

**TEN – YEAR WQMA Implementation Plan for
Calapan River Water Quality Management Area (CR-WQMA)
2016- 2026
Calapan City, Oriental Mindoro**

Problems: *Domestic pollution load accounts for 70% of the estimated BOD load, non-existence of municipal wastewater treatment facilities
Non-existence of municipal wastewater treatment facilities
Non-compliance of majority of industries to DENR effluent standards. Majority has no wastewater treatment facilities.*

Time Frame: 2016 - 2021

GENERAL OBJECTIVE : IMPROVE THE WATER QUALITY OF CALAPAN RIVER

OBJECTIVE 1. REDUCTION OF DOMESTIC BOD₅ LOAD IN CALAPAN RIVER SYSTEM BY 10%

| Specific Objectives | Actions | Sub-actions | Output | Responsible Agency | Time Table |
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| Primary Measures | | | | | |
| 1)Area characterization: the component of each monitoring station should be determined | A detailed map must be prepared showing the ecological profile, socio economic profile, land use / zoning, river characteristics and drainage pattern and the activities / establishments within the area Adopt the existing Local Sustainable Sanitation Plan | Baseline data acquisition Profiling every station showing the specific sources of pollution and erosion | Database of all the residential, industrial and commercial establishments that drains in that specific monitoring station Database of establishments with and without proper toilets Prepare a Sustainable Sanitation Plan in accordance to the present situation of the area | City Health and Sanitation Department and City ENRO In coordination with NEDA CGC in coordination with CHD-DOH | May 2016– December 2016 |

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| <p>2)Evaluation of the areas or monitoring stations that are primarily used for irrigation or other agricultural purpose</p> | <p>Monitoring of agricultural runoff that leads to leaching of available nitrogen and extractable phosphorus into the river.</p> <p>The analysis of nutrients must be correlated with the cropping calendar per season</p> <p>Prevention and improvement of the river water quality through phytoremediation</p> | <p>Analysis of ammonia, nitrates and phosphates must be done in those stations near agricultural lands</p> <p>Record weather data especially the occurrence of heavy rain / storm and flooding</p> <p>Identification of the locally available species of plant that helps in the reduction of pollution and erosion</p> <p>Creation of “Ilog Rangers” who will facilitate the Phytoremediation Activities</p> | <p>Record on the frequency of fertilizer use, both organic and inorganic</p> <p>Trend on Ammonia, Nitrate and Phosphate concentration per monitoring station</p> | <p>DA and City Agricultural Officer</p> | <p>2016 - 2021</p> |
| <p>3)Evaluation of septage management per area of monitoring</p> | <p>1. Development of a scheme in monitoring the wastewater generation of every residential and commercial establishment.</p> <p>2. Development of a Septage Treatment / Sewerage Management System. <i>This should be done in coordination with Calapan Waterworks</i></p> | <p>Adopt a standard septic tank design and strictly monitor compliance to building permit requirements</p> <p>Development of other wastewater management strategies.</p> <p>Analysis of fecal coliform</p> <p>>Introduction or use of technologies that will be used in the treatment of wastewater or sludge before it drains towards the river</p> <p>>Develop a local Sustainable Sanitation Plan</p> <p>>Develop a local Sustainable Sanitation Promotion Program</p> | <p>Report on the trend on BOD and DO concentration per monitoring station</p> <p>Report on the trend on the fecal coliform levels in each monitoring station</p> | <p>EMB</p> <p>DPWH, City Engineering Office in coordination with</p> | <p>2016 –2025</p> |

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| | 3. Construction of a Sewage Treatment Plant | <p>>Develop a local Septage and Sewerage Management Program</p> <p>>Construct Septage / Sewerage System</p> | By early 2017, there should be a definitive decision on the sewerage master plan and construction of the sewerage treatment plant | Calapan Waterworks City ENRO | |
| 4) Conduct IEC campaigns to ensure awareness of every citizen regarding the rehabilitation activity | <p>Identification of target audience</p> <ul style="list-style-type: none"> ➤ Students ➤ Youth Groups ➤ Women's Groups ➤ Other groups recognized by the City Government ➤ Other NGOs that wishes to participate in the WQMA Program | <p>Conduct capacity building activities to those who wanted to take part in the WQMA Program</p> <p>Conduct forums at schools, different youth groups, women's group, etc and present the steps to be done in the rehabilitation program</p> | <p>Distribute IEC materials like brochures and flyers loaded with the latest update on the water quality of Calapan River</p> <p>Use of TV Network Ads</p> | EMB Academe CRI | 2016 - 2021 |
| 5)Passing of a local ordinance with regards to the Sustainable Sanitation Plan that has been drafted for a better implementation | The local ordinance will raise knowledge and awareness on the importance of clean water and sanitation and how this helps in the improvement of the water quality of Calapan River | Drafting local sanitation ordinance allows better enforcement of the Sustainable Sanitation Plan and to keep every citizen abide in the environmental laws | Monitoring and Evaluation Reports on the improved water quality of the river because everybody has an access to an improved sanitation facilities | DILG City ENRO | 2016 - 2021 |

