

PN-A CD-569
98787

URBAN AND ENVIRONMENTAL SERVICES PROJECT
Contract No 608-0221-C-00-6000

**ENVIRONMENTAL ASSESSMENT AND PROJECT REVIEW:
REPLICABLE TECHNIQUES AND LESSONS LEARNED**

Prepared For

**United States Agency for
International Development**
Rabat, Morocco

The Office of Environment and Urban Programs

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March 1997

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EXECUTIVE SUMMARY

OBJECTIVES

The objectives of the current international consultant mission, as specified in the terms of reference, called for the following

- 1 A review of past and current projects of the Agence National de Lutte contre l'Habitat Insalubre (ANHI) and the Fond d'Equipement Communal (FEC) to evaluate the effectiveness of environmental review procedures, both in general terms, addressing the all elements of the environment that affect or are affected by a project, and, particularly, in terms of the impact of those procedures on water resources sustainability, and
- 2 A preliminary report on techniques of environmental analysis and design that can be replicated in other projects,
 - lessons learned,
 - identification of case studies for use in training workshops, and
 - input to the refinement of procedures for environmental analysis, planning and review

The emphasis of the TOR was on ANHI projects and on aspects of project design that were in the direct control of ANHI. However, towards the end of the mission, the consultants were requested to place greater emphasis of the activities of FEC and municipalities as well as the environmental impacts of wastewater and solid waste disposal. These requests have been addressed in this final report to the extent feasible based on the previously agreed-upon focus of the mission and will be given greater attention in the second mission.

ACTIVITIES

Prior to the mission, Mr Sefiane Benyahia assembled all the documents that could be of relevance to the mission and assessed the experience of ANHI and the FEC with environmental review procedures. He also reviewed past and current projects for the purpose of selecting a representative array of projects for site visits to examine the effectiveness of the review procedures. In accordance with the Terms of Reference, the focus was on ANHI projects because of its more extensive experience with project planning and review.

During the mission, the international and local consultants have visited projects in Marrakech, Meknes, Fes and Rabat and have consulted with the ANHI chefs d'antennes in each of those cities, as well as with the ANHI Chief of Projects, technical staff at the FEC, the Chiefs of the Environment and Housing Offices of the USAID Mission, and the Chief of Party of the Water Resources Sustainability Project.

Some modifications were made to the workplan during the latter part of the mission, placing greater emphasis (as originally proposed in Functional Activity 501) on sanitation, solid waste and the needs of the FEC. In addition, it was necessary to focus to a greater degree on aspects of the approved workplan which relate to the Mission's Strategic Objective #2 and water resources sustainability in particular.

The report addresses progress on certain recommendations made by the authors in the Programmatic Environmental Assessment (PEA) of the USAID HG-004 Program and carries forward plans for implementing other PEA recommendations. The report's proposals and recommendations are also intended to strengthen linkages among the HG-004 Program, activities being carried out under the MUES Project, and the third of the USAID's principal initiatives with respect to urban environment, the Water Resources Sustainability project.

The document provides the preliminary recommendations for a technical training workshop that will be conducted during the consultants' next mission to expose technical staff of ANHI, FEC and other agencies to techniques for environmentally-responsive, efficient, and cost-effective site

selection, environmental assessment, and project design. The report also proposes an approach to training selected staff of ANHI and FEC as trainers as well as other elements of a recommended environmental planning action plan for the two principal target agencies.

KEY FINDINGS

A review of past ANHI projects indicates that a number of them show attention to environmental factors in their planning and design. There are notable examples of ANHI's leadership in solving environmental problems, such as the planning of interceptor sewers at Al Manar in Marrakech. However, sensitivity to the environment does not appear consistently from project to project. Moreover, there appear to be relatively few projects which exhibit a sufficiently comprehensive understanding of and response to environmental constraints and opportunities.

