Annex 8: Environmental Management Plan (Summary)

Overview

1. **Introduction.** The proposed Second National Drainage Project is anticipated to have a positive environmental impact and contribute to improved land and water management in Egypt. The provision of subsurface drainage would help maintain the water table at low levels and prevent water logging and soil salinization. Preparation of the proposed project has included field-based environmental review by representatives of the EPADP, and DRI. The proposed project is the seventh of a series of World Bank-supported investments for the subsurface drainage and builds upon earlier environmental work which included input from the Egyptian Environmental Affairs Agency (EEAA) and the United States Environmental Protection Agency (USEPA). A review of the environmental issues associated with the Proposed Project was prepared to support project preparation (IWACO, August 1999) based on which an Environmental Management Plan (EMP) has been prepared to address environmental issues during the implementation process (EPADP/IWACO, March 2000).

2. **Water Sector Note:** At the request of MWRI the World Bank has initiated a water sector review with respect to institutional issues and water quality management. The resulting Water Sector Note prepared by IWACO and Delft Hydraulics identified as main and most urgent issue the reduction of discharges of industrial and domestic waste water into the water system. A national programme would be needed to accelerate the construction of waste water treatment plants and rural sanitation schemes. Issues for immediate attention are:

   - Increase the re-use potential of waste water flows by treatment, storage through artificial recharge, regulatory and financial measures for industries and agriculture and separation of re-usable and non-re-usable waste water flows;
   - Increase re-use of drainage water along with careful spatial planning of activities (e.g. more salt tolerant crops, aquaculture, specific industrial purposes);
   - Improvement of the legal framework; law 48/1982 is under revision;
   - Set up of organisations for solid waste collection and handling;
   - Upgrading the present water quality monitoring programme; and
   - Capacity building at the MWRI.

3. **Environmental Assessment.** The proposed project has been placed in environmental screening category “B” consistent with the procedure of World Bank Directive 4.01, “Environmental Assessment” and for which an Environmental Assessment (EA) has been carried out. It has been placed in this screening category due to: (a) the limited potential negative environmental impacts associated with construction activities for the drainage work envisaged in the project; (b) routine monitoring measures are in place for maintenance of proper water quality; and (c) special monitoring to minimize risk in selected locations in the project area where domestic and industrial wastewater are discharged into open drains. Given that the focus of the proposed project on drainage is for drainage of existing agricultural land, it is not anticipated that the project would require involuntary resettlement or result in drainage of archeological and/or historical sites. All project related works and actions would be subject to a site specific environmental review by EPADP, as part of the design process, to minimize potential localized environmental impacts, avoid involuntary resettlement and prevent drainage to archeological and historical sites. Environmental assessment would place emphasis, in particular, on subproject locations situated in vulnerable areas such as coastal, and reclaimed deserts and seriously polluted drains.

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6 Water Sector Note on Water Quality Management was prepared (IWACO, 1999),
Environmental Management Plan

4. **Objectives:** An Environmental Management Plan (EMP) has been prepared for the project by EPADP based on the EA. This would facilitate continued integration of environmental concerns into the construction operation and maintenance activities of the drainage system. The EMP would support: (a) establishment of an Environmental Unit in EPADP; (b) training of regional drainage sector staff with view to improving their enforcement capacity; (c) use of site specific environmental review procedures for subsurface and open surface drainage works; and (d) preparation and implementation of local pollution abatement plans for priority areas/drains including support for continued activities in water quality monitoring and improvements by assisting the ministries and industries in the project areas in preparation of Compliance Action Plans (CAP). Items in the EMP which are not covered under the ongoing bilateral activities under the Netherlands or Canadian projects would be included as a fully funded component of the proposed project and would be implemented by EPADP with the support of the Drainage Research Institute (DRI). Detailed discussion concerning the EMP was finalized during appraisal. The EMP includes an environmental mitigation plan and an environmental monitoring plan (see paras 13, 14 of Annex 8) with respect to main environmental issues.

5. **Development of the Environmental Unit in EPADP:** The EPADP, as part of the prerequisite for the proposed project has established an Environmental Unit whose purpose is to coordinate environmental work carried out by DRI, and/or other Government agencies concerned with drainage activities. An important function of the EPADP Environmental Unit would be to create environmental awareness among EPADP personnel assigned to headquarters and regional field offices. The EPADP Environmental Unit would include a staff of four professionals including a Unit Chief. It would undertake the following functions: (a) be responsible for coordinating activities in EPADP related to EA and the EMP; (b) coordinate consultation at site; (c) disseminate environmental information and coordinate environmental training, especially for open drains field operation and maintenance activities; (d) coordinate site specific environmental reviews for activities at new subsurface and open surface drainage and particularly in the newly-added areas and subproject sites in or near vulnerable areas; (e) coordinate in cooperation with DRI water quality monitoring activities concerning open drains; and (f) coordinate the implementation of local pollution abatement plans; (g) communicate with other agencies like EEAA, Ministry of Health, etc.; (h) establish database and maintain monitoring of water quality downstream of mixing stations where municipal water offtakes are operating; and (i) the EPADP Environmental unit would also prepare consolidated environmental reports every six months as an element of the project reporting process (see below).

6. **Environmental Training Program.** The EPADP Environmental Unit would coordinate implementation of a project supported environmental training program to be conducted by DRI. The training program would be conducted at three complementary levels.

   (a) Training would be provided for senior EPADP staff at the level of Chairman, vice Chairman undersecretaries, Director Generals and Unit Chiefs through one or two days seminars promoting environmental awareness and focussing on key environmental issues in system designs, construction and operation and maintenance. These would include review of the impacts of water quality on the life and quality of drainage facilities; application of monitoring data to management decisions; environmental and health concerns associated with the expanded reuse of drainage effluents; and special issues related to industrial and domestic effluents in drainage waters, legislation and policy developments.

   (b) Training for professional staff: Training would be provided to professional staff of EPADP to promote environmental awareness and monitoring aspects of EPADP activities especially those related to Law 48 enforcement activities. One week workshops would be repeated four times a year during the initial two years of the proposed project and then reduced to two times
a year. Training in the workshops would cover water quality and environmental management, including investigation and design issues, operational and maintenance concerns, application of guidelines, collection and interpretation of monitoring data, and the use of environmental management plans.

(c) Environmental Unit Staff: The staff of the EU will receive on-the-job training during EMP execution by the TA component. Besides, staff would receive formal training courses on environmental issues, water quality assessment, data management in order to enable them to understand environmental issues, the "environmental language." Pollution abatement programs abroad may be included as study tours.

