

**Follow-up action / initiatives as well as status-update on compliance to NGT Orders in O.A. 606 of 2018 and other related matters: State of Goa**

*(as per NGT Order dated 12<sup>th</sup> September 2019 in a matter of O.A. 606 of 2018)*

<b>A. Compliance to Solid waste Rules including Legacy waste (as per NGT Order dated 12<sup>th</sup> September / 18<sup>th</sup> October 2019 in a matter of O.A.606 of 2018)</b>							
<b>Sr. No.</b>	<b>Clause as referred in SWM Rules, 2016</b>	<b>Action mandated</b>	<b>Current status as on January 2020</b>	<b>Desirable level of compliance in terms of statute</b>	<b>Gap between current status and desired status</b>	<b>Proposal of attending the gap with the timeline</b>	<b>Name and designation of officer ensuring compliance to provisions under statute</b>
1	<b>Clause – 29 / 39 (i)</b> - Compliance under Rule 22 of Solid Waste Management (SWM) Rules 2016.	<p>a. Identification of suitable sites for setting up solid waste processing facilities.</p> <p>b. Identification of suitable sites for setting up common regional sanitary landfill facilities for suitable clusters of local</p>	<p><b>Integrated Solid Waste Management Facility (SWMF)</b> (100 tons per day - TPD) at Saligao has been augmented to 150 TPD for disposal / treatment of solid wastes generated from twenty-seven village Panchayats and further has proposed its <b>enhancement from existing 150-TPD to 250-TPD (+20%)</b>.</p> <p><b>Integrated Solid Waste Management Facility – Cacora (100 TPD +20%)</b></p>	<b>Being addressed</b>	<p>Gap is wet waste generated in 6 Census Towns/ULB's of Pernem, Bicholim, Sattari and Bardez Talukas from North Goa district.</p> <p>Gap is wet waste generated in 2 Census Towns / ULB's of Quepem and Sanguem Talukas from South Goa district</p>	<p>Proposed expansion in the Saligao treatment facility to <b>250 TPD (+20%)</b> is scheduled to be completed by March 2021 due to change in technical specification.</p> <p>GWMC to issue work order to Concessionaire by February 2020, subjected to approvals. As per tender condition the timeline for</p>	<p>Mr. Levinson J. Martins, Managing Director, Goa Waste Management Corporation (GWMC).</p> <p>Mr. Levinson J. Martins, Managing Director, Goa Waste Management Corporation (GWMC).</p>

	<p>authorities and for setting up common regional sanitary landfill facilities or stand alone sanitary landfill facilities by all local authorities.</p> <p>c. Procurement of suitable sites for setting up solid waste processing facility and sanitary landfill facilities.</p> <p>d. Enforcing waste generators to practice segregation of bio-degradable,</p>	<p><b>Integrated Solid Waste Management Facility-Bainguinim (250 TPD +20%)</b></p> <p>- Environmental Clearance (EC) has been granted and the process of preparation of tender document is in progress.</p> <p><b>Solid Waste Management Facility –Verna (250 TPD + 20%)</b></p> <p>GWMC floated tender for conducting Rapid EIA studies on 17/01/2020 and shall be</p>	<p><b>Being addressed</b></p> <p><b>Being addressed</b></p>	<p>Gap is wet waste generated in 11 Census Towns/ULB's of Tiswadi and 10 Census Towns/ULB's of Ponda Talukas.</p> <p>Gap is wet waste generated in 4 Census Towns / ULB's of Mormugao and 10 Census</p>	<p>commencement is 24 months from issue of work order. Whereas, as per the Hon'ble High Court Order dated 11/07/2019, time granted upto 28 months from issue this order (<i>i.e. by 11<sup>th</sup> November 2021</i>).</p> <p>GWMC proposes to float tender by March 2020 and issue work order July 2020. Whereas, as per the Hon'ble High Court Order dated 11/07/2019, time granted upto 28 months from issue this order (<i>i.e. by 11<sup>th</sup> November 2021</i>).</p> <p>GWMC to complete EIA studies by August 2020. Whereas, as per the Hon'ble High Court Order dated 11/07/2019, time</p>	<p>Mr. Levinson J. Martins, Managing Director, Goa Waste Management Corporation (GWMC).</p> <p>Mr. Levinson J. Martins, Managing Director, Goa Waste Management Corporation</p>
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		<p>recyclable, combustible, sanitary waste domestic hazardous and inert solid wastes at source.</p> <p>e. Ensure door to door collection of segregated waste and its transportation in covered vehicles to processing or disposal facilities.</p> <p>f. Ensure separate storage, collection and transportation of construction and demolition wastes.</p> <p>g. Setting up solid waste processing facilities by all local bodies.</p> <p>h. Setting up common or stand</p>	opened on 12/02/2020.		Towns/ULB's of Salcete Talukas.	granted upto 28 months from issue this order (i.e. by 11 <sup>th</sup> November 2021).	(GWMC).
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	<p>alone sanitary landfills by or for all local bodies for the disposal of only such residual wastes from the processing facilities as well as untreatable inert wastes as permitted under the Rules.</p>					
	<p>i. Bio-remediation or capping of old and abandoned dump sites (<i>i.e. legacy-dumps</i>).</p>	<p>Till date the State has remediated approximately 1,15,315 tons of waste from legacy dumps at Saligao, Cacora and Aradi.</p> <p>GWMC issued work orders to 3 bidders to remediate legacy-waste dump at Sonsodo, Margao and Headland, Sada, Vasco-da-Gama and for remaining 11 legacy dumps in the State of Goa in 03 years' time excluding monsoons.</p>	<p>Bio-remediation or capping of old and abandoned dump sites in 5 years of notification of SWM Rules 2016.</p>	<p>Gap of approximately 4,50,000 tons to be remediated.</p>	<p>Work order issued for remediation of 4,50,000 tons. The proposed remediation shall be completed in 3 years, time excluding monsoons (<i>by December 2023</i>)</p>	<p>Mr. Levinson J. Martins, Managing Director, Goa Waste Management Corporation (GWMC).</p>
Compliance under Rule 24 of Solid	<p>j. Submission of Annual report by</p>	<p><b>Complied with</b></p>	<p><b>Complied with</b></p>	<p><b>NIL</b></p>	<p><b>Not Applicable</b></p>	<p><b>Secretary, Village Panchayats /</b></p>