Since 1993, when the Programmatic Environmental Assessment (PEA) of the HG004 Program was prepared, the environmental sensitivity of both ANHI and the FEC has increased. The use of an environmental checklist was proposed in the PEA as a first step to encourage greater attention to environmental issues in project planning, not as an end in itself. Accompanied by the appropriate training and practice, and with proper annotation, the checklist is a valuable tool -- an aide-memoire for the local project manager, an important source of information for decision makers, both within ANHI and the FEC and their partner organizations, and a means of proactively introducing environmental considerations into early project planning, making the formal environmental assessment or impact study required for a majority of projects by the Ministry of the Environment more effective.

ANHI followed up the PEA by introducing the formal use of environmental checklists in 1994 and completing them for all of the HG004 projects. However, an understanding of the purpose and benefits of the checklist has not been disseminated widely and deeply among the staff. The procedure therefore tends to be viewed as a burden rather than as an aid to improved project planning which can help to reduce costs and increase affordability, protect public health and safety, and increase the attractiveness, and hence the rate of absorption, of projects.

At the FEC, the content of the checklist is used informally and there is a desire for the preparation and use of formal checklists that relate to specific sectors as well as assisting in sensitizing municipalities to the environment and help them in setting priorities among needed improvements and choosing project types and technologies. Observations and discussions during the mission strongly suggested the need for additional attention by the FEC to the two key environmental problems addressed in the Programmatic Environmental Assessment: the collection and especially the treatment of solid and liquid wastes.

PROPOSED PLAN OF ACTION

In recognition of the fact that comprehensive environmental planning is still very new in Morocco, the following coordinated activities are to assist with internalizing the approach and techniques of systematic environmental assessment, planning and review:

1. Continuing efforts by ANHI are recommended to expand and deepen the use of environmental assessment procedures within the agency.

2. An initial workshop is proposed for the first half of 1997 for technical staff from ANHI, the FEC, the Ministry of the Environment, municipalities, and consultant offices. Following the format of a similar and very effective event in Lisbon some years ago, the workshop will present environmental planning principles and a case study, providing the facts and instructions needed for a small group planning exercise. Preparation for the workshop and follow-up activities will offer opportunities for beginning the training of selected staff at ANHI and the FEC as trainers.

3 Following the technical workshop, it is recommended that bi-monthly planning charettes take place, focusing on projects being initiated by ANHI or the FEC. Local antenna staff would be required to assemble information needed for the charette, while head office staff would present program and budget objectives. These two-day charettes would be attended by staff of ANHI, the FEC, the relevant municipality, and other partners with an interest in the project under study and would be guided by the local TSS consultants and trainee trainers.

4 In the months between the charettes, it is recommended that ANHI and the FEC meet on a regular basis to seek opportunities for joint projects and perhaps to plan the next charette.

5 A low-technology wastewater treatment pilot project is recommended, with FEC leadership, to provide additional improvement to the environment of a planned multi-developer project in Marrakech. Several activities in the area of solid waste management are also recommended.

6 Two to three staff members from ANHI, the FEC and the Ministry of the Environment will be offered training at a summer course in environmental planning at a francophone university.

7 In support of the increasing attention being accorded to the environment in its planning, ANHI should be given guidance in the establishment of an office of environmental studies. This office would assemble and disseminate environmental studies, offer advice on specific projects throughout the organization, and perhaps eventually carry out research projects.

8 Finally, a national environmental conference is suggested for mid 1997 for the purpose of sensitizing decision makers within the partners of ANHI and the FEC to the need for improved environmental quality and coordination in environmental planning. The conference would be initiated by ANHI but sponsored by the Ministry of the Environment and coordinated with the activity managers of the USAID Mission's Water Resources Sustainability (WRS) Project.