7. Site Specific Environmental Review: The EPADP would design and implement a program for site specific environmental review of drainage activities to be conducted under the supervision of the EPADP Environmental Unit and include the use of standardized format including:

(a) review of current environmental conditions at the site, including industrial and domestic discharge, solid waste dumping, etc.;

(b) Assessment of potential environmental impacts associated with drainage activities, including construction impacts such as dust, noise, and disposal of waste materials;

(c) Evaluation of potential environmental issues associated with the operation and maintenance of drainage facilities including the disposal of waste materials;

(d) Review of the potential need for involuntary resettlement due to construction activities;

(e) Review of any potential impacts to archeological and historical site from construction activities, progress in undertaking site specific environmental reviews would be included in reports proposed by EPADP Environmental Unit. These reports would also identify any special issues which arise and outline mitigation measures to address these concerns.

8. Water Quality Monitoring and Management Plan. The EMP would support Water Quality Monitoring Program to assist EPADP in assuring the drainage system in the project area is designed and maintained in an environmentally safe manner. The program would include the following:

(a) Program Management. The Water Quality Monitoring Program would be supervised by a steering committee chaired by the Chairman of EPADP and including representatives of project related institutions (Ref. para 10, below). It would meet twice a year to discuss the status of the monitoring Program, trends observed by the program and measures which need to be taken to address potential environmental issues. The EPADP would work directly with the private and public sector parties to implement the recommendations of the Steering Committee especially when mitigation measures are required to protect water quality. The Environmental Unit would monitor the implementation of mitigation measures and keep the Steering Committee informed of the progress in addressing these issues.

(b) Monitoring Strategy. The proposed project would support a series of water quality monitoring activities in the project areas, to complement the ongoing program of DRI that includes 110 observation points evaluated on a regular basis. Priority will be given to 8-10 sites in the project areas which require special monitoring due to any risks associated with industrial and domestic effluent. The EMP would support Costs associated with special monitoring programs at up to eight locations by contract through DRI. DRI would be requested to prepare Environmental management plans and Compliance Action Plans (CAPs)
for industries and priority ranking domestic polluters in the project areas for corrective actions at these sites on the basis of monitoring data and field studies. The estimated cost of monitoring, preparation and monitoring of implementation of the environmental mitigation plan, and provision of basic equipment for DRI are included under the proposed project. The project would through a contract with DRI also monitor any parts downstream of mixing stations where municipal water supply stations are operational in the project areas and prepare a mitigation or pollution abatement plans. Specific monitoring programs would normally be for periods between 12 to 24 months.

(c) Monitoring Program for Middle and Upper Egypt. Coverage of monitoring in these areas has still not started. The proposed project would support development of a general monitoring program for drains in Middle and Upper Egypt after completion by DRI reconnaissance survey tentatively planned to be completed by the end of June 2000. It is anticipated that the proposed program for this activity would be reviewed by the Steering Committee and requirements for logistical support for the program would be agreed with the Bank by October 2001.

9. Implementation of Guidelines for Mixing of Drainage Water. The growing need in Egypt to more effectively use limited water resources is requiring the reuse of agricultural drainage water by mixing it with irrigation water, which necessitates careful planning, field supervision and monitoring. Current Egyptian procedures for mixing follow; (a) the FAO guidelines on tolerance limits for various crops salinity; (b) the WHO guidelines for various heavy metals and chemical composition of such water and its effect on crops produced for human consumptions. The DRI, with support from the African Development Bank, is currently preparing comprehensive guidelines for mixing irrigation and drainage water under the specific conditions of Egypt. The proposed project would provide logistical support for the application of these guidelines, disseminate them through an environmental training course and support pilot monitoring of their use at two or three locations in the project area, including monitoring of domestic and industrial load pollution at any mixing stations in the project area.

10. Reporting: The EPADP would prepare, as an element of its project reporting requirements, a series of semi-annual environmental reports that outline progress in implementation of the EMP. These reports would be prepared by the EPADP Environmental unit and provide a means for rapid review of the progress in development of the unit as well as addressing specific environmental objectives.

11. Project Supervision: The supervision plan for the proposed project would include the participation of World Bank Environmental staff in selective mission to review progress in implementation of the EMP. It is anticipated that support of these activities would draw upon MNA environmental specialist from headquarters and the resident mission. The environmental performance of the proposed project would be included as a standard element of the supervision reports, including the Mid-Term Review and the Implementation Completion Report. The implementation of the EMP would be supervised by a Steering Committee chaired by the Chairman of EPADP. The Steering Committee would include representatives from MWRI, EEAA, DRI and possibly other institutions directly involved in EMP implementation. Responsibilities would be guiding the EMP implementation progress, facilitating in institutional and legislative issues, main decisions like selection of key sub-project locations with serious environmental issues, guiding the monitoring and enforcement strategies and activities, etc. The Committee would meet twice a year. The EPADP Environmental Unit would serve as the secretariat.

12. EMP Implementation Schedule and Budget. The Environmental Assessment was carried out at pre-appraisal and the draft EMP has been prepared at appraisal and the implementation schedule and budget for this component finalized at appraisal. The implementation schedule will allow EMP activities to be undertaken in a fully integrated manner with other activities to be supported by the proposed project. Preliminary cost estimates have been prepared for the EMP which include contracts for
monitoring services and assistance by the DRI. Training and technical assistance to the Environmental Unit shall be through INTESP Project and NAWQAM, in addition to Government budget.

13. Various international programmes and projects (especially Canadian and Dutch funded) already strongly focus on improvement of the environmental situation and the capacities of the institutions involved. The NDP-II EA report considers the main environmental issues as identified in the Water Sector Note and the EMP is in line with and strongly supports the main recommendations (regulatory measures for industries, influence of planning of domestic treatment, recommendations for re-use as result of site reviews, use and adjust water quality monitoring programme, capacity building at EPADP).

**Environmental Mitigation Plan**

**Introduction**

14. **General.** The proposed Second National Drainage Project II (NDP-II) is anticipated to start during the year 2000 and to be carried out during the period from 2000 to 2005. It is anticipated to contribute to improved land and water management in Egypt. The provision of sub-surface drainage would help maintain the water table at low levels and prevent water logging and soil salinization thus improve drainage performance efficiency. The Project aims at:

- Rehabilitation of old malfunctioning sub-surface drainage systems;
- The provision of new sub-surface drainage in the new areas of the old cultivated lands as well as in the old and new reclaimed lands;
- The deepening and remodeling of the open surface drains.