	Waste Management (SWM) Rules 2016.	local bodies (i.e. CCP / municipal councils / village panchayats).					<b>Chief Officer, Municipal Council / Commissioner, City Corporation.</b>
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## Compliance from Corporation of City of Panaji (CCP) and other Municipal Councils (MCs')

There is 100% door to door collection in all ULB's and segregation is at 86%. The gap in Wet Waste Treatment Capacity is proposed to be covered through major plants being constructed through GWMC. All ULB's have MRF/sorting stations for segregating dry waste into recyclables and non-recyclables. The recyclables are sorted, baled and sold to recyclers while the non-recyclables are baled and transported to cement factories for co-incineration. Upgradation of MRF is proposed in ULB's namely Mormugao, Ponda, Valpoi, Mapusa, Cuncolim, Bicholim, Sankhali and Margao. This will be completed by December 2020. There is a ban on Plastics below 50 microns and there is 100% enforcement.

With respect to Three identified Model Cities, the status is as given below:-

1. **Corporation of The City of Panaji- Class A:** 100% Door to Door collection is being carried out . Steps have been taken to augment processing and disposal capacity. The ULB has sufficient treatment capacity with respect to Dry waste and in respect of wet waste the gap in capacity is catered to by the Integrated Solid Waste Management Treatment plant at Saligao. The gap in Wet Waste Treatment capacity in the future will be met by the proposed ISWMTF at Bainguinim.
2. **Cuncolim Municipal Council- Class B** : 100% Door-to-Door Collection is being carried out. The ULB has sufficient capacity for treatment of Wet and Dry Waste The ULB is augmenting capacity for waste treatment for which the work of construction of shed has commenced.
3. **Valpoi Municipal Council- Class C:** 100% Door to Door Collection is being carried out. The ULB has sufficient capacity for treatment of Wet and Dry Waste The ULB is augmenting capacity for waste treatment and work of construction of shed is 90% complete.

## Compliance from Village Panchayats

### ***1. Dry Waste Collection, Storage and Disposal***

All 191 Village Panchayats collect Door to Door Dry waste, store in shed/premises and send to GWMC for scientific disposal.

### ***2. Wet Waste Collection and Disposal***

Altogether **64 village Panchayats** who are close proximity to the municipal jurisdiction, touristic places, and semi urban areas generate wet waste, out of which 37 Village Panchayats collect Door to Door wet waste. 28 Village Panchayats send waste to Saligao plant and other 9 Village Panchayats have set up wet waste disposal facilities. **12 Village Panchayats** have land available for set up facility for wet waste disposal which are in process and will be completed within 6 months. Remaining **15 Village Panchayats** are in process to identify land and in process to set up facilities which will require period of 1 year. **127 village Panchayats** have mostly single dwelling units which dispose wet waste at source.

### ***3. Village Waste Management Plan***

All 191 Village Panchayats have prepared Village Waste Management Plan and submitted to GWMC. Village Panchayats strictly execute the plan prepared for proper collections, transportation and scientific disposal of waste.

### ***4. Bulk Waste Generators***

264 Nos of Bulk waste generators were identified by Village Panchayats, out of which 218 Bulk Waste Generators have set up wet waste disposal facilities and the remaining 46 are in process to set up disposal facilities.

### ***5. Ban on 50 Microns and below Plastic***

All 191 Village Panchayats have taken Gram Sabha Decision to BAN on plastic of 50 Microns and below thickness. For strict compliance, enforcement through imposing penalties is regularly done by the V.P. Secretaries. Public awareness is also done for educating public regarding ban on plastic of 50 microns and below.

### ***6. Sewage/waste water Discharge in Rivers***

3,273 nos of notices issued for direct/indirect discharge of waste water in the river. Out of which 1,451 nos of violators have constructed soak pit. 34 nos of water disconnections are carried out by Directorate of health services on request of the village Panchayats under the Public Health Act for non compliance. 1,788 nos are in process to construct Soak pit /Septic tank.

**B. Compliance to Bio-Medical Waste Rules** (as per NGT Order dated 12<sup>th</sup> September / 18<sup>th</sup> October 2019 in a matter of O.A.606 of 2018)

Sr. No.	Clause as referred in BMW Rules, 2018	Action mandated	Current status as in January 2020	Desirable level of compliance in terms of statute	Gap between current status and desired status	Proposal of attending the gap with the timeline	Name and designation of officer ensuring compliance to provisions under statute
1	Compliance to Bio-medical waste (BMW) Management Rules, 2018	Setting up of Common BMW Treatment facility (CBMWTF) including 200 kgs.per. hour incinerators.	<p>Health Care Facilities (HCFs') in the State generate about 02 tons of BMW per day and are being disposed-off as per the provision of the Bio-medical Waste Rules, 2018.</p> <p>The State through Goa Medical College (GMC)/ GWMC commissioned incinerator of 100 Kg/hr at Goa Medical College on 20/01/2020.</p> <p>In meanwhile, the State Government is setting up separate <b>Common Bio-Medical Waste Treatment and Disposal Facility (CBWTDF) – Kundaim</b>, 200 Kg/hr incinerators. Status as follows:</p> <ul style="list-style-type: none"> <li>● Financial Bid opened on 06/01/2020 and file is moved for approval of the bidder.</li> <li>● Consent to Establish granted by GSPCB on 06/01/2020.</li> <li>● Civil work of compound wall commenced.</li> </ul>	<b>Being addressed</b>	<b>Being addressed</b>	<p>Tender for CBWTDF is floated on 09/08/2019 and Financial Bid opened on 06/01/2020 and file is moved for approval of the bidder.</p> <p>The Work order will be issued by February 2020 subjected to approvals.</p> <p>The plant will be commissioned in 24 months from the issue of work order.</p>	Mr. Levinson J. Martins, Managing Director, Goa Waste Management Corporation (GWMC).