1 INTRODUCTION

1.1 PURPOSE OF THE MISSION

The recent mission addressed Functional Activity #501 Methods of Urban Project Assessment and Planning, under Project Objective 5, Improving the Environmental Quality of Urban Projects, in the first Morocco Urban and Environmental Services (MUES) Annual Workplan

The objective of the overall task is to provide technical assistance and guidance to the Agence National de Lutte contre l'Habitat Insalubre (ANHI) and the Fond d'Equipement Communal (FEC) in the development of effective environmental assessment and project design techniques for maximum feasible avoidance of environmental impacts and creative responses to environmental constraints

The terms of reference for the first task in Functional Activity #501 required the consultants to help the two agencies with an analysis of past projects and to make site visits to document the use of assessment criteria and identify replicable techniques and lessons learned

1.2 RELATIONSHIP OF TASK 5 TO THE REVISED MUES WORKPLAN

Since preparation of the contractor's first MUES work plan, changes within the USAID Mission in Morocco with respect to its organization and strategic objectives have required reorganization and expansion of the environmental components of the MUES Project. In order to ensure that the Mission's Strategic Objective #2 Improved Water Resources Management in the Agricultural, Urban and Industrial Sectors, is addressed directly, the environmental component of the work plan has been expanded from two activities previously to 8-9 rearranged or new activities. The revised project work plan is attached in Annex A

It should also be noted that the terms of reference for the first task in Functional Activity #501 required the consultants to help the two agencies with an analysis of past projects and to make site visits to document the use of assessment criteria and identify replicable techniques and lessons learned. The emphasis of the approved TOR was on ANHI projects and on aspects of project design that were in the direct control of ANHI. Towards the end of the mission, however, the consultants were requested to place greater emphasis of the activities of FEC and municipalities and the environmental impacts of wastewater and solid waste disposal. These requests have been addressed in this final report to the extent feasible based on the previously agreed-upon focus of the mission and will be given greater attention in the second mission.

1.3 REPORT CONTENT AND RELATIONSHIP TO OTHER USAID PROJECTS

This final draft report describes the results of activities defined in the terms of reference, representing the second required output, and also responds to the Mission's broadened MUES requirements as reflected in the recently-revised work plan¹

The report addresses progress on certain recommendations made by the authors in the Programmatic Environmental Assessment (PEA) of the USAID HG-004 Program² and carries forward plans for implementing other PEA recommendations. The report's proposals and recommendations are also intended to strengthen linkages among the HG-004 Program, activities

¹ Functional Activities A 2 1, A 2 2 and B 5 1 1 under the recently revised work plan

² Programmatic Environmental Assessment, Morocco Urban Infrastructure, Land Development and Financing Program HG-IV prepared by Alan Wyatt, Alison Kenning Massa, Driss Benjelloun, Sefiane Benyahia and Abdelali Filali Baba, August 1993

being carried out under the MUES Project, and the third of the USAID's principal initiatives with respect to urban environment, the Water Resources Sustainability project

The document provides the preliminary recommendations for a technical training workshop³ that will be conducted during the consultants' next mission to expose technical staff of ANHI, FEC, the Ministry of the Environment, target municipalities and other agencies to techniques for environmentally-responsive, efficient, and cost-effective site selection, environmental assessment, and project design. The report also proposes an approach to training selected staff of ANHI and FEC as trainers as well as other elements of a recommended environmental planning action plan for the two principal target agencies

14 PREPARATORY WORK OF SEFIANE BENYAHIA

In accordance with his terms of reference relative to improving the environmental quality of urban projects, Sefiane Benyahia, a local consulting engineer, undertook preparatory studies. This first phase of work consisted of collecting available documents relevant to the mission and of defining, with ANHI, the objectives and components of the workplan for the two-week mission of the international consultant

The collection effort addressed the complete set of documents produced to date by ANHI regarding HG-004 (especially with regard to the environment), general documents relative to various cities to be studied, and documents relevant to environmental factors at a larger scale. A list of documents collected is presented in Annex B

Simultaneously, the consultant began an evaluation of actions aimed at improving the environmental quality of projects. He also began an analysis of the various documents prepared by ANHI and FEC in the course of carrying out the program project workplans, policy statements, impact studies, project profiles, and checklists

In the same manner, the consultant examined the different projects within the HG-004 program, looking at the sensitivity to environmental problems demonstrated, the solutions envisioned, and the projects which could serve as case studies. A list of ANHI projects from which significant lessons and replicable actions could be drawn was prepared for the international consultant

