

Terms of Reference

Assessment of Contamination, Closure and Containment of Municipal Solid Waste Site at Ukkayyapalli, Kadapa in Andhra Pradesh

Under Capacity Building for Industrial Pollution Management Project, World Bank

I. Background

The Government of India, through the Ministry of Environment and Forests (MoEF) is implementing a project on Capacity Building and Industrial Pollution Management (CBIPMP) with financial assistance from the World Bank. The objective of the project is aligned with the endeavor of the GOI to establish a National Program for Rehabilitation of Polluted Sites (NPRPS) as a framework for scaling up the clean up and rehabilitation of polluted sites and facilitate the reduction of environmental and health risks associated with legacy polluted sites. It also aims to build capacity at the State and Central level and develop a framework to address these issues in a comprehensive and systemic manner.

Project activities will include demonstrative investments for area-based management of pollution resulting from legacy contamination and ongoing industrial activities through (i) remediation/containment of polluted sites / hazardous waste hotspots, (ii) implementation of enforcement and self-regulatory measures to improve compliance and competitiveness of industries in selected industrial clusters, and (iii) upgrading of common environmental infrastructure.

II. Project Components

The main components implemented by APPCB are

1. **Strengthening of Environmental Institutions** - This component is aimed at building capacity for addressing pollution remediation, through pilot site remediation, developing risk-based technical solutions to implement measures for intercepting, containing or treating, as well as monitoring the environment and health impacts in the project areas
2. **Investments in Priority Remediation and Environmental Improvements** - Technical and administrative support for remediation of Noor Mohammad Kunta

Lake near Hyderabad and closure and containment of Kadapa Municipal Solid Waste Site in Kadapa District are taken as priority areas in Andhra Pradesh under this component.

3. **Project Management** - for effective and transparent implementation of the project.

III. Objective of Consultancy

The main objective of this consultancy is (i) to assess the level and nature of contamination (groundwater, surface water, soil) Municipal Solid waste dump site at Ukkayyapalli, Kadapa in Andhra Pradesh (ii) conduct detailed investigations, (iii) prepare technical and engineering designs for containment and closure of Municipal Solid waste dump site (iv) support the bid process and (v) supervise the execution of the remediation works.

IV. Site description

The solid waste dump yard at Kadapa is a 50 year old, with a height of 10-15 feet, and is close to habitation. The dump site is situated near Ukkayyapalli village and surrounded by the residential colonies of Vidyuthnagar and G.K Nagar. (The dump yard has no protection or physical demarcation. Waste has been dumped for several years, resulting in gross pollution of water, soil and air. Rag pickers burn the waste during summer to retrieve metal scrap; the smoke pollutes the air and causes respiratory problems among the public.

V. Scope of Work

Towards achieving the objectives of the consultancy the following broad steps shall be undertaken by the consultancy firm.

Step: 1 Reconnaissance and Preliminary Assessment of the site through site visits, review of existing documents, maps and literature and carry out the following activities.

- Visual inspection
- study of topographical, geological, soil and flood plain maps, land use, rainfall rates, groundwater and soil cover characteristics, flora and fauna, etc.,
- Current status of waste disposal at the site

- study previous site investigation reports and conduct a desk review of type, volume and location of waste disposal at the site
- discussion with local people and other informed people, district administration, municipal and regulatory authorities, NGOS, etc.
- other methods as may be appropriate

The Andhra Pradesh pollution Control Board (APPCB) will share the relevant documents available. The Board will help in acquiring relevant information specific to the project from other Govt. departments on the request of the consultant.

After the preliminary assessment is completed, a report, detailing the physical site and pollution characteristics and the area of containment shall be submitted

Step 2: Development of Sampling Protocol and Sample Analysis

Field investigations shall be conducted to identify the level of pollution. The work will consist the following:-

- conduct sampling to identify areas of pollution
- determine soil characteristics, depth of aquifer and quality of ambient groundwater
- determine pollutant concentration in both soil and groundwater through test pits, bore holes, monitoring wells, nearby water bodies, etc. through soil, groundwater and surface water sampling
- Quality Assurance/Quality Control (QA/QC) Program

A detailed sampling protocol aimed at assessing the pollution level of the site and to establish the baseline environmental status of the project area, shall be developed. The protocol shall include parameters for analysis, sampling frequency (number of seasons), number of samples, etc. and shall be submitted for approval by APPCB.

The samples shall be analyzed for physico-chemical parameters, heavy metals, volatile, semi-volatile and non-volatile organics based on pollutant parameters present at the site and as per national / international testing procedures. All samples may be analyzed at the APPCB Central Lab or any labs recognized by Ministry of Environment & Forests, Govt. of India.

This step based on the above sample analysis shall establish the extent of pollution, characteristics, ranking of pollutants at the project site.

Step 3: Field Investigations of the identified polluted site

The consultancy firm will take up detailed field investigations consisting of, but not be limited to, the following.

- Delineating the area of pollution in both soil and groundwater, through topographic and other engineering surveys, and supplemented by modeling
- Estimating the waste quantum (weight & volume), waste characteristics (pollutants and their concentrations), and level of ongoing leachate contamination
- On-site or affected population report, based on detailed socio-economic surveys and impacts on flora, fauna.