**C. Compliance to Construction and Demolition Waste Rules, 2016** (as per NGT Order dated 12<sup>th</sup> September / 18<sup>th</sup> October 2019 in a matter of O.A.606 of 2018)

Sr. No.	Clause as referred in C & D waste Rules, 2016	Action mandated	Current status as in January 2020	Desirable level of compliance in terms of statute	Gap between current status and desired status	Proposal of attending the gap with the timeline	Name and designation of officer ensuring compliance to provisions under statute
1	Compliance to Construction and Demolition (C & D) wastes Management Rules, 2016.	Ensure separate storage, collection and transportation of construction and demolition wastes  Setting up of C & D facility	The State has proposed C & D treatment facility at survey no. 146/2,3,4,6 and Survey no. 148/2,6,7 of Curchirem village in Bicholim taluka, North Goa through a consultancy services – M/s Santef. Currently, codal procedure for transfer of land is in-process.  PWD has Identified 13 locations across Goa next to National Highways and State roads for Urban Local Bodies (ULB's) and others to deposit its C&D waste.	As per C & D Waste Management Rules 2016, (i) Formulation of State Policy - 12 months. (ii) Identification of sites for facility - 18 months. (iii) Commissioning and implementation of the facility. -18 months	Construction & Demolition Waste Management Facility – Bicholim (500 TPD) to be set up within 30 months from the date of allocation of the land to GWMC.	Goa Waste Management Corporation has signed MOU with SINTEF, Institute for Building and Infrastructure, a registered Scientific Research Organisation in Scandinavia, for the development & research of science and technology in the area of recycling of construction and demolition (C&D) waste and implementation of new technology related to C&D waste processing and preparation of DPR.  In meantime GWMC proposes to notify abandon	Mr. Levinson J. Martins, Managing Director, Goa Waste Management Corporation (GWMC).

						quarries/mining pits at Bicholim for temporary backfilling of inert C & D Waste by February 2020.	
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**D. Compliance to Hazardous Waste Management Rules, 2018** (as per NGT Order dated 26<sup>th</sup> August 2019 in a matter of O.A.804 of 2017)

Sr. No.	Clause as referred in HW Rules, 2018	Action mandated	Current status as in January 2020	Desirable level of compliance in terms of statute	Gap between current status and desired status	Proposal of attending the gap with the timeline	Name and designation of officer ensuring compliance to provisions under statute
1	Compliance to Hazardous wastes (HW) Management Rules, 2018.	Setting up of Common CHWTSD facility - 25,000 TPA Secured Landfill (SLF) & 1.5 ton/hr incinerators	<p>Hazardous Waste generated in the State are disposed as per CPCB/GSPCB norms or guidelines for recycling and incineration at Maharashtra and Karnataka, respectively.</p> <p>The State is in a process of setting-up a Common HW treatment and storage facility at Pissurlem industrial estate through a tri-partite agreement / MOU between Goa Industries Environmental Management Association (GIEMA) and SMS Envocare on 04/12/2019 and Govt. Approval is being sought for the Operator i.e. M/s. SMS Envocare Ltd selected by GIEMA.</p> <p>Civil work for CHWTSD has commenced.</p>	Ongoing	Being addressed	<p>As per the Hon'ble NGT Order dated 26/08/2019, in OA 804/2017 time granted upto 31/03/2020 to setup TSDF.</p> <p>Whereas GWMC putting efforts to commence the 1<sup>st</sup> secured landfill by May 2020 and incinerators with second SLF by January 2021.</p>	Mr. Levinson J. Martins, Managing Director, Goa Waste Management Corporation (GWMC).

**E. Compliance to E-Waste Rules, 2016** (as per NGT Order dated 02<sup>nd</sup> September 2019 in a matter of O.A.512 of 2018)

Sr. No.	Clause as referred in E-waste Rules, 2016	Action mandated	Current status as in January 2020	Desirable level of compliance in terms of statute	Gap between current status and desired status	Proposal of attending the gap with the timeline	Name and designation of officer ensuring compliance to provisions under statute
1	Compliance to E-wastes Management Rules, 2016.	Setting up of E-waste treatment facility	<p>Considering the less quantity of generation of e-waste (7,682.24 MT), it's not economically viable to setup recycling facility. However, the process to comply with the E-waste Rules, 2016 (<i>i.e. collection of E-waste, segregation and scientific disposal</i>) is in place through M/s Karo Sambhav for scientific disposal with authorised recyclers at Bengaluru, Karnataka.</p> <p>However, the State is exploring a proposal for Design Build and Operate an E-Waste Management (<i>Collection, Storage, and Dismantling</i>).</p> <p>GIDC has allotted land to GWMC of 4000 sqmt. each at Pissurlem &amp; Sanguem IDC for E Waste Management. Currently, waste collected is stored at SWMF, Saligao.</p>	State to ensure earmarking or allocation of Industrial space or shed for e-waste dismantling and recycling in the existing and upcoming industrial estate. (100%)	Being addressed	Tender shall be floated for selection of service provider for Design Build and Operate an E-Waste Management ( <i>Collection, Storage, and Dismantling &amp; Disposal</i> ) for the State of Goa by February 2020.	Mr. Levinson J. Martins, Managing Director, Goa Waste Management Corporation (GWMC).

**F. Compliance to Plastic Waste Management Rules, 2016** (as per NGT Order dated 12<sup>th</sup> September / 18<sup>th</sup> October 2019 in a matter of O.A.606 of 2018)

Sr. No.	Clause as referred in PWM Rules, 2016	Action mandated	Current status as in January 2020	Desirable level of compliance in terms of statute	Gap between current status and desired status	Proposal of attending the gap with the timeline	Name and designation of officer ensuring compliance to provisions under statute
1	Compliance to Plastic waste Management (PWM) Rules, 2016.	Ban on plastic below 50-microns	The Department of Environment has Notified the Goa Non-Biodegradable Garbage ( <i>Control</i> ) (Amendment) Act, 2019 in an Official Gazette (Extraordinary), Series I, No. 25 dated 23 <sup>rd</sup> September 2019, wherein vide clause 3(A), use of single-use plastics have been prohibited.	100%	0%	Being enforced through public-awareness, raids and fines	Commissioner, CCP / Chief Officer, Municipal Councils / Secretary, Village Panchayats.