Finally, the local consultant reviewed the use of the environmental impact checklist presented in the PEA and introduced with implementation of the HG-004 program. The evaluation was based on examination of the project profiles and on remarks and observations by various senior staff at ANHI and FEC. Particular attention was paid to the efficiency and efficacy of the checklist and to any changes in projects brought about by responses to questions in any of the nine topical areas

During the second phase of work, the local consultant provided assistance to the international consultant in selecting projects for study, arranging and participating in interviews and meetings, and conducting site visits. He also participated in writing portions of the final report under the direction of the international consultant. He was responsible in particular for the sections on project selection criteria, the use of checklists, recommendations for changes to checklists and procedures, and general observations regarding the sensitivity of ANHI and FEC to environmental problems. Finally, the local consultant collaborated in the review and preliminary efforts at refinement of the checklists themselves

³ Functional Activity #501 2 or B 5 1 2 in the modified workplan

1 5 ACTIVITIES DURING MISSION

Accompanied by Mr A Drissi and/or Mr M Chraïbi, the local and international consultants held information-gathering meetings with representatives of ANHI, in the national headquarters and at three regional antenna offices, in Marrakech, Meknes, Fes and Rabat. They made site visits to Al Manar in Marrakech, Marjane I, II and III in Meknes, Oued-Fes, Sahrij-Gnaoua and other projects in Fes, and projects in Sidi Yahia des Zaers and Skhirat.

Meetings were also held with officials of FEC and USAID. Final presentations were made to ANHI and FEC and to USAID. A list of individuals consulted is presented in Annex C. Efforts to schedule meetings with the Ministry of the Environment prior to the end of the mission were unsuccessful. It will be especially important to ensure close collaboration with the Ministry in future environmental activities under the MUES Project.

1 6 CRITERIA FOR SELECTION OF CITIES AND PROJECTS FOR STUDY

The projects studied and visited were selected because they appeared to offer significant lessons and replicable actions and represented examples of large, phased projects including responses to the environment of varying levels of sensitivity, projects involving coordination with municipalities and other builders, and small projects providing good illustrations of sensitive response to the environmental conditions of the site and surroundings as well as the effects of inadequate off-site infrastructure. In accordance with the Terms of Reference, the focus was on ANHI projects because of its more extensive experience with project planning and review.

For purposes of case studies for the first training workshop, the consultants made a preliminary list of projects which offer interesting aspects and whose specific characteristics support some generally applicable principles. While the list is not exhaustive, the projects all in some way illustrate physical and environmental constraints, and planned or realized responses and measures to mitigate potential adverse impacts. They include Al Manar at Marrakech, Marjane at Meknes, ANHI projects at Sefrou, Fes and Tanger, and Sidi Yahia at Sidi Yahia des Zaers. Each of these, together with additional observations based on field visits, desktop study of plans and reports, and knowledge from prior missions, is described in Annex D.

2 0 THE HG-004 PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

2 1 ENVIRONMENTAL IMPACT FINDINGS OF THE PEA

The Programmatic Environmental Assessment (PEA) of the Morocco Urban Infrastructure, Land Development and Financing Program (HG-004) described the adverse impact on the environment of the growth of Moroccan cities, in large part due to the persistence of uncontrolled urban growth in bidonville slums and clandestine neighborhoods. It found that no significant adverse impacts would be created as a result of projects financed and/or managed by ANHI under the HG-004 program and that the projects were mitigating many of the adverse impacts of urban growth through slum removal and rehousing, clandestine neighborhood upgrading, and provision of serviced residential land affordable to families who would otherwise settle in slums and clandestine neighborhoods.

The PEA recognized that these ANHI projects could not, by themselves, mitigate the most significant adverse impacts of urban growth--those resulting from the discharge to the environment of untreated wastewater collected by sewers installed in the projects and from inadequate collection and unsound disposal of solid wastes. It concluded that the collection of wastes from ANHI projects for untreated disposal to the environment at a distance from the residential area was an improvement upon prevailing conditions in bidonville and clandestine communities. Full mitigation of these two impacts would require liquid and solid waste treatment systems.