Step 4: Development of closure and containment Plans

The consultant shall

- list and evaluate best options for (i) containment and closure of the dump site (ii) addressing the issues of water and soil pollution in the affected areas, based on cost, complexity, technology, effectiveness, execution aspects, previous performance, safety, locally available skills, etc.
- assess the environmental and social impacts of the proposed option, based on detailed field surveys and investigations
- Recommend appropriate implementation strategies, considering the future land use and based on (i) compliance with the standards as applied in India or standards adopted for similar situations in other countries and (ii) performance based approach that is based on verifiable success in similar situations.
- The implementation strategy should consider options such as technology neutral performance or conventional turnkey or Engineer-Procure-Construct (EPC) contracts. For each of the identified strategy, the consultant will analyze engineering, environmental and contractual requirements.
- prepare detailed designs for the approved option, comprising engineering drawings,

cost estimates and implementation schedule .

- To impart hands on training in situ/on site to the PIU & LIU staff of APPCB.

Step 5: Preparation of Bid Documents and Bid Process Management

Based on the approved, implementation strategy, the consultant will prepare necessary bid documents (RFQ, RFP / tender documents, etc.) and assist the APPCB in the selection of suitable agency for the implementation of remedial activities. The assistance shall include providing technical assistance in the evaluation of RFQ responses, RFP / tender documents and advising the client on the technical matters related to the selection of the agency.

The Consultant shall provide the details of staff & deployment schedule to accomplish the task.

Step 6: Supervising the Implementation of closure and containment activities

The consultant shall supervise the implementation of the containment and closure plan, to ensure that all the activities are being carried out as per approved design and agreed terms and also provide technical advice on the quality of work. Duration of supervision will depend on assessment report and approved implementation schedule.

The scope of supervision will comprise (i) ensuring that all the activities agreed as part of the contract complied with the technical standards (ii) monitoring the progress of work in accordance with QC/QA (iii) supervising the day to day implementation activities, and (iv) contract management, quality of works

Step 7: Validation of Containment Measures and Long term monitoring

The consultant on completion of the closure activities will carry out suitable investigations / monitoring to establish that the project objectives have been achieved. The consultant shall also recommend a long term monitoring plan for key environmental attributes.

VI. Data, Services & Facilities to be provided by APPCB to

1. Relevant data and reports available with APPCB and MOEF.
2. Facilitate correspondence with relevant agencies; However, it will be the sole responsibility of the consultancy firm to get the necessary data and reports.

VII. Consultancy firm Qualifications

The consultancy firm must have experience in implementing closure and containment of municipal solid waste disposal sites

List of Professional Positions who's

Sl. No	Key Position	Area of Specific Expertise Desired	Minimum Qualification and Professional Experience Desired
1	Team Leader	Municipal solid waste site investigation, liability assessment, remediation closure techniques, Municipal solid waste management, contaminated site investigation, analyzing toxicity and health impacts of contamination, undertaking risks assessment, remediation techniques and costing, environmental and social assessment, ownership issues and legal issues in urban land planning.	<p>Masters degree in chemical, civil engineering or environmental science, technology or engineering or related discipline with minimum of 15 years experience with excellent understanding of environmental issues in industrial sector, regulations, standards</p> <p>Experience in handling external aided projects.</p>
2	Technical Specialists (Env. Specialist/ Landfill specialist / Design specialist)	Institutional Development / Economist / Impact monitoring & Evaluation/RFP preparations and Bid processing as per World Bank procedures/ design and engineering drawings.	<p>Masters degree in environmental planning/science/engineering, toxicology or some related discipline with minimum of 6 years experience</p> <p>Familiarity with Indian industrial setup, Environmental policies, environmental enforcement / compliance structure & issues, urban and industrial sector planning, experience in designing of landfills of Municipal solid waste.</p> <p>Experience in developing design and engineering drawings.</p> <p>Working experience in external aided projects</p>

VIII. DELIVERABLES

The entire assignment is expected to follow all the guidelines of World Bank and necessary approvals as required must be taken from APPCB. The assignment shall be for a duration of 26 months, which includes about 10 months for the detailed assessment and design of approved remediation option, 4 months for bid process management and 12 months to supervise the implementation of remediation plan. The delivery schedule for the assignment shall be as follows.

1. Site Assessment and Development of Sampling Protocol (step 1 and part of step 2)– within 2 months of mobilization
2. Sample Analysis and Assessment of Site Pollution Levels (part of step 2 and step 3) – within 8 months of mobilization.
3. Development of Draft Containment and Closure Plans including a separate environmental and social assessment report (Step 4) - within 9 months of mobilization.
4. Submission of Final Containment and Closure Plan (CCP) including a separate environmental and social management plan– within 10 months of mobilization
5. Preparation of Bid documents (step 5) – within two weeks of approval of CCP
6. Bid Process Management including technical evaluation, bid evaluation reports, etc. (step 5) – Month 11 to 14
7. Monthly Supervision Reports during implementation (step 6) – Month 15 to 26. (The payment will be linked to Containment and Closure work schedule.)
8. Validation and Long term Monitoring Program (step 7) – within 8 weeks of completion of the CCP.

All deliverables will be provided by the consultant in color hardcopy (10 copies) and in electronic form.

IX. Procedures for Review of Reports

The reports submitted by the consultant/firm would be sent to all the members of the committee by APPCB and Technical Evaluation Panel (TEP) of MoEF. The consultant would be required to make presentation of all the reports as per the delivery schedule to the above referred review committee and seek its comments. Review committee recommendations would need to be incorporated / implemented by the consultancy firm.