**G. 351 Polluted river-stretches in the Country** (as per NGT Order dated 06<sup>th</sup> December 2019 in a matter of O.A.606 of 2018)

Sr. No.	Compliance to be made in respect of	Current status as in January 2020	Desirable level of compliance in terms of statute	Gap between current status and desired status	Proposal of attending the gap with the timeline	Name and designation of officer ensuring compliance to provisions under statute
1	Submission of Revised Action Plan for rejuvenation of polluted river-stretches for priority criteria III to V.	<p>“Revised” action plans for priority criteria III &amp; IV (<i>i.e. Sal / Mandovi and Talpona river</i>), after its approval by the River Rejuvenation Committee (RRC-Goa) during its meeting held on 10<sup>th</sup> January 2020 has been communicated to the Central Pollution Control Board as per the NGT Order dated 6<sup>th</sup> December 2019 in a matter O.A. 673 of 2018. Further, based on improvement in water-quality of Talpona river w.r.t. pH, DO, BOD &amp; Total coliform since April 2019 till date, RRC-Goa has decided to “De-list” the said river-stretch from among the eleven polluted stretches in the State of Goa.</p> <p>The remaining action plans (05 nos.) for priority criteria – V are being revised and proposed interventions namely, (a) laying of sewerage network / diversion are being executed through SIDCGL, (b) de-silting of polluted-stretch is being executed through Captain of Ports (CoP), (c) toilet-facilities at fish-landing sites is being completed and are being monitored by the implementing agency / line departments.</p>	100%	Nil	Revised action plans for priority criteria for III / IV have been submitted to the CPCB on 21 <sup>st</sup> January 2021.	Principal Secretary, Environment / Chairman, RRC-Goa.

2	Submission of Performance Guarantee as per the Order dated 08 <sup>th</sup> April 2019.	State Government ( <i>through the Department of Environment</i> ) has submitted a 'Performance Guarantee' of Rs. 15 crores to the CPCB as per NGT Order dated 8 <sup>th</sup> April 2019 in a same matter.	100%	0%	Not Applicable	
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**H. 100 Critically Polluted Industrial Estates (CPIE) / Clusters** (as per NGT Order dated 14<sup>th</sup> November 2019 in a matter of O.A.1038 of 2018)

Sr. No.	Compliance to be made in respect of	Current status as in January 2020	Desirable level of compliance in terms of statute	Gap between current status and desired status	Proposal of attending the gap with the timeline	Name and designation of officer ensuring compliance to provisions under statute
1	Submission of Action Plan to address the CPIE.	The State of Goa does not have any Critically Polluted Industrial Estate (CPIE) / Cluster. However, it is proposed to monitor the Ambient Air-Quality (AAQM) at regular intervals.	Goa State Pollution Control Board (GSPCB) will continue to carry-out AAQM. The GSPCB has been conducting air-quality monitoring through 18 fixed-locations under National Ambient Air-quality Monitoring Programme (NAMP) of the CPCB. In addition, site-specific air-quality monitoring is being conducted by the Board with the help of mobile Online Continuous Ambient Air Quality Monitoring System (CAAQMS).	Not applicable	Not Applicable	Member Secretary, GSPCB / Managing Director, Goa Industrial Development Corporation (Goa-IDC).

**I. Status of STPs' and re-use of Treated-water** (as per NGT Order dated 11<sup>th</sup> September 2019 in a matter of O.A.148 of 2016)

Sr. No.	Compliance / current-status in respect of	Current status as in January 2020	Desirable level of compliance in terms of statute	Gap between current status and desired status	Proposal of attending the gap with the timeline	Name and designation of officer ensuring compliance to provisions under statute
1	Operational status of STPs'	<p>Presently, 8 Government STP's are operational, 6 are under construction and 4 are proposed at various locations. The total sewage treated in the commissioned STP's is around 23.81 MLD and the status of sewerage system in the State may please be referred at <b>Annexure – 1</b>.</p> <p>While, there are 399 Private-STPs' (as per consents granted by the GSPCB). The Board conduct 'Performance Evaluation' of selective STPs' on monthly basis. (<b>Annexure – 2</b>).</p>	100%	Nil	<p>Performance Evaluation of industrial units is an on-going process as-and-when parameters are exceeding prescribed limits. Accordingly, Show cause Notice (SCN) / Directions and fines as per Polluter-Pay-Principle (PPP) are being levied.</p>	<p>Managing Director, Sewerage Infrastructure Development Corporation of Goa Limited (SIDCGL).</p> <p>Member Secretary, Goa State Pollution Control Board (GSPCB).</p>
2	Action Plan for utilisation of Treated water	Out of total availability of 23.81 MLD of treated water, although there is no agricultural demand, part utilisation has been proposed for (i) flushing of St.	30%	70%	Local authorities / Municipal councils have been instructed to utilise STP-treated water.	Managing Director, Sewerage Infrastructure Development Corporation of Goa

		Inez creek, (ii) municipal gardening, (iii) social forestry, (iv) private-plantation, (v) dust-suppression measures. There is no Thermal power-plant in the State.				Limited (SIDCGL) / Principal Chief Engineer, Public Works Department (PWD)
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**J. Status of CETPs' / ETPs' including performance** (as per NGT Order dated 28<sup>th</sup> August 2019 2019 in a matter of O.A.593 of 2018)

Sr. No.	Compliance in respect of	Current status as in January 2020	Desirable level of compliance in terms of statute	Gap between current status and desired status	Proposal of attending the gap with the timeline	Name and designation of officer ensuring compliance to provisions under statute
1	Operational status of CETPs' / ETPs' in the State	<p>The State of Goa does not have Common Effluent Treatment Plant (CETP).</p> <p>There are 209 ETPs' in the State and are being monitored by the GSPCB to verify its compliance with prescribed standards (<b>Annexure – 3</b>).</p>	100%	Nil	Performance Evaluation of industrial units is an on-going process as-and-when parameters are exceeding prescribed limits. Accordingly, Show cause Notice (SCN) / Directions and fines as per Polluter-Pay-Principle (PPP) are being levied.	Member Secretary, Goa-PCB

**K. Groundwater extraction /Contamination and recharge** (as per NGT Order dated 11<sup>th</sup> September 2019 in a matter of O.A.496 of 2016)