15. The proposed Project has been placed in environmental screening category “B” consistent with the procedures of the World Bank Directive 4.01, Environmental Assessment and for which an Environmental Assessment (EA) has been carried out.

16. An Environmental Management Plan (EMP) would be prepared for the Project by the Environmental Assessment (EA) Consultant based on the EA. The purpose of the Plan would be to facilitate the continued integration of environmental concerns into the construction and operations and maintenance activities of the Drainage System.

17. On July 1, 1999 as a result of the NDP-II preparations, an Environmental Unit has been established at the Egyptian Public Authority for Drainage Projects (EPADP). In the new organization chart released in December 1999, the Environmental Unit has been placed under the Under-secretary of Planning, Follow-up and Evaluation and depend of the Directorate General of Monitoring and Evaluation.

**Objectives of the Environmental Management Plan**

18. The objectives of the EMP are:

- minimise negative environmental impacts from drainage works/systems;
- establishment of and support to the Environmental Sub-unit in the General Directorate of Planning and Follow-up of EPADP by Ministerial Decree;
- sustainable incorporation of environmental concerns and actions in EPADP activities;
- incorporation of the results of the Environmental Assessment issues report in NDP-II implementation;
- stimulate environmental awareness in the drainage sector, especially within EPADP.
19. The Environmental Sub-Unit ( "Unit" ) would include staff of four to five professionals including a Unit chief. Their main purpose is to function as a liaison between a number of parties involved in the execution of the EMP. It would have the following responsibilities and undertake the following functions:

- **Management:** Maintain data and information, prepare progress reports, prepare steering committee meetings, etc.;
- **Coordination:** Coordinate activities in EPADP related to the EMP; represent the EPADP in environmental matters with external parties involved (DRI, MIWR, EEAA, MOH, etc.);
- **Training:** Organize and attend formal and informal environmental training for EPADP and drainage sector staff;
- **Dissemination:** Disseminate environmental information to the drainage sector;
- **EMP execution:** Coordinate the execution of the environmental mitigation plan and the environmental monitoring plan.

20. The Environmental Sub-unit has been established as a result of the NDP-II discussions during project preparation. Therefore the Unit needs to grow and develop itself during the coming period. This requires support, which has been envisaged. The framework of the Unit is:

- at central level separate Environmental Unit within the M&E Unit;
- at regional/local level in or integration with the five regional M&E units;
- staff consisting of 1 chief and preferably 5 (coincides with number of regional offices) professionals;
- preferably engineers with chemical/biological/environmental background;
- staff should have commitment for implementation basic environmental guidelines.

**Preparation of the EMP**

21. This EMP is the last of three documents comprising the environmental assessment. These are:

- the Water Sector Note on water quality management in Egypt, prepared at the request of MWRI by IWACO under contract of World Bank in 1999;
- the Environmental Assessment Issues report, prepared by IWACO in 1999;
- the Environmental Management Plan.

22. After establishment in July 1999, the Environmental Unit at EPADP continued with their preparations for the Environmental Management Plan (EMP). The following activities have been conducted up to and during appraisal with the support of a local consultant:

- Review/elaborating on the environmental issues report as prepared in August 1999;
- conducting three field trips to Gabal El Asfar, Bahr El Bakr and Giza Governorate;
- preparation of a first draft of the EMP;
- preparation of the draft environmental mitigation and environmental monitoring plans;
- review the institutional capacity of the environmental unit and the required input from DRI in relation to the required activities;
- additional funding of the EMP execution including support to the Environmental Unit; discussions with EIB, KfW, the Netherlands Embassy and the NAWQAM project;

Before initiation of NDP-II the Environmental Unit would continue with further preparations as formulated in the EMP.
Contents of this EMP

23. The EMP is a commitment by Egyptian Public Authority for Drainage Projects (EPADP) to carry out the proposed assessments/reviews and monitoring activities to guarantee environmentally friendly actions and environmental improvement especially with respect to drains under NDP-II. These actions have been made explicit in the form of:

- the approach to the EMP;
- an action plan for the environmental unit of EPADP;
- an environmental mitigation plan including all technical and environmental measures as proposed in the environmental assessment (this especially concerns pollution abatement);
- an environmental monitoring plan in which actions are indicated to control and maintain the quality of environmental measures;
- an overview of required resources, including human resources and materials;
- an update of the cost overview for the implementation of the EMP.

24. For the necessary background information, like for the institutional framework, water quality issues, etc., we refer the reader to the subsequent chapter of the Environmental Assessment Issues Report.

25. This EMP has been established in co-operation with the Environmental Unit of EPADP under supervision of the General Director for Planning and Follow-up.

Approach

26. General. EPADP is responsible for some 19,000 km length of open public drains in the Nile Delta and Valley (lower and upper Egypt). These drains are maintained by contracting companies and the Drainage Directorates General within each of the five (5) Drainage Sectors in the regions. Drainage engineers of the Drainage Sectors are responsible to apply precautions required to minimise contamination of these drains. Within this context EPADP and DRI have carried out source pollution surveys along all primary and secondary drains.

27. EPADP reports violations of law 48 to the competent authorities and through the police, water police of MWRI and courts enforces law 48 of protection of water courses against pollution. Articles 60 to 65 are used for cases of disposal of liquid and solid disposals into fresh water bodies and articles 66 to 69 for disposal in non-fresh water bodies. The data available from EPADP record indicate that the percentage of environmental violations (1993-1999) which were remedied is 52%. This was clearly shown in Annex to the MOU for the appraisal mission dated March 12, 2000.

28. The number of violations against Law 48 has been maintained at a level of 1500 a 2000 per year. However, the number of settled issues has decreased substantially to around 600 per year. The main constraints concern the law itself (see EA issues report, chapter 3), which is under revision, but also the capacity of EPADP regional drainage sectors. The knowledge on environmental issues as well as the availability of transparent information are limited, which constraints their power to track violations, to communicate to the police for enforcement and to provide advice. Also the existence of pollution abatement plans would enhance this capacity.

Main aims

29. On one hand the environmental issues identified during the EA should be incorporated in the process of NDP-II and on the other hand improved sustainability of EPADP operations with respect to environmental affairs would be pursued. Therefore, the EMP objectives have been translated as follows:
Prepare an action plan to cope with the main environmental issues related to NDP-II as identified in the environmental assessment;

Select eight to ten NDP-II areas for preparation and implementation of local pollution abatement plans in order to achieve tangible and even substantial results;

Capacity building of the Environmental Unit to handle internal and external communications in order to cope with implementing the EMP; and

Capacity building at EPADP's five regional Drainage Sectors in view of improving the enforcement performance.