| Secondary Measures | | | | | |
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| 1) Foster solid waste management with emphasis on the improvement of water quality in Calapan River | Review and implement the ecological solid waste management plan of the City Government | Practice the 3Rs (Reduce, Reuse, Recycle) right from the source Prepare a River Clean Up and River Dredging Scheme involving the different sectors or groups within Calapan City Regular collection of garbage Provide appropriate facilities for solid wastes such as but not limited to sanitary landfill | Reduction of solid wastes in the river MRFs should be made available and visible in every corner possible | EMB PG ENRO City Government City ENRO SMVC Holy Cross | 2016 - 2021 |
| 2) Improve drainage system to ensure that storm run offs will not drain directly to the river | The City Government of Calapan must develop a Drainage System Master Plan in coordination with DPWH The City Government of Calapan must coordinate with the Calapan Waterworks and DPWH on this matter | Ground survey must be done to establish a flood hazard map for the WQMA. Coordinate with MGB The construction or improvement of the existing drainage system must be in accordance with the flood hazard map | Flood hazard map of the whole WQMA Natural drainage ways must be identified. | City ENRO DPWH Calapan Waterworks DPWH EMB MGB | 2016 - 2021 |
| 3) Address land use problems especially those living near the river banks (informal settlers) | Review the CLUP of Calapan City Implement the resettlement program | Review the relocation and resettlement plan To claim and reclaim easement areas along the riverbanks (3meters) | The river banks must be cleared and free from informal settlers | City Housing and Urban Center Department | 2016 - 2021 |

OBJECTIVE 1.1. LIVELIHOOD COMPONENT OF CALAPAN RIVER WATER QUALITY MANAGEMENT AREA

| Specific Objectives | Actions/ Sub-Actions | Output | Responsible Agency | Time Table |
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| 1) Mushroom Culture and Vermicomposting | The city government particularly the office of the city agriculture should start the practice of growing mushrooms using rice straw and using the spent rice straw as a medium for vermicomposting | Button Mushrooms / Rice Straw Mushrooms and Vermicompost | LGU – City ENRO EMB DA CWAAMI | 2017 – 2021 |
| 2) Vetiver / Bamboo Grass | The city government should initiate the planting of vetiver / bamboo grass along the banks of Calapan River. The vetiver / bamboo when its due time to harvest could make a good income | Broom Handicraft Furniture Housing Materials | LGU – City ENRO CRI CWAAMI EMB | 2017 - 2021 |

OBJECTIVE 2. REDUCTION OF INDUSTRIAL BOD₅ LOAD IN CALAPAN RIVER BY 30% - THROUGH ENHANCED COMPLIANCE OF INDUSTRIES (INCLUDING COMMERCIAL ESTABLISHMENTS AND INSTITUTIONS) TO DENR GENERAL EFFLUENT STANDARDS

| Specific Objectives | Actions/Sub-actions | Output | Responsible Agency | Time Table |
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| Primary Measures | | | | |
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| <p>1) Devising strategies on sustainable pollution abatement and control for all the industries and commercial establishments within Calapan City</p> | <p>1. Identification and clustering of the industries into two groups: high BOD and low BOD generators. Options on pollution prevention and control strategies must be convened and during GB meetings (end-of-pipe treatments as well as cleaner production options). The GB Members should agree upon which type of technology to be employed or used.</p> <p>2. Preparation of sectoral profiles on the different firms / industries by conducting site visits, sampling and gathering of technical and economic data (pollution management appraisals)</p> <ul style="list-style-type: none"> a) Ensure that all firms / industries must have an appropriate and effective Wastewater Treatment System where BOD, Coliform and other pollutants are treated. A technology upgrade or improvement must be recommended in cases that the existing treatment systems could not meet the limits of the Effluent Water Quality Guidelines – DAO 2016 - 08 b) Require every firm / industry to have an accessible sampling point for their discharges. In cases that the firm/industries claims “No Discharge”, there should be a record showing that the wastewater they generate is collected and treated by a DENR recognized wastewater treatment facility c) The firm / industry must have a Hazardous Wastewater Management Plan in accordance to the IRR of RA 6969 d) The firm / industry must have a Solid Waste Management Plan in accordance to the IRR of RA 9003 | <p>Annual Assessment Report</p> | <p>EMB</p> | <p>2017 - 2021</p> |