Sr. No.	Compliances in respect of	Current status as in January 2020	Desirable level of compliance in terms of statute	Gap between current status and desired status	Proposal of attending the gap with the timeline	Name and designation of officer ensuring compliance to provisions under statute																				
1	Action plan w.r.t. Rain-water Harvesting (RWH) initiatives	<p align="center"><b>Ground Water Estimation, Monitoring &amp; Recharge Regulations</b></p> <p>1. <i>Dynamic Ground Water Estimation</i></p> <p>There two districts in State namely North Goa and South Goa. Department has identified the 'ground water harvesting structures' in both districts, and are registering these ground water structures.</p> <table border="1" data-bbox="446 857 1489 1172"> <thead> <tr> <th></th> <th colspan="2">Ground water structures</th> <th colspan="2">Ground Water harvesting structures</th> </tr> <tr> <th></th> <th>Open wells</th> <th>Bore wells</th> <th>Bandharas</th> <th>Mining pits</th> </tr> </thead> <tbody> <tr> <td>North Goa</td> <td>3026</td> <td>324</td> <td>178</td> <td>15</td> </tr> <tr> <td>South Goa</td> <td>1479</td> <td>525</td> <td>152</td> <td>25</td> </tr> </tbody> </table> <p>The state of Goa in collaboration with Central Ground Water Board (CGWB) is conducting study and estimation of Dynamic Ground Water Resources of the State. Accordingly -</p> <p>(i) 105 nos. of Ground water monitoring station are setup in the state to ascertain Pre- and Post-Monsoon study of groundwater availability and fluctuations.</p>		Ground water structures		Ground Water harvesting structures			Open wells	Bore wells	Bandharas	Mining pits	North Goa	3026	324	178	15	South Goa	1479	525	152	25	80% All the lakes, ponds and other ground water structures needs to identified and provided UID work.	20%	Work is in progress. North Goa to be completed by May 2020. South Goa to be completed by August 2020.	Mr. Srikant Patil, Chief Engineer Water Resources Department.
	Ground water structures		Ground Water harvesting structures																							
	Open wells	Bore wells	Bandharas	Mining pits																						
North Goa	3026	324	178	15																						
South Goa	1479	525	152	25																						

- (ii) 44 nos. of hydrograph stations are maintained in the State to study the ground water fluctuations.
- (iii) The water level below the ground level (BGL) is ranging from 1.18 mts bgl to 18.17 bgl of which 86.5 % of the wells have water level within 2 mts to 10 mts bgl in **pre- monsoon** and **Post -monsoon** the depth 95.2 % have of water depth of 2 to 10 mts bgl.
- (iv) From the data so collected from the monitoring stations and hydrograph stations Ground Water availability in the reporting year 2017, is estimated to be 16,033Ha-m.
- (v) There is increase in the ground water availability to the extent of 9.12 % over previous base year of 2013 studies 14625 Ha –m.

STAGE OF GROUND WATER DEVELOPMENT IN THE STATE

Particulars	As in 2013	As in 2017
Annual extractable Ground water resources	14625	16033
Existing Ground water Extraction for Irrigation ( <i>ha.m</i> )	2148	2058
Existing Ground water extraction for domestic and Industrial water Supply ( <i>ha.m</i> )	3229	3314
Existing Ground water Extraction for all uses ( <i>ha.m</i> )	5377	5371
Provision for domestic and Industrial requirement supply for 2025	3902	3669
Net Ground water availability for future irrigation development ( <i>ha.m</i> )	8575	6993
Stage of ground water Extraction (%)	37%	34%
<b>Category</b>	<b>Safe</b>	<b>Safe</b>

Stage of Ground Water Extraction 34 % hence is categorised as SAFE.

*2. Ground Water quality*

Ground water quality is monitored at different locations with the help of 48 nos. observation wells , 2 well out of 48 wells (4.16 %) are affected by salinity it being in low and tidal water affected areas. Rest of the wells are having fresh water and chlorides are in permissible limits. Entire Goa state is free from fluoride.

*3. Ground Water Recharge and Water Harvesting Structures*

State has constructed two Medium dams namely Salauli Dam and Anjunem Dam located in Sanguem (*South Goa district*) and Sattari taluka (*North Goa district*).

**a. Salauli Dam** in Sanguam (South Goa)

Monsoon water is harvested from the catchment area to the extent of 22,700 ha-m. to irrigate 9,686 ha of land in Sanguem, Qupem, Salcete taluka of South Goa. It supplies drinking Water to the extent of 200 mld to South Goa district. Ground water level in the entire command area of the Saluli Dam is safe.

**b. Anjunem Dam** at Keri Sattari (North Goa)

Monsoon water is harvested from the catchment area to the extent of 4485 ha-m. Supplies water for irrigating 1800 ha of land Sattari and Bicholim Taluka and drinking Water to the extent of 80 mld to North Goa district. Ground water level in the entire command area is safe. It was water stressed area prior to construction of the dam

**c. Tillari Dam (Inter- State project)** North Goa

Monsoon water is harvested from the catchment area to the extent of

11,350 ha- m to supply water for irrigation in the talukas of Bardez and Pernem, and drinking Water to the extent of 100 mld to North Goa district.

**d. Minor Irrigation Dams;-** 4 nos. minor dams namely Amthane in North Goa and Panchwadi, Gawane, Chapoli in South Goa dist, harvesting 29,365 ha- m of water. These dams supply water for irrigation and drinking, for Bardez, Ponda and Canacona Taluks respectively. Due to supply of water for irrigation the ground water level in the command area is satisfactory.

**e. Lakes and Spring / Ponds;-** State has taken up development of lakes , wells and other water storages structures for rejuvenation of water bodies have implemented over 1,500 nos. small projects .

**f. Bandharas;-** The department has implemented over **350-water harvesting structuring by the way of bandharas / weir on the rivers, which are storing 564.7 MCM** of water which charges the ground water and maintains E- flow in the river.

**g. Mining Pits;-** There over 100 open cast iron ore mining pit in the State, which are spread across over 50 kms. in Sattari, Bicholim. These abandoned mining pits are massive ground water recharge structures. An estimated 15,000 ha-m (approx) of rainwater is harvested in these pits. These pits are recharging the ground water, department is working out the proposal to use the harvested water to supply for drinking and irrigation.

#### *4. Groundwater Regulations*

- The State has implemented Goa Ground Water Regulation Act 2002 on 29<sup>th</sup> January 2002.
- The State is actively monitoring the ground water resources for its availability, use and contamination.
- To monitor and for judicial use the ground water the government

has declared entire state of Goa as **Scheduled area**, where it is required to obtain prior permission of the ground water officer , for construction of new wells, withdrawal of ground water. All the existing the ground water structure registration is mandatory.