30. **Capacity building.** The Environmental Unit is aimed at becoming a liaison unit for environmental issues. It is part of the Monitoring & Evaluation unit of EPAPD with responsibilities in the field of monitoring drainage performance. Besides technical reviews, there is a system of complaint management through which farmers can express their views on required improvements. The Environmental Unit would have contacts with different parties involved like other parts of the MWRI, EEAA, other ministries, international donors, consultants, etc. Various environmental issues would be part of their subjects and daily work. In order to enable them to carry out this and future environmental jobs satisfactorily, training is required.

31. Many experiences show that a combination of formal training sessions and training on the job along with implementation of activities works most effective. During the last few months support by a local consultant was given in the framework of the preparation of the EMP. Field trips to Gabal El Asfar (treatment plant, re-use of domestic waste water), Bahr El Bakr (main sewage drain from Cairo to lake Manzala) and Giza governorate (various pollution sources) have been held. Moreover, they have worked on available data sets with respect to industrial and domestic waste water disposals.

32. The Environmental Unit has requested drainage engineers to collect information on waste water disposal in the NDP-II areas. More specific information can be obtained if drainage engineers in the regions know more on the background of these questions and in general more on background on Law 48 issues. This would enhance the interactions between the Environmental Unit at central level and the drainage engineers in the various sectors, but also would create a better basis for improving the enforcement capacity and thus water quality in drains in Egypt. Therefore, training for drainage engineers is required with ample attention to legislation, legal responsibilities and background.

Environmental issues

33. The environmental assessment has identified a number of environmental issues to be dealt with during the implementation of the NDP-II programme. A small part of these issues relate to potential impacts generated by the project. The main issues are in principle external to the project interventions; however, they very much relate to the project and to responsibilities within EPADP. This applies for all water quality and pollution issues like re-use of drainage water, disposal of industrial pollution, disposal of domestic waste water, dumping of solid waste, water quality monitoring and the weak enforcement of Law 48. Background information on these issues can be found in the Environmental Assessment issues report.

34. On all these issues considerable progress is made during the last decade amongst others by the implementation of many large projects in the framework of international co-operation. However, problems are immense and still a lot can and has to be achieved. Therefore, a mitigation and monitoring plan have been drafted for NDP-II implementation.
35. In principle the mitigation and monitoring plans refer to all individual project areas throughout the country. However, this would create a very diffuse set of interventions, actions, discussions, site reviews, etc. In order to line up activities in a more effective way, the following is proposed: collection of data and relative simple environmental site reviews for all NDP-II areas, in order to have a certain basis of environmental background information and to assure that no negative impacts occur; a more integrated approach for a selection of 8 to 10 NDP-II areas where a combined set of actions in line with the environmental mitigation plan will be carried out; the basis for these actions would a site specific environmental mitigation plan.

Environmental Action Plan

36. Priority areas. In the Environmental Assessment Issues Report an initial environmental assessment has been carried out with respect to the main environmental features of each new NDP-II drainage command area. In appendix 2, two tables are presented, comprising:

- an overview of those command areas that are selected for implementation of new subsurface drainage within NDP-II, including planning;
- an updated table with the environmental characteristics per command area.

37. Based on these tables, priority drainage command areas can be selected for more intensive and/or focussed environmental management during NDP-II. Part of the actions will be identified for all areas, part for these selected areas only. The preliminary priority areas / commands have been selected to:

- whether downstream problems would occur with respect to re-use, wetlands, other functions;
- the general drainage water quality;
- whether large polluters discharge their waste water in the subsequent areas;
- whether the main drains would already be included in the drainage monitoring system at DRI.

38. In the environmental assessment the status with respect to these criteria determined the seriousness of environmental problems, which has been indicated with one or more “+”. A tentative evaluation resulted in the following key areas:

- West Delta: Idku, El Tabya, El Kaala, Sidi Eisa;
- Middle Delta: Lower nr. 8 PS;
- East Delta: Faraskur, Bahr El Bakr;
- Middle Egypt: Ibrahimiya, Makshouva & Al Sarwe;
- Upper Egypt: More information on the identified environmental issues, possible mitigation measures and other background information is presented in the Environmental Assessment Issues Report.

Outline of the action plan

39. The Action Plan is presented as much as possible in a succession of work packages, activities and tasks built upon each other, both in time and contents. In line with the Unit’s responsibilities the following work packages have been defined:

a. management;
b. training program;
c. dissemination or environmental information exchange;
d. assessment and mitigation.
40. The table below contains all main activities identified for each of the work packages.

Table 1. Overview of work packages and activities

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<tr>
<th>Work package</th>
<th>Activity number</th>
<th>Activity</th>
<th>Links</th>
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<tbody>
<tr>
<td>Management</td>
<td>a.1</td>
<td>Agreements, protocols, contracts</td>
<td>Before implementation</td>
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<td></td>
<td>a.2</td>
<td>Data information acquisition / exchange</td>
<td>Depends on a.1</td>
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<td></td>
<td>a.3</td>
<td>User needs assessment, equipment specification and procurement</td>
<td>Field/lab., cars, office</td>
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<tr>
<td>Training Program</td>
<td>b.1</td>
<td>Training program identification</td>
<td>At start</td>
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<td></td>
<td>b.2</td>
<td>Training of Environmental Unit</td>
<td>During first year</td>
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<td></td>
<td>b.3</td>
<td>Environmental issues for drainage engineers</td>
<td>After b2</td>
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<td></td>
<td>b.4</td>
<td>Environmental issues for managers and policy makers</td>
<td>Independent</td>
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<td></td>
<td>b.5</td>
<td>Water quality monitoring, data handling and QA/QC</td>
<td>Existing course</td>
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<td>Dissemination program</td>
<td>c.1</td>
<td>Environmental data/information library</td>
<td>From start</td>
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<td></td>
<td>c.2</td>
<td>Public relations: environmental news letter</td>
<td>During NDP-II</td>
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<td></td>
<td>c.3</td>
<td>Publications by DRI</td>
<td>Already scheduled</td>
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<td></td>
<td>c.4</td>
<td>Dissemination material for public consultation</td>
<td>See social assessment</td>
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<tr>
<td>Assessment ad mitigation</td>
<td>d.1</td>
<td>Environmental field assessments / reviews</td>
<td>After b3 and b4</td>
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<td></td>
<td>d.2</td>
<td>Preparation of site specific pollution abatement plans</td>
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<td></td>
<td>d.3</td>
<td>Water quality monitoring program</td>
<td>After b3 and b6</td>
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<td></td>
<td>d.4</td>
<td>Coordination on EA by the Unit: environmental mitigation (see mitigation plan)</td>
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<td></td>
<td>d.5</td>
<td>Coordination on EA by the Unit: environmental monitoring (see monitoring plan)</td>
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<td></td>
<td>d.6</td>
<td>Reporting</td>
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All work packages and activities have elaborated upon systematically in tables (in the Appendices) in which all tasks per activity are spelled out. The tables also contain an introduction as well as a present status description. Performance indicators are indicated as well.