Installation and operation of treatment systems was seen as a long-term process since they were beyond the current financial and managerial capacity of Moroccan municipalities and neither financially nor administratively feasible for ANHI due to its mandate. However, the requirement that participating municipalities, assisted by the HG-004 program, prepare Sewage Master Plans (SDAs) was seen as an important first step in this process. The proposed program was also to provide technical assistance and training to assure that these same municipalities would prepare Solid Waste Management Studies appropriate to their needs.

2 2 TRAINING AND TECHNICAL ASSISTANCE RECOMMENDATIONS OF THE PEA

The requirement that each participating municipality, assisted by the proposed HG-004 program, prepare a Sewage Master Plan (SDA) was seen as an important first step in this process. The proposed program was also to provide technical assistance and training to assure that these same participating municipalities prepare appropriate Solid Waste Management Studies. Finally, the HG-004 program was to support for the long-term development of solutions to these problems through assistance to the municipal governments and the Municipal Infrastructure Fund (FEC). In advance of the capacity to provide full wastewater treatment, the PEA urged that consideration be given to construction of pre-treatment ponds wherever additional discharge of untreated liquid wastes would have an unacceptable direct or cumulative impact.

The PEA also recommended a comprehensive range of training and technical assistance programs to assist in realizing these mitigation measures as well as achieving additional improvements in project environmental quality beyond those required to address the most significant of the potential impacts. The programs addressed liquid and solid waste collection, treatment and disposal, sensitization, or environmental awareness, training for ANHI staff and consultants, municipality staff and elected officials, and project beneficiaries, environmental planning and impact assessment methodology, and environmental monitoring. It was anticipated that implementation of the program of training and technical assistance would enhance the Government of Morocco's institutional capacity to integrate environmental considerations and review procedures more fully into its planning and decision-making process when investing in and designing urban infrastructure projects.

2.3 ENVIRONMENTAL ASSESSMENT RECOMMENDATIONS OF THE PEA

In addition to the two most significant adverse impacts, the evaluation of the proposed program identified certain other potentially significant impacts resulting from on-site activities or off-site construction and service provision. Recommended measures that could mitigate such impacts to less-than-significant levels included, on the part of ANHI, more in-depth surveys and assessment of site characteristics for even more environmentally-sensitive site planning, measures for water and energy conservation, and improved construction practices, supervision, and control of sources of construction materials. With respect to the first of these, the PEA recommended an early examination of the environmental circumstances and potential impacts of any project to be undertaken by ANHI or financed by FEC. To assist in that examination, it recommended the use of an environmental assessment checklist.

The PEA noted that ANHI had generally incorporated environmental considerations into its project plans. It also noted that USAID's environmental procedures require a preliminary study, known as an Initial Environmental Evaluation (IEE), to determine the need for a complete environmental assessment.⁴ However, the PEA's additional recommendations were made because a review of selected ANHI projects suggested the need for

- more systematic assessment of the contents of applicable regional/municipal master and sanitation plans,
- more systematic assessment of on-and off-site environmental conditions and response to those conditions in the preparation of site plans, and
- greater attention to design details for further improvement of project environmental quality

Experience in the United States indicates that even an Initial Environmental Evaluation is prepared after much of the planning of a project has been completed. It is now clear that reliance on environmental impact assessments prepared on projects once they have been designed is unwise, because

- such assessments do not always achieve results, i.e. effective mitigation of impacts,
- they rarely result in the relocation or redesign of a poorly conceived project, and
- by adding one or more studies to the overall planning time frame, project costs are increased

The CEQA Initial Study takes the form of an annotated impact checklist. Used at an earlier time in the planning process, such a checklist (or adaptations of it) can be a valuable aid to ensuring environmentally-sensitive, comprehensive and creative approach to project planning and design. They can also prompt analysis that results in improved safety, salability and cost-effectiveness of projects. A modification of the CEQA list was successfully developed for and used at a Portuguese National Institute of Housing training workshop in 1992 and that modification, the CEQA Initial Study checklist, and an example from South Africa were included in the PEA. (They are presented here in Annex E.)