- To implement the provisions of the act, Ground Water Cell is constituted by the govt headed by the Chief Engineer, with Sr. Engineer, as members. The role of the ground water cell is to monitor and regulate the sinking of new wells, and control drawl of water for commercial purpose.
- Govt has nominated **6 nos. Ground Water Officer** in the state in the grade of Executive Engineer who is implementing provisions of the act.
- The state of Goa first state in the Indian union, to levy tax on the commercial exploitation of water.

The consumers are charged Rs.2/- per Cum during monsoon, and Rs 6/ m<sup>3</sup> from Nov. to May of every year. Domestic purpose i.e. multi users are charges Rs. 0.1 / m<sup>3</sup>.

#### *5. Rejuvenation of Water bodies*

**A subsidy scheme** ‘named *Nital Goem Nital Baim*’ has been introduced for rejuvenation of wells where in the well owner is provide financial help upto Rs 50,000/- (max)

**Water Quality Lab:-** Department has established full-fledged water quality lab under hydrology project which monitors water quality pre and post mason.

**Rejuvenation of Water bodies:** - Under Jal Shakti, programme department has initiated work of identification and development of water rejuvenation of water bodies and rivers.

**L. Air Pollution including Noise Pollution** (as per NGT Order dated 20<sup>th</sup> November 2019 in a matter of O.A.681 of 2018)

Sr. No.	Compliance / submission in respect of	Current status as in January 2020	Desirable level of compliance in terms of statute	Gap between current status and desired status	Proposal of attending the gap with the timeline	Name and designation of officer ensuring compliance to provisions under statute
1	Action plan for Non-attainment cities	The State of Goa does not have any city categorised under the “Non-Attainment Cities – NAC”.	<b>Not Applicable</b>	<b>Not Applicable</b>	<b>Not Applicable</b>	<b>Not Applicable</b>
2	Preparation of / noise-level zones and noise-mapping	<p>The State has categorised the areas into (i) Industrial, (ii) Commercial &amp; Residential and (iii) Silent zones and has also notified the designated authorities in compliance with the provisions of the Noise Rules, 2000 and NGT Order dated 20<sup>th</sup> November 2019.</p> <p>The Department of Environment vide Order No.7/4/98/STE/DIR/Part-III/539 Dated 24/09/2019 in pursuance of the directives of the Hon'ble High Court has published the names and telephone numbers of the officers designated as "Authority" under the said rule, for information of the public</p>			The State is in the process of purchasing 07 Noise Monitoring devices/measurement meters to be delivered to each Taluka Sub-Divisional Magistrate to monitor the enforcement of Noise Pollution ( <i>Regulation and Control</i> ) Rules, 2000.	District Collector ( <i>North and South Goa</i> ) / Police Department

**M. Illegal Sand-mining / Illegal extraction of laterite-stones** (as per NGT Order through VC dated 26<sup>th</sup> November 2019 in a matter of O.A.77 of 1986)

Sr. No.	Compliance / submission in respect of	Current status as in January 2020	Desirable level of compliance in terms of statute	Gap between current status and desired status	Proposal of attending the gap with the timeline	Name and designation of officer ensuring compliance to provisions under statute
1	Institutional mechanism to address illegal / major-mineral sand-extraction	In respect of extraction of major minerals (i.e. Fe & Mn-ores), Hon'ble Supreme Court of India, vide its Order dated 07 <sup>th</sup> February 2019, has squashed the second-renewal granted to 88 mine-leases and at present, there is no extraction activities in the State.	<b>Not Applicable</b>	<b>Not Applicable</b>	<b>Not Applicable</b>	Department of Mines and Geology (DMG).
2	Action plan for illegal extraction of laterite-stones in Pernem taluka	The Deputy Collector (Pernem) has identified the occupant of the land / offending parties responsible for said act & notices have been issued upon them for restoration of land. Show Cause Notices (SCNs') have been issued to the violators for the recovery of value of mineral from polluters. Flying squads have been constituted empowering respective Taluka Mamlatdars for monitoring of illegal extraction, transportation and storage of minor-mineral. Illegal extractions-sites	75%	25%	The action plan is being prepared / abandoned mine-pits are in a process of being fenced.	Department of Mines and Geology (DMG) / Water Resources Department (WRD) / Goa Waste Management Corporation (GWMC).

<p>have been identified in Pernem / Bicholim /Satari and Tiswadi talukas and the details have been shared with the District Collector (North Goa) to facilitate action plan by the Goa Waste Management Corporation (GWMC) to utilise the same for dumping of inert-wastes. Water Resources Department (WRD) is preparing action plan for survey, estimation, utilisation of such-pits as water harvesting structures. In addition, WRD is to take up the work of fencing the abandoned pits by allotting work to different contractors, so that the work of fencing is expedited.</p>				
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**N. Rejuvenation of Waterbodies – Action plan for Notification / Restoration of Wetlands** (as per NGT Order dated 10<sup>th</sup> May 2019 in a matter of M.A.26 of 2019 in O.A. 325 of 2015)

Sr. No.	Compliance / submission of	Current status as in January 2020	Desirable level of compliance in terms of statute	Gap between current status and desired status	Proposal of attending the gap with the timeline	Name and designation of officer ensuring compliance to provisions under statute
1	Notifying the 'Wetlands' and preparation of action plan restoration of waterbodies.	The State has notified 'Bondal lake' as the first wetland in the State. Action Plan for restoration of water bodies, <i>proposed through Goa State Wetland Authority (GSWA)</i> , be referred at <b>Annexure – 4</b> .	Ongoing	Ongoing	By October 2020	Goa State Biodiversity Board (GSBB) / Department of Environment.

**O. District / State Environment Plan** (as per NGT Order dated 26<sup>th</sup> November 2019 in a matter of O.A.360 of 2018)

Sr. No.	Compliance in respect of	Current status as in January 2020	Desirable level of compliance in terms of statute	Gap between current status and desired status	Proposal of attending the gap with the timeline	Name and designation of officer ensuring compliance to provisions under statute
1	Submission of District Environment Plan (DEP) and subsequent preparation of State Environment Plan.	Being prepared through a consultancy services – <b>M/s Aditya Environmental Services.</b>	Ongoing	Ongoing	By end-February 2020	District Collector (North and South Goa) / Department of Environment.