Action plan for work package “Management”

41. The key task of the Unit is the coordination of environmental issues and work carried out by the EPADP, DRI and/or other Government and private agencies concerned with drainage activities. The objective of work package a. is to develop coordination with internal and external parties, to establish agreements on cooperation and data transfer and to arrange required equipment for NDP-II. An important item concerns agreement with DRI on support to the NDP-II in general and to the monitoring activities in specific. This action plan has been attached as Appendix 3.
Plan for work package “Training”

42. The training would be coordinated by the Environmental Unit and carried out by others like DRI. The environmental training programme would be conducted at three complementary levels of the EPADP organisation. These concern the level of drainage engineers in the Drainage Sectors, the Environmental Unit and management and decision making staff. The whole package would create considerable environmental awareness at EPPADP.

43. For the level of Director Generals one or two day seminars can be organised to promote environmental awareness by focussing on the key environmental issues in project design and implementation. Also the main national policy issues especially with relation to the water sector should be discussed.

44. The Environmental Unit will receive both formal and on the job training. As the staff should be able to learn the “environmental language”, they should receive training on all major environmental and water quality issues. Through the support during preparation mitigation plans, reviews, negotiations with industries, etc., they obtain hands on experience very valuable for their operations.

45. The drainage engineers who are responsible for law 48 enforcement, would be supported with workshops in which water quality issues will be discussed with clear cases (e.g. mitigation plan implementation). The training sessions should clearly link up to legislative aspects and a reasonable enforcement of the law.

46. The training plan would as much as possible be integrated with the ongoing activities of the NAWQAM project. This action plan has been attached as Appendix 4.

Action plan for work package “Dissemination / information exchange”

47. Another important function of the Environmental Unit is to create environmental awareness by the proper use, management and dissemination of environmental data/information. For internal purposes a library will be established which is accessible for any drainage project. News letters on environmental issues in drainage projects and their progress can be prepared for the drainage sector. Environmental concerns can also be incorporated in external presentations. Dissemination to farmers could be arranged through the public participation process (see social assessment). This action plan has been attached as Appendix 5.

Action plan for work package “Environmental Assessment”

48. The main objective of this part of the action programme is:
   - to co-ordinate the execution of the environmental mitigation plan including local pollution abatement plans;
   - to co-ordinate and partly execute the environmental monitoring plan;
   - to carry out environmental reviews for NDP-II projects under planning and execution.

49. This work package is a direct result of the initial environmental assessment, which has identified the main environmental issues. Through environmental reviews by the DRI / EPADP, the initial assessment will be verified and further elaborated upon in detail. For example industries will be identified and selected for approaching them to comply. These actions in principle apply for all NDP-II areas. However, strong focus will be given to the preparation of local (area or site specific) pollution abatement plans for 8 to 10 selected priority areas.
50. This action plan has been attached as Appendix 6. Moreover, the details with respect to the general environmental mitigation plan and the environmental monitoring plan are incorporated in the following chapters.

Environmental Mitigation Plan

Overall plan

51. The environmental mitigation plan is a result of the environmental assessment activities and covers the main identified environmental issues. Most of the issues will not be generated by the NDP-II interventions themselves, but are however related and linked to the drainage sector in general and the NDP-II command areas in specific.

52. For each environmental issue, mitigation measures are indicated, preliminary responsibilities are defined and further reference is given.

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Env. Issue</th>
<th>Mitigation measure</th>
<th>Responsibility</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Water quality in general</td>
<td>- monitoring drains in general; - monitoring of drains in drains, of effluents, at mixing points in priority areas</td>
<td>C: DRI/Env. Unit E: DRI</td>
<td>- see preliminary program below</td>
</tr>
<tr>
<td>2.</td>
<td>Industrial discharge in drains</td>
<td>- estimate concentration, load and impact - Advice on compliance (CAP) - Enforce regulatory framework - Keep tight database of pollution loads and violations</td>
<td>C: Env. Unit E: DRI / EPADP / Drainage Sectors (MWRI)</td>
<td>- Contact and advice from EEAA - Letter from EPADP / MWRI - see procedure below</td>
</tr>
<tr>
<td>3.</td>
<td>Domestic discharge in drains</td>
<td>- Determine/estimate concentration, load and impact on priority for waste water treatment on functioning of sanitary systems, if any</td>
<td>C: Env. Unit E: DRI / EPADP / Drainage Sectors</td>
<td>- Contact and advice from EEAA - Contact and advice to NOPWASD</td>
</tr>
<tr>
<td>4.</td>
<td>Unacceptable water quality downstream</td>
<td>- advice on mixing drainage and irrigation canal water; - advice on re-use of drain water; - advice on re-use of domestic waste water; - advice on source for drinking</td>
<td>C: Env. Unit E: DRI / EPADP / Drainage Sectors</td>
<td>- Contact and advice to MWRI, Irrigation Sector - Advice to the Ministry of Health</td>
</tr>
<tr>
<td>5.</td>
<td>Dumping of solid waste in drains</td>
<td>- cover drains along solid waste sensitive stretches</td>
<td>C: Env. Unit E: EPADP</td>
<td>- about 6 km. of coverage is available - Contact relevant municipalities</td>
</tr>
<tr>
<td>6.</td>
<td>Involuntary resettlement due to drain construction</td>
<td>- advice on resettle alternatives - compensate affected people</td>
<td>C: Env. Unit E: EPADD / MWRI</td>
<td>- Contact people affected; see social assessment (minor issue)</td>
</tr>
<tr>
<td>7.</td>
<td>Cultural heritage (archaeological and historical sites)</td>
<td>- apply chance find procedure (if archaeological evidences, stop activity and bring in</td>
<td>C: Env. Unit E: contractors</td>
<td>- see procedure below - items incorporated in contractor contracts</td>
</tr>
</tbody>
</table>


### Preliminary monitoring strategy

54. Water quality monitoring in Egypt is carried out by various organisations with different purposes. An overview of the responsibilities has been given in the Environmental assessment Issues report. Main deficiencies in the monitoring programs concern irrigation canal water in general and drainage canal water in the Nile Valley. DRI has a continuous monitoring effort for the drainage canals in the Nile Delta and Fayoum; this effort has special emphasis on the mixing locations. The NDP-II monitoring support would be oriented to:

- A general drainage canal monitoring component including the Nile Valley to complement the existing gaps; funding would be organized through the NAWQAM project (Canadian funded; recipient of the monitoring component is DRI);
- A specific monitoring component in the priority drainage command areas as identified in the preliminary environmental assessment; funding would be born by adjusting the ongoing program where required; most of the priority areas are situated in the Nile Delta.