⁴ The IEE is modeled on the US National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) which both include a preliminary step designed to determine the need for a complete Environmental Impact Study. However, the study known as an Environmental Assessment under NEPA and an Initial Study under CEQA, is prepared on a development application by the government agency from which approval is sought. Since the project has already been planned, little opportunity exists for any necessary or desirable rethinking the approach to the project.

2.4 RECENT FOLLOW-UP STUDIES

The recent mission aimed to assess the degree to which the recommendations have been put in place and the effectiveness of the recommendations. The following chapter describes the findings of a review of project documents and site visits and the effectiveness of the use of checklists by ANHI and FEC. The review aimed to provide the basis for recommending improvements to environmental assessment and project design procedures and confirming or refining previous recommendations for training and technical assistance.

3 THE RESPONSE TO THE PEA -- OBSERVATIONS AND FINDINGS FROM INTERVIEWS AND CASE STUDIES

This chapter summarizes the consultants' findings on the effectiveness of attention to environmental matters over recent years. The findings are based on interviews with staff at ANHI and FEC, review of recent studies, examination of program and project documents, and first-hand observation, over time in some cases, of projects in the case study cities.

3.1 SANITATION

Sanitation remains the most severe environmental problem facing Morocco's cities. As indicated in the previous chapter, the PEA concluded that the projects undertaken by ANHI were environmentally beneficial because sewage was piped away from the residential areas, and some measures were taken to facilitate solid waste collection. Some progress has been made, particularly in the area of solid waste, as discussed below. However, the time has come to deal with the issue of wastewater and solid waste treatment because of the accumulating environmental impacts.

As the urban population continues to grow, air, rivers and groundwater are becoming increasingly polluted and drinking water increasingly scarce. Development pressures and the scarcity of land suitable for development in many cities are additional reasons for ensuring that attention is paid to these basic impacts in future project planning. Examples of land made undevelopable by the discharge of untreated sewage and projects stalled because of proximity to uncontrolled solid waste dumps are mentioned below and presumably are not uncommon. Since the substantial loan and grant funds once anticipated for treatment facilities are unavailable, it is necessary to address these issues with realism and creativity.

3.1.1 Wastewater Collection and Treatment

Progress has been made towards completion of Sanitation Master Plans (SDA) by a number of cities. However, expectations made about grant funding sources have not been realized while the expectation of cost recovery from individual development projects is unrealistic (The comments of the former Chief of Tetouan's Environmental Division are instructive in this regard -- see Annex D). In addition, from inspection of the SDA for Tetouan, insufficient focus appears to have been placed on alternative technologies and small-scale treatment facilities.

In these circumstances, ANHI has shown leadership in addressing problems of sewage collection and disposal. For example, for the proposed Al Manar project in Marrakech (see box and Annex D), it commissioned a feasibility study of means to divert three sewers that discharged 70% of the city's waste near the site. The study freed up much of Sraghna, the last remaining easily developable sector of the city for development and took an approach that coordinated the actions of the municipality, another Government-sponsored housing project (to be developed by ERAC), and private developers. However, the proposed solution merely displaces the impact since the new interceptor sewer will discharge to the environment at a location in the general direction of the city's proposed, but as yet unfunded, sewage treatment plant.

Wastewater in the existing sewers crossing the Al Manar site are ultimately used, and in some cases specially diverted, to irrigate vegetable fields. They thus have significant direct health impacts in addition to continuing to contaminate the ground water in the aquifer 3 meters below the surface. Although it would be unrealistic to expect that user charges, even if imposed on all of the developments in the Sraghna district, could support conventional treatment plant construction, they could perhaps support preparation of a pre-treatment pond to at least reduce pathogen levels before discharge or use. This would be in line with the recommendations of the PEA.