**P. Estimate of value of environmental degradation and cost of restoration be prepared and compensation be planned and recovered from polluters for environmental restoration and Restitution on that basis.**

Sr. No.	Follow-up action / compliance	Current status as in January 2020	Desirable level of compliance in terms of statute	Gap between current status and desired status	Proposal of attending the gap with the timeline	Name and designation of officer ensuring compliance to provisions under statute
1	Implementation of Polluter-Pay-Principal / levy of fines	<p>The GSPCB, <i>subsequent to the Board's approval during its 139<sup>th</sup> meeting held on 8<sup>th</sup> May 2019</i>, has imposed fines under the PPP.</p> <p>The Board has issued directions and levied fines under the Polluter-Pay-Principal (PPP) to about 202 units, out of which 119 units have responded to the same while, 53 units have paid the fines as-on-date. Subsequently, the Board has issued 're-directions' to non-complying units with instruction to pay the fine within stipulated time-frame, failing which closure-proceeding to be initiated.</p> <p>Under the PPP, the Board has collected fines to the tune of Rs. 56 lakh since April 2019 till mid-January 2020. The Board is in a process of formulating a guideline towards utilisation of fines towards environmental restoration / restitution.</p>	50%	50%	By end-May 2020	Member Secretary, GSPCB

**Q. Water Audit of all Casinos**

<b>Sr. No.</b>	<b>Follow-up action / submission in respect of</b>	<b>Current status as in January 2020</b>	<b>Desirable level of compliance in terms of statute</b>	<b>Gap between current status and desired status</b>	<b>Proposal of attending the gap with the timeline</b>	<b>Name and designation of officer ensuring compliance to provisions under statute</b>
1	Submission of water-audit of Casinos	<p>M/s TUV has submitted the final report on 'Water-audit for six casino vessels operating in river Mandovi. The report is being scrutinised for further action.</p> <p>Based on the monthly water-quality monitoring by the Board, water-quality has been marginally improved since May 2019 and is being monitored under the National Water-quality Monitoring Programme (NWMP) of the CPCB.</p>	100%	Nil	Not applicable	Member Secretary, Goa State Pollution Control Board.

## ANNEXURE -2

## Status of Private STPs'

Months	No. of Operational STPs'	No. of STPs' inspected	No of non-functional STPs'
August 2019	399	8	NIL
September 2019	399	15	3
October 2019	399	17	6
November 2019	399	11	2

The GSPCB has issued 'Directions' to non-complying STP's (*i.e. exceedance of upto 02-nos. of CPCB-prescribed parameters for STP-treated-water*) with instruction to rectify the same and submit treated-water analysis within 06-months from date of issuance of such directions, failing which environmental compensation be imposed. While, in other cases, the GSPCB has imposed a submission of 'Bank-guarantee' with instructions to repair / modify / augment the treatment capacity or process-methodology within stipulated time-frame, failing which the B.G.to be forfeited and proceed with Polluter-Pay-Principle and/or criminal proceedings.

## ANNEXURE – 3

## Status of ETPs' in the State of Goa

Months	No. of Operational ETPs' in Goa	No. of ETPs' inspected	No. of non-functional ETPs'
August 2019	209	1	1
September 2019	209	5	1
October 2019	209	7	3
November 2019	209	11	2

Total nos. of Non- Functional STPs/ETPs in Goa and the reason thereof:

Sr. No.	Name of Industry & Address	Parameters Exceeding	Action Initiated	
<b>August 2019</b>				
1.	M/s. Igloo Dairy Services Pvt. Ltd., Plot No. 144/145, Kundaim Industrial Estate.	BOD parameter is exceeding the permissible limit	Directions have been issued and further compliance is being monitored.	
<b>September 2019</b>				
2.	M/s. Perfect Laundry & Dry Cleaners, Plot No. S-153, Phase III B, Verna Industrial Estate, Verna.	BOD and COD parameters exceeding the permissible limit		
3.	M/s. Shamiraj Hotels Pvt. Ltd. (Hotel Sea Coin), Survey No. 25/4, 5 & 7 (Part), Colva, Salcete.	BOD parameter is exceeding the permissible limit.		
4.	M/s. Golden Crown Hotel and Spa, Survey No. 57/1, Beach road, 4 <sup>th</sup> ward, Colva, Salcete.	BOD parameter is exceeding the permissible limit.		
5.	M/s. Salcete Beach Resort, Sy. No. 54/5, 55/3, 4 <sup>th</sup> ward, Colva, Salcete-Goa	SS, COD and BOD parameter is exceeding the permissible limit.		
<b>October 2019</b>				
6.	M/s. Aloft Calangute Goa. Unit: Le Meridian, Gaura vaddo, Calangute, Bardez.	COD, BOD and SS parameters are exceeding the permissible limit		
7.	M/s. Resort De Crossroads H. No. 3/39, ward No. 3, Tivar vaddo, Calangute, Bardez.	BOD parameter is exceeding the permissible limit.		

8.	M/s. Launderaids Plot No. S-53 & 54, Phase II-B, Verna Industrials Estate, Verna- Salcete.	Phosphate parameter is exceeding the permissible limit.
9.	M/s. Schiffer & Menezes India Pvt. , Plot No. L-26 & 27, Phase II A, Verna Industrial Estate, Verna.	pH parameter is below the permissible limit.
10.	M/s. Crompton Greaves Ltd., Plot no. 1, Bethora Industrial Estate, Bethora, Ponda.	BOD parameter of the final treated ETP and STP is exceeding the permissible limit.
11.	M/s. IFB Industries Ltd., Plot No. L-1, Verna Industrial Estate, Verna.	BOD parameter of the final treated STP and ETP is exceeding the permissible limit.
12.	M/s. Colmar Hotels Pvt. Ltd. (Colmar Beach Resort) Plot/Phase No. 40/4, Colva Beach, Colva, Salcete.	COD, BOD and SS parameters are exceeding the permissible limit
<b>November 2019</b>		
13.	M/s. Putzmeister Concrete Machine Pvt. Ltd., Plot No. N-4, Phase IV, Verna Industrial Estate, Verna.	BOD parameter is exceeding the permissible limit
14.	M/s. Vailankanni Power Laundry, Survey No. 30/2, H.No. 160-A, Codde Vaddo, Deussa, Chinchinim, Salcete.	BOD parameter is exceeding the permissible limit
15.	M/s. Kylesal Holiday Pvt. Ltd., Plot No. 125/1, 5,6,7,8,12,13,14, Fatrade, Varca.	BOD parameter is exceeding the permissible limit
16.	M/s. Old Anchor (Dalmai Resort International Pvt. Ltd.) Sy. No. 109, Cavelossim, Salcete.	BOD parameter is exceeding the permissible limit

## Action Plan for Restoration of Wetlands

### Action Plan for Restoration of Waterbodies in the State of Goa

Based on the presentation given by CSIR – National Institute of Oceanography Dona Paula, Goa, below given is the strategy and action plan for the conservation and management of wetlands which include restoration plan also. The detailed work plan with budgetary estimates will be prepared only after completion of first phase of identification and brief document preparation of wetlands.