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| | 3. Preparation of an annual assessment report on the feasibility of the actions taken during the monitoring year | | | |
| 2) More stringent enforcement of environmental laws | <p>1. Conduct stakeholders' forum and public workshops to disseminate information on enforcement and to encourage voluntary compliance of industries</p> <p>2. Database on the most recent information on the number and list of discharge permits, environmental compliance certificates (ECC) issued, registered hazardous waste generators and industries with pending wastewater-related Notice of Violation (NOV)</p> | <p>- Number and list of discharged permits issued</p> <p>- Number and list of industries with ECC and compliant industries</p> <p>- Number of NOV issued</p> | Governing Board EMB | 2016 – onward (quarterly report to start in 2016) |
| 3) Comprehensive knowledge management system on sources of pollution for the entire Calapan River WQMA | <p>1. Keep an updated database of the all the industries including all the information from the submitted Self-Monitoring Reports. Use the information to evaluate their applications for Discharge Permit</p> <p>2. Conduct semi-annual industry survey for the entire WQMA of the Calapan City</p> <p>3. Implement stringent enforcement of the discharge permit system and possible enhanced sanctions for non-compliance</p> <p>4. Introduce or propose pollution abatement strategies (end-of-pipe, best management practices & cleaner production) and identify firms that will participate with the pilot testing of the program</p> <p>5. More rigorous water quality monitoring of the river with focus on the BOD being affected by the salinity of the river must be implemented. Seasonal changes in the pH and salinity of the river must also be thoroughly checked.</p> | Number of Industries applying for Discharge Permit and submitting well accomplished SMRs | EMB DTI DOST EMB | 2016-onward |

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| | <p>6. The Discharge Permit status of a firm / industry should be considered in the issuance of business permits by the LGUs / City Government</p> <p>7. Create a group e.g. “Ilog Patrollers” to involve the concerned citizens in reporting violators; this can either be via a social network group or through SMS</p> | <p>Resolution from the CRWQMA Governing Board that City Government of Calapan would craft an ordinance on the issuance of business permits</p> | <p>City Government</p> <p>CRI</p> | |
| <p>5) Database of firms / industries with the corresponding environmental profile</p> | <p>1. Designate a staff / personnel who will manage the database using the information reported in the SMR and Discharge Permit Applications of all the firms / industries within the WQMA</p> <p>2. Assessment of the data generated on the pilot testing of the proposed pollution abatement strategies</p> <p>3. Recognition of the firm / industry and provide incentives for adopting or participating in the program</p> <p>4. Generate analysis reports of environmental information from the database (i.e., compliance monitoring, effluent loadings, volume of wastewater discharges, hazardous wastes data etc.) and quarterly summary reports on environmental performance of the selected firms / industries</p> | <p>Environmental database</p> <p>A model industry that adopts the practice of Effluent Quota Allocation / Effluent Trading</p> | <p>EMB</p> <p>DOST</p> <p>Governing Board</p> <p>EMB</p> | <p>2016-2020 (quarterly report to start in 2016)</p> |
| <p>6) Technical capacity improved and partnership fostered among the regional</p> | <p>1. Forge partnerships (i.e., MOA, MOU) among regulators, industries and LGUs</p> | <p>CR WQMA must join clean-up activities</p> | <p>EMB</p> | <p>2016-2019</p> |

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| <p>implementing agencies with the national government</p> | <p>2. Disseminate success stories to the stakeholders within the CR WQMA and the national agencies through workshops, seminar and conferences</p> <p>3. Improve the information, education, and communication (IEC) campaign on clean river and safe water resources.</p> | | <p>MinSCAT / St. Anthony</p> | |
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Time Frame: 2021-2026

GENERAL OBJECTIVE : IMPROVE THE WATER QUALITY OF CALAPAN RIVER

OBJECTIVE 1. REDUCTION OF DOMESTIC BOD₅ LOAD IN CALAPAN RIVER BY 30%

| Specific Objectives | Actions | Sub-Actions | Output | Responsible Agency | Time Table |
|---|---|--|---|---------------------------|-------------------|
| 1)Control the direct discharge of households and commercial establishments into the river to improve the water quality of Calapan River | The city government must present the sustainable plan of centralized sewerage treatment facility If necessary, amend the ordinance on sanitation to adjust to the current status of septage management of the city | Add more sanitation facilities and improve the existing ones | Amended local sanitation ordinance Better water quality of Calapan River | City Government | 2021-2025 |
| 2)Control the agricultural runoff | Fertilizer application management / scheme; Proper timing of fertilizer application Regulate the use of chemical fertilizer and introduce the use of organic fertilizer | Improve riparian vegetation near the river banks that would act as filters of the excess nutrients from the agricultural areas before it reaches the river | Improved nutrient concentration and improved BOD | DA | 2021 – 2026 |

OBJECTIVE 2. REDUCTION OF INDUSTRIAL BOD₅ LOAD IN CALAPAN RIVER BY 30%

| Specific Objectives | Actions/ Sub-Actions | Output | Responsible Agency | Time Table |
|--|---|---|---------------------------|-------------------|
| 1)Continuous and strengthened inspection and monitoring program | Capacitate the members of the CR WQMA GB on technical assessment and water quality monitoring | More industries with upgraded wastewater treatment facilities | EMB | 2021 – 2025 |
| | If necessary, revise the monitoring scheme base on the assessment of the first five years of the rehabilitation program of the river | Reducing number of NOV _s | DOST | |
| 2)Encourage more industries including the Small-Medium Enterprises to comply with the different environmental laws | Intensify IEC Campaign and foster sustained partnership with the stakeholders Recognize and provide incentives to industries adopting or participating in the program; these industries will be used as models to other industries | More industries comply with the DENR environmental laws | | 2022 – 2025 |