Going further, it would be desirable to investigate the feasibility of low-technology, low-cost alternatives which might offer water of a quality for which farmers could be charged. With the

addition over time of lagoons and then of reed beds and/or artificial wetlands to pre-treatment ponds, high quality water could be available for aquifer recharge and cleansing and for low-cost potable water treatment. However, leadership of such efforts would be beyond the mandate of ANHI and should be taken by the FEC or, preferably, by the municipality under the guidance of the FEC. The FEC could be assisted with gaining an understanding of alternative technologies and with techniques for assisting municipalities make informed choices about the most cost-effective technologies and priorities, as well as building capacity to manage treatment systems.

3 1 2 Solid Waste Collection and Treatment

The PEA identified the need for studies on solid waste, addressing site selection and design of future landfills. This recommendation has been met already with preparation in 1995 of two solid waste studies under the MUES Project in the three target municipalities in Meknes, Sefrou and Azrou,⁵ The studies, and especially the learning experience for the municipalities through application of landfill site selection criteria, represent a major step forward in the capacity of municipalities to improve collection and treatment of solid waste.

In addition to providing landfill site selection criteria which offer a good basis for a sector-specific checklist for the FEC, the first study also contains some lessons that should be reflected in revision of the general planning checklist. It describes a proposed market project which has been unable to proceed because it is downwind of the Sefrou solid waste dump, which may require closing despite its remaining 10-20 years' capacity and potential to become a controlled landfill. In addition, the study suggests ways in which the physical design of projects can facilitate garbage collection.

In several of the projects visited, the absence of solid waste collection was evidence of the need for FEC's assistance to municipalities with improving solid waste collection (for which the Dohrman assessment offers important guidance). In Sharj-Gnaoua in Fes, for example (see box and Annex D), despite the advances made over the past three years, the streets and open lots are strewn with garbage, greatly diminishing the enhancement of the environment and quality of life that other improvements have brought about.

Referring to Dersa and Samsa in Tetouan, the PEA noted that "the productivity of solid waste collection had not been significantly improved, even though more is being collected. Physical constraints may not have been removed sufficiently for efficient collection. While education and sensitization of new owners may help to reduce the problem of indiscriminate disposal of garbage in the community, they alone will not be enough to control the problem. Moreover, treatment and/or satisfactory landfill conditions are not being provided."

In the improvement of Sraghna douar near the Al Manar site in Marrakech, huge accumulations of solid waste in the streets and all round the settlement were a clear illustration of the need both to develop effective garbage collection and disposal services and to educate residents about more appropriate garbage disposal. Similarly, at Marjane in Meknes, where a major effort has been made to protect the historic city walls, the space between the double walls is filling with garbage.

Education should be addressed as part of, or through, the sensitization component of the MUES (Functional Activity #502). The Dohrman reports identify the need for more specific studies, to provide national waste management standards for Morocco, institutional and financial guidelines and a national medical waste policy, as well as addressing institutional questions associated with improving collection systems and constructing and operating controlled landfills.

⁵ Preliminary Assessment of Solid Waste Management Systems in Meknes, Azrou, and Sefrou, Morocco, James A. Dohrman, July 1995, Conceptual Landfill Design for the Urban Community of Meknes Morocco James A. Dohrman, October 1995

3 2 STORM DRAINAGE

The increasing shortage of uncontaminated ground water and the mounting rates of hillside erosion and sedimentation, as well as the cost of storm sewers, make it critically important to protect opportunities for groundwater recharge from reasonably clean storm runoff. At the same time, as discussed later in this chapter, protection of significant vegetation and natural drainage channels have important aesthetic and recreational values.

Projects inspected showed varying degrees of response to the recommendation that where feasible natural channels be retained and managed for storm drainage and multi-purpose open corridors. At Oued-Fes in Fes, the earliest of ANHI's prevention projects, a drainage channel was diverted along the contours of the hillside above the development to other channels on either side.

From the point of view of the project concept and site planning, the PEA pointed out that the Oued-Fes site lies at the foot of a slope, which, although neither particularly long or steep, nevertheless shows clearly drainage channels. The roads and plots have been laid out across the channels. According to ANHI, this was not considered to be a problem because of the heights of the hills. However, it appeared to be another indication of the need for greater attention to storm drainage, preferable using natural drainage patterns.