55. The monitoring would cover general parameters as well as pollution parameters (32 parameters). Reference is made to the full spectrum analyses by DRI at part/all of the mixing stations. The programme considers maximum 10 priority areas during a period of maximum 3 years per command area and a monitoring frequency of 4 to 12 per year. The monitoring locations are related to effluents, mixing stations and other critical issues for each command area.

56. The project will support the provision of basic monitoring equipment for the monitoring activities by DRI as well as the local M&E Units of EPADP in the regions.

### Industrial Compliance Guidelines

57. The principal items of environmental legislation which control industrial compliance are:

- Decree of the Prime Minister 338 of 1995, Executive Statutes of the Law on Protection of the Environment;
- Law 48 of 1982, on Protection of the River Nile from Pollution;
58. The major environmental licensing requirement concerns for all industrial facilities:

- should comply to Law 48 and Decree 8 with respect to their effluents;
- should have completed the process of environmental impact assessment (EIA). This assessment must be approved by the Egyptian Environmental Affairs Agency (EEAA); This approval forms what is called the operating permit;
- details of the approved EIA, including technical specifications and any attached conditions must be recorded on an official register by the facility operator. Such a register must be kept for a minimum of 10 years;
- the EEAA will audit the register on an annual basis and can prosecute for any non-compliant activities or emissions;
- for discharges in the River Nile, canals and drains legislation requires a permit for the discharge of industrial wastewater;
- if there is any deviation from the register in the criteria or specification of any emitted pollutant, then the operator must notify the EEAA by writing with the details of this deviation and what is being done to correct it. It is up to the facility, installation or establishment to take the appropriate samples in order to demonstrate compliance.

59. With respect to identified (either before or during NDP-II execution) industrial effluents in the NDP-II command areas the following procedure will be applied:

- industries will be informed concerning the above guidelines;
- industries will receive a formal letter requesting for water emission data and documents;
- compliance will be analysed with these documents and additional water quality data;
- in case of non-compliance industries will be requested to draft a compliance action plan (specific measures with a planning to comply); in principle advice can be given;
- EPADP will write a letter to that industry for MIWR and EEAA to enforce the Law in case of non-compliance and reluctance to prepare a compliance action plan.

Cultural Heritage Assessment Guidelines

60. The known NDP-II project areas concern agricultural lands without known major culture heritage. Unknown heritage might be in the underground, but since subsurface drains are constructed at shallow depth, there is little chance to discover them during works.

61. Unknown heritage should be managed through chance find procedures (needed for unexpected discoveries of previously unknown buried sites and features during excavation and construction). Chance find procedures should include the following guidelines:

- the method and procedures to notify the cultural heritage authorities in case a find is suspected;
- the waiting period required before work can resume after a chance find occurs and measures for care of found objects are implemented;
- development of measures to avoid, minimize or mitigate impacts including possible excavation or salvage operations;
- monitoring of heritage sites and the use of chance find procedures;
- training in heritage conservation and management as needed.

Guidelines for preservation of cultural heritage are being incorporated in the contracts for civil works.
Ecological sensitive areas

62. According to the environmental legislation, a permit is also required for the operation of any installation within 200m off the coast to protect marine waters. This distance has also been applied as criterion with respect to the distance to sensitive areas in NDP-I. For NDP-II the same criterion and consequences will be in force. This means:

- check if NDP-II drainage construction works are planned within 200 m from ecologically sensitive areas; for the NDP-II programme this mainly concerns the lakes along the northern coast line;
- field drain installation should be limited to the inland side of coastal drains;
- if projects are planned beyond the coastal drains, environmental assessment should be carried out prior to these works.

Site specific (local) pollution abatement plans

63. The mitigation measures under point 1 to 5 of the table 1. will be dealt with in the framework of site specific pollution abatement plans. These plans would be drafted for the drains in a selection of 8 to 10 NDP-II drainage command areas. A preliminary selection of priority areas has been made in the previous chapter.

64. The actions in the site specific pollution abatement plans will be based on the difference between the currently actual or predicted water quality in drains on one hand and legislation and for the functions acceptable (future) water quality in the other hand. Actions are:

- water quality monitoring in case of insufficient data, within the NAWQAM monitoring framework;
- determination of realistic targets for water quality improvement;
- compliance of industries and/or preparation of compliance action plans (CAP’s) in line with the targets;
- adjustments of the NOPWASD programme for implementation of treatment systems for domestic waste water;
- coverage of drains at critical locations with solid waste disposal in drains;
- monitoring of water quality in the relevant drains will be continued to determine any changes.

65. The NDP-II interventions for the priority areas will be planned at a later stage as much as possible after drafting the site plans and (partial) implementation. With such a procedure EPADP can supply an integrated intervention, which combines technical (drainage) and environmental actions in one package.

Environmental Monitoring Plan
General planning

66. For all identified environmental issues for which mitigation measures have been defined, we have developed clear indicators for monitoring and evaluation purposes.

