8.19		8.43	
1-Sep-25	DO (mg/L)						9.54		9.48	
9-Jul-25	Conductivity (µS/cm)						65		124	
13-Aug-25	Conductivity (µS/cm)						87		138	
1-Sep-25	Conductivity (µS/cm)						97		63	
9-Jul-25	Temperature (°C)						30.54		24.85	
13-Aug-25	Temperature (°C)						34.18		33.9	
1-Sep-25	Temperature (°C)						33.9		35.74	
9-Jul-25	Turbidity (NTU)						42.2		10.1	
13-Aug-25	Turbidity (NTU)						24.5		7.83	
9-Jul-25	BOD5 (mg/L)	<30					<6		<6	
13-Aug-25	BOD5 (mg/L)	<30					<6		<6	
1-Sep-25	BOD5 (mg/L)	<30					<6		<6	
9-Jul-25	COD (mg/L)	<125					32.6		16	
13-Aug-25	COD (mg/L)	<125					29.4		35.8	
1-Sep-25	COD (mg/L)	<125					37.1		23	
9-Jul-25	Faecal Coliform (MPN/100mL)	<400					1600		920	
13-Aug-25	Faecal Coliform (MPN/100mL)	<400					1600		920	
1-Sep-25	Faecal Coliform (MPN/100mL)	<400					8		2	
9-Jul-25	Total Coliform (MPN/100mL)	<400					1,600		1,600	
13-Aug-25	Total Coliform (MPN/100mL)	<400					1,600		1,600	
1-Sep-25	Total Coliform (MPN/100mL)	<400					130		2	
9-Jul-25	Total Nitrogen (mg/L)	<10					1		3	
13-Aug-25	Total Nitrogen (mg/L)	<10					2.55		1.36	
1-Sep-25	Total Nitrogen (mg/L)	<10					3		3	

			Site Name	NNP1 Landfill Leachate					Houay Soup Landfill
			Location	Pond No.01	Pond No.02	Pond No.03	Pond No.04	Discharge Point	Last pond
			Station	LL1	LL2	LL3	LL4	LL5	LL6
Date	Parameter (Unit)	Guideline							
9-Jul-25	Lead (mg/L)	<0.2					<0.01		<0.01
13-Aug-25	Lead (mg/L)	<0.2					<0.01		<0.01
1-Sep-25	Lead (mg/L)	<0.2					<0.01		<0.01
9-Jul-25	Copper (mg/L)						<0.1		<0.1
13-Aug-25	Copper (mg/L)						<0.1		<0.1
1-Sep-25	Copper (mg/L)						<0.1		<0.1
9-Jul-25	Iron (mg/L)						0.42		0.27
13-Aug-25	Iron (mg/L)						0.28		0.1
1-Sep-25	Iron (mg/L)						0.58		0.47
9-Jul-25	Ammonia nitrogen (mg/L)	<10					<0.1		0.06
13-Aug-25	Ammonia nitrogen (mg/L)	<10					<0.1		0.07
1-Sep-25	Ammonia nitrogen (mg/L)	<10					0.06		0.10
9-Jul-25	Oil & Grease (mg/L)	<10					<2		3.2
13-Aug-25	Oil & Grease (mg/L)	<10					0.8		2.5
1-Sep-25	Oil & Grease (mg/L)	<10					<2		<2

APPENDIX 6: DWP AND SSESMP FOR DRILLING WORK AND INSTALLATION FOR MONITORING EQUIPMENT_REV1_10-10-25



Detailed of Work
Program Rev1.pdf



Site Specific
Environmental and S

APPENDIX 7: EMO COMMENTS & CONTRACTOR'S RESPONSES TO SSESMP - DRILLING WORK AND INSTALLATION FOR MONITORING EQUIPMENT



DAS and EMO
Comments_DWP&SS



Contractor's
Response to SSESMP