After notification of each wetland, its management and restoration plan could be prepared as given below.

#### **Basic Outline of Plan.**

1. Identification, brief document preparation, ground truthing and notification of wetlands after stakeholders' consultations. ( One Year)
2. Preparation of management and conservation plan including setting up of committees and local management framework. ( one month)
3. Wetland specific restoration plan, budgetary provisions, approvals, selection of agencies in transparent way and execution of plan for each wetland identified and notified. ( two years total period for each wetland)

#### **Wetland Conservation and Management Plan:**

- Based on the initial survey, consultation and scope given in part-I above, one important wetland will be selected for formulating a model 'Conservation and Management Plan'.
- Detailed baseline data will be collected for **one selected wetland** which is to be notified for conservation. The data shall include

baseline on the physical, physico-chemical, biological and social aspects, including ecological health indicators of the wetland.

- A comprehensive conservation and management plan for **one selected wetland** will be prepared and an action plan will be delineated. This shall also include permissible and restricted activities for ecological sustenance and efficient ecosystem function of the wetland.
- The plan will have strategies for conservation and wise use of wetlands within their jurisdiction; wise use being a principle for managing these ecosystems which incorporates sustainable uses (such as capture fisheries at subsistence level or harvest of aquatic plants) as being compatible with conservation, if ecosystem functions (such as water storage, groundwater recharge, flood buffering) and values (such as recreation and cultural) are maintained or enhanced;
- The plan shall include restoration activities and habitat enhancement strategies; if required.
- In cases wherein lands within boundary of notified wetlands or wetlands complex have private tenancy rights, recommend mechanisms for maintenance of ecological character through promotional activities;
- Identify mechanisms for convergence of implementation of the management plan with the existing State/Union Territory level development plans and programmes;

**Stage  
-I**

- Removal of Weeds, debris and rubbish
- De-Silting, Lake deepening & Excavation
- Surrounding Earth/civil Work

**Stage  
-II**

- Embankment construction
- Pitching & Gabion etc.
- Sewage Treatment

**Stage  
-III**

- Treatment for pH, nutrients and weed eradication
- Bio-restoration
- Ghat Construction, Paving, Benches, Machans and SWM

**Stage  
-IV**

- Plantation and Gardening
- Walkways, Lighting and recreational facilities
- 3D Enhancement Measures & Lake Beautification

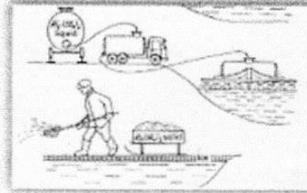
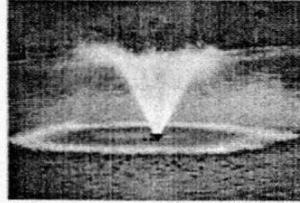
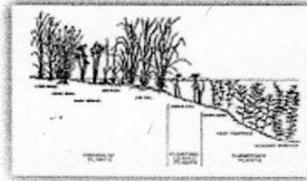
### Bio-restoration methods

**Preventive methods:**

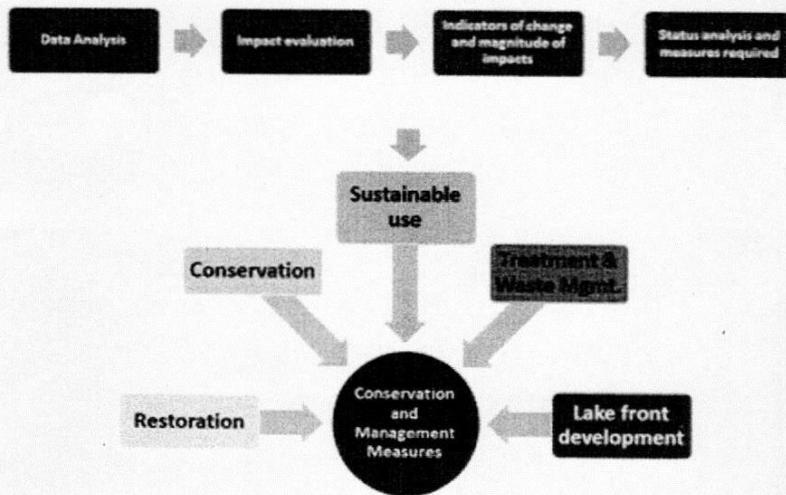
- Drainage basin alterations
- Waste prevention/ STP/SW Management
- Legal implementations

**Direct methods:**

- Mechanical biomass harvest
- Phosphate flocculation/ precipitation
- Aeration
- Hydrophyte plantation
- Restoration of native fish species
- Algaecide/herbicide treatment



### Lake Conservation and Management Measures



## Wetland Conservation and Management Plan

- Baseline data of the wetland (Physico-chemical, Biological, pollution)
- Activities required as per the baseline status
- Restoration activities, conservation activities and remediation
- Lake front development activities and other sustainable socio-economic activities
- Budget and action plan

### **Schedule:**

#### Inventorization of Wetlands of Goa:

Schedule	Months												
	1	2	3	4	5	6	7	8	9	10	11	12	
Fields Survey	■	■	■	■	■	■	■						
Map preparation, documentation and analysis		■	■	■	■	■	■	■	■	■	■		
Web Portal								■	■	■	■	■	
Draft Reports Writing & Submission												■	■

#### Wetland Conservation and Management Plan:

Schedule	Months					
	1-4	4-8	8-12	12-16	16-20	20-24
Fields Sampling and Survey	■	■	■			
Sample analysis, mapping and interpretation		■	■	■		
Data analysis, delineate management strategies and conservation			■	■	■	
Draft Reports Writing & Submission				■	■	■