Table 3. Environmental Monitoring Plan

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Environmental issue</th>
<th>Indicators</th>
<th>Monitoring frequency</th>
<th>Responsibilit y</th>
<th>Remarks</th>
</tr>
</thead>
</table>
| 1.  | Water quality in general | - Number of samples taken in priority areas;  
- Number of samples analysed;  
- in general: progress NAQWAM project | 4 to 12 times per year per priority area | DRI (NAWQAM project) | - agreement required EPADP/DRI/(MWRI)         |
| 2.  | Industrial discharge in drains | - Number of industries in NDP-II areas;  
- Number of letters to industries;  
- Number of violations stops;  
- Number of CAP's;  
- Number of letters from MPWWR to EEAA to industries;  
- improvement water quality downstream; | 2 times per year in progress report | DRI Env. Unit | Improvement relates to industry specific indicators to be determined |
| 3.  | Domestic discharge in drains | - Number of main discharges in NDP-II areas;  
- Number of letters (and contact) to NOPWASD;  
- Number of adjusted priorities in master plan; | 2 times per year in progress report | DRI Env. Unit |                                              |
| 4.  | Unacceptable water quality downstream | Number of advice letters to MWRI | 2 times per year in progress report | DRI | - strictly related to measure 1. |
| 5.  | Dumping of solid waste in drains | Meters of coverage along sensitive stretches | 2 times per year in progress report | EPADP | - budget for 6 km. available |
| 6.  | Involuntary resettlement due to drain construction | Number of people to be resettled;  
Number of people resettled; | Determine for each drain prior to and after rehabilitation/construction | Env. Unit with local drainage engineers | - way and amount of compensation is main criterion |
Egypt: Second National Drainage Project

<table>
<thead>
<tr>
<th></th>
<th>Cultural heritage (archeological and historical sites)</th>
<th>Number of valuable sites encountered; number of sites with action of arch. Experts</th>
<th>Continuous application of procedure</th>
<th>Local drainage engineer</th>
<th>- securing any valuable site encountered is main criterion</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Disposal of weeds</td>
<td>occasions of contact of humans to disposal</td>
<td>Regular (/week)</td>
<td>Local drainage engineer</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Ecologically sensitive areas</td>
<td>Sensitive area (m²) within 200 m.</td>
<td>Determine for each area prior to construction</td>
<td>Env. Unit</td>
<td>Probably none</td>
</tr>
</tbody>
</table>

67. The environmental monitoring plan will be partly executed through the environmental site reviews by DRI and Environmental Unit staff. Progress will be reported in progress reports and discussed with the Steering Committee. The Steering Committee will be informed in case of structural non-compliance to the EMP in order to take necessary strategic steps.

**Environmental site reviews**

68. In order to achieve a proper implementation of mitigation measures, but especially to maintain a strict monitoring on the main environmental issues and quality control of measures, environmental site reviews by DRI and the Environmental Unit would be conducted prior, during and after the interventions (at least 3x for each NDP-II priority command area).

69. Site reviews should be conducted according to a standard format. The format will be based on the general environmental mitigation and monitoring plans. The environmental site reviews would include the following:

- review of the current environmental conditions at the site;
- verification of the main environmental issues (see table 2 of Appendix 1);
- specify the EMP (especially the mitigation measures) for each NDP-II command area in case of pre-implementation review (use general environmental mitigation plan);
- monitor the implementation of the EMP (use environmental monitoring plan);
- provide advice on the implementation where required or requested;
- reporting.

**Reporting**

70. The following reporting activities would be incorporated:

- for each environmental site review of an NDP-II area a standard review form should be completed;
- site specific pollution abatement plans are presented in the form of reports;
- the water quality monitoring programme should be reported four times a year by the implementing agency (DRI); the reports should include recommendations for the environmental issues 2, 3 and especially 4.
- in case of involuntary resettlement separate notes or reports with respect to characteristics of resettlement and compensation;
- in case of unexpected cultural heritage notes or reports on characteristics and actions;
twice per year preparation of a progress report on the environmental management plan (EMP).

71. The progress reports will be discussed during the half yearly Steering Committee meetings. The Steering Committee consists of the Chairman of EPADP, the Chairman of DRI, a representative of the MWRI and a representative of EEAA. The Environmental Unit staff will provide the logistic and secretarial services. The responsibility of the Steering Committee are:

- review the EMP progress during NDP-II execution;
- advice on strategic and institutional issues;
- advice on adjustments in the implementation of the EMP, if required;
- approve the progress report and the half year planning.

The progress reports and the findings of the Steering Committee are subjected to World Bank review.

Implementation Conditions

72. Resources and materials. This listing provides an indication of the minimum required resources, human, technical and physical to carry out the Environmental Management Plan (EMP).

<table>
<thead>
<tr>
<th>Human resources</th>
<th>Task description</th>
</tr>
</thead>
<tbody>
<tr>
<td>At least five (5) members of staff with a chief as follows:</td>
<td></td>
</tr>
<tr>
<td>- Three (3) Irrigation/Drainage/Civil Engineers in charge of 5 Sectors</td>
<td>Provision of professional input in the Site Specific Environmental Reviews and Environmental Management Plan</td>
</tr>
<tr>
<td>- One (1) Communication/Graphics Staff Member (part time)</td>
<td>Provision of input in communication, graphics techniques and effective presentations for Dissemination and Public Relations</td>
</tr>
<tr>
<td>- One (1) DataBase/GIS/AutoCAD Staff Member (part time)</td>
<td>Provision of input for the Unit in Data/information Entry and Conversion</td>
</tr>
<tr>
<td>- One (1) Environmental Trainer/Consultant/Institutional Specialist</td>
<td>Provision of input and instruction in the environmental aspects of the EMP, application of environmental information as well as the coaching for the EMP implementation</td>
</tr>
<tr>
<td>- One Chief Staff Member</td>
<td>Provision of organizational and managerial functions</td>
</tr>
</tbody>
</table>
**Table 5. Overview of hardware required**

<table>
<thead>
<tr>
<th>Hardware</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>One (1) <em>Work Station</em> consisting of a powerful computer, laser printers (black and white and colour), high end A3/A4 colour printer for presentations, A3/A4 scanner, A0 colour scanner and an A0 Plotter.</td>
<td>HW and SW for data/information entry and conversion; for mapping; for display and for presentation</td>
</tr>
<tr>
<td>One (1) digital camera</td>
<td></td>
</tr>
<tr>
<td>One (1) GPS</td>
<td>For positioning and location marking when taking samples</td>
</tr>
<tr>
<td>Four (4) field vehicles 4 X 4 for Environmental Unit and DRI</td>
<td>For data/information collection, sampling and field observations and environmental assessments</td>
</tr>
<tr>
<td>Five (5) sets of simple analyses and sampling equipment for the 5 regional M&amp;E laboratories</td>
<td>Supplied by NAWQAM project</td>
</tr>
<tr>
<td>Office equipment, furniture, etc. for Environmental Sub-unit;</td>
<td></td>
</tr>
</tbody>
</table>

**Table 6. Support and services to the EMP implementation**

<table>
<thead>
<tr>
<th>Support by</th>
<th>Description</th>
<th>Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drainage Research Institute</td>
<td>- execution of water quality monitoring;</td>
<td>Continuous involvement</td>
</tr>
<tr>
<td></td>
<td>- advice on mitigation measures;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- preparation of site specific EMP for each priority area, including CAP’s;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- support to environmental site reviews;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- reporting water quality monitoring including recommendations;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- support to progress reporting;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- development and contribution to environmental and water quality training;</td>
<td></td>
</tr>
<tr>
<td>MIWR, EEAA, NOPWASD, etc.</td>
<td>- advice and legal actions</td>
<td>In case of actions, further on a regular basis</td>
</tr>
<tr>
<td>Senior local consultant</td>
<td>- regular support, phasing out after 4 years</td>
<td>For 3 years half time, then 2 years quart time, during subsequent years support upon request</td>
</tr>
<tr>
<td></td>
<td>- support to format preparation for activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- support to specific environmental site reviews</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- support to site specific EMP; CAP preparation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- support to communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- support to reporting</td>
<td></td>
</tr>
<tr>
<td>International consultant</td>
<td>- process management</td>
<td>For 3 years 2 months/year, then for 2 years 1 month/year</td>
</tr>
<tr>
<td></td>
<td>- strategic environmental advice</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- supervision on EA and EMP matters;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- review reporting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- advice to the Steering Committee</td>
<td></td>
</tr>
</tbody>
</table>

Note: Consultancy support is limited due to available funds
Cost estimates

The cost of the environmental component is based on:

**Investments:**
- Based on Table 5;

**Services:**
- monitoring (sampling and analyses) based on Section 2.2; it comprises 10 sites 6 times per year at 3 locations by DRI for 2 years per site;
- Local services further based on Table 6;
- Local services further based on Table 6;

**Miscellaneous:**
- 2 seminars for decision makers;
- 3 workshops for EPADP professionals at central and regional level;
- 10 training sessions (2 at each regional office) for operation and maintenance staff;
- miscellaneous cost

Table 7 comprises the tentative cost estimate for the EMP during the course of the NDP-II programme. Separately, the cost breakdowns are attached in which also the main funds for the cost items are indicated.

### Table 7. Tentative cost estimate

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Item</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit cost (US$)</th>
<th>Cost (US $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>Investment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Laboratory equipment</td>
<td>L.S</td>
<td>5</td>
<td>10,000</td>
<td>50,000</td>
</tr>
<tr>
<td></td>
<td>Office equipment</td>
<td>Set</td>
<td>2</td>
<td>10,000</td>
<td>20,000</td>
</tr>
<tr>
<td></td>
<td>Car (Env. Unit/DRI)</td>
<td>Number</td>
<td>4</td>
<td>35,000</td>
<td>140,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(210,000)</td>
</tr>
<tr>
<td>B.</td>
<td>Services</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sampling</td>
<td>Number</td>
<td>864</td>
<td>20</td>
<td>17,000</td>
</tr>
<tr>
<td></td>
<td>Flow measurements</td>
<td>Number</td>
<td>864</td>
<td>50</td>
<td>43,000</td>
</tr>
<tr>
<td></td>
<td>Lab. Analyses/report</td>
<td>Number</td>
<td>864</td>
<td>100</td>
<td>87,000</td>
</tr>
<tr>
<td></td>
<td>Preparation of monitoring</td>
<td>Number</td>
<td>10</td>
<td>1,500</td>
<td>15,000</td>
</tr>
<tr>
<td></td>
<td>reports/advice for follow-up</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mitigation plan/CAP's/site</td>
<td>Sites</td>
<td>30</td>
<td>3,000</td>
<td>90,000</td>
</tr>
<tr>
<td></td>
<td>Final report</td>
<td>Number</td>
<td>1</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(262,000)</td>
</tr>
<tr>
<td>C.</td>
<td>Training</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Development of programme</td>
<td>Number</td>
<td>2</td>
<td>10,000</td>
<td>20,000</td>
</tr>
<tr>
<td></td>
<td>and course materials</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Overseas visits</td>
<td>Missions</td>
<td>18</td>
<td>4,000</td>
<td>72,000</td>
</tr>
<tr>
<td></td>
<td>Manager Workshops</td>
<td>Staff days</td>
<td>30</td>
<td>1,000</td>
<td>30,000</td>
</tr>
<tr>
<td></td>
<td>Prof. Seminars</td>
<td>Staff days</td>
<td>70</td>
<td>1,000</td>
<td>70,000</td>
</tr>
<tr>
<td></td>
<td>Local training</td>
<td>Number</td>
<td>10</td>
<td>2,000</td>
<td>20,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(212,000)</td>
</tr>
<tr>
<td></td>
<td>A,B,C-</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Contingencies</td>
<td>10%</td>
<td></td>
<td></td>
<td>68,400</td>
</tr>
<tr>
<td></td>
<td>Sub-total cost</td>
<td></td>
<td></td>
<td></td>
<td>752,400</td>
</tr>
<tr>
<td></td>
<td>Foreign support</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Staff</td>
<td>Month</td>
<td>6</td>
<td>16,000</td>
<td>96,000</td>
</tr>
<tr>
<td></td>
<td>Per diem</td>
<td>Day</td>
<td>180</td>
<td>150</td>
<td>27,000</td>
</tr>
<tr>
<td></td>
<td>Ticket</td>
<td>Number</td>
<td>20</td>
<td>600</td>
<td>12,000</td>
</tr>
</tbody>
</table>
### Egypt: Second National Drainage Project

<table>
<thead>
<tr>
<th>Nr.</th>
<th>Item</th>
<th>Unit</th>
<th>Quantity</th>
<th>Unit cost (US$)</th>
<th>Cost (US $)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Local consultants</td>
<td>Month</td>
<td>24</td>
<td>4,000</td>
<td>96,000</td>
</tr>
<tr>
<td></td>
<td>Local cost</td>
<td>Month</td>
<td>36</td>
<td>500</td>
<td>18,000</td>
</tr>
<tr>
<td></td>
<td>Contingencies</td>
<td></td>
<td>10%</td>
<td></td>
<td>24,900</td>
</tr>
<tr>
<td></td>
<td>Sub-total cost</td>
<td></td>
<td></td>
<td></td>
<td>273,900</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>1,026,300</td>
</tr>
</tbody>
</table>

Note: the cost items slightly deviate from the official allocations.

- **Cost for equipment (US$210,000.-)** will be born from the IBRD budget;
- **Cost for sampling and analyses (US$262,000.-)** may be partly covered by the Canadian NAWQAM project (still to be checked) and partly by government budget;
- **Cost for training (US$212,000.-)** may be born from the NAWQAM budget and government budget;
- **The international component of the institutional strengthening and support to the Environmental Unit (DFL 500,000.-)** will mainly be born from the Dutch funded INTESTP project.