Marjane in Meknes is a more recent example of a project where advice to maintain a natural drainage channel has been followed. ANHI has determined that this approach represents a substantial cost savings despite the need to install large gabion walls at a bend in the stream. In addition, it preserves some semblance of a natural ambiance on the site and adds significantly to its character. A wider open space corridor to contain the creek could have led to greater cost savings (through the construction of gabion baskets rather than a wall), more usable and imageable open space and greater potential for contributing to ground water recharge.

In Marrakech, the Al Manar site is traversed by several seasonal drainage courses, or talwegs, which flow towards the River Tensift. Two small rocky hills interrupt the overall flatness of the site and create the potential for locally intense runoff. In presenting the site plan for Al Manar, staff of the local ANHI office suggested that drainage patterns had been respected and that extensive green space had been provided. The plan suggests at least a recognition of the presence of the talwegs. However, major streets, with narrow central green strips, are located within each one. Clearly, this defeats several purposes of the concept of maintaining and enhancing natural drainage.

- the green spaces will be difficult to maintain,
- they will not be accessible and usable,
- the costs of storm drainage will not be reduced because site runoff will need to be conveyed underground, and
- the storm drainage will not be detained and allowed to percolate into the aquifer.

3 3 OTHER ASPECTS OF ENVIRONMENTAL PLANNING AND MANAGEMENT

3 3 1 Green Space

As ANHI pursues its objective of becoming more financially self-sustaining, its need is increasing to manage site development costs and raise its rate of absorption through affordability and attraction. These factors can be in conflict, however, as illustrated by the Marjane project in Meknes. Since 1993, pressures to maximize developable area have led to decisions to permit building on some of the designated green space. As a result the required overall 3% ratio of green space has been cut by approximately 50%. This is a significant impact on the urban

environmental quality of a relatively dense development and underscores the importance of using every opportunity to plan for multi-purpose open space

While, as indicated in the discussion of storm drainage, a natural channel has been maintained at Marjane, the open corridor containing the channel is too narrow for an effective multi-purpose green space. The reason for the narrow corridor and the consequent need for a gabion wall is to allow lots to be developed in close proximity. In future projects, it would be instructive to conduct a cost benefit study comparing the additional cost of improvements and the effects of lost opportunities to include some of the required green space in and adjacent to the corridor with the revenue generated by the increased number of lots. Examination of alternative configurations of open space and densities would also be valuable.

The plans for Al Manar in Marrakech illustrate another green space concern. In addition to the green strips in the road medians, there are several other small green spaces located in inaccessible or barely accessible places. They look attractive on a formal site plan. However, some rethinking of the location, recreational and aesthetic use, and other functions of open space is in order. By concentrating the green spaces, perhaps adjacent to a landscaped talweg, they could be made larger, more usable and easier to maintain.

At present, all the plans turn their backs on the two hills. Portions of the hills might be used to increase the interest of the site. Possibilities include planting trees to reduce runoff and erosion, and creating a trail to a park and viewpoint. Because Marrakech is predominantly flat, the opportunity to enjoy a view over a part of the city could be an attractive aspect of the development.

Finally, the part of the Sraghna sector, to be developed by ERAC, is the only part to contain a significant amount of natural vegetation, some of which is wetland. While ANHI would be unlikely to plan the removal of important vegetation, it could perhaps play a role in assisting the municipality to encourage plan modifications and greater integration of development plans in such cases.

In Sharif-Gnaoua, the most striking impression of this second visit was the completed entrance road which had a pleasant, urbane ambiance. Play areas on this very large and steeply sloping site appeared to be largely absent except for a play field on the level hilltop. The original olive groves only vegetation represented the only vegetation on the site, raising questions about how long they will remain.

3 3 2 Soils and Geologic Conditions

There may be a need to pay more careful attention to physical site conditions. In Oued-Fes, concern about the modification of drainage patterns discussed in 3 2 1 is increased because the soils on the hillside exhibit expansive characteristics. A series of longitudinal cracks is visible in and adjacent to the road which runs along the contour at the upper end of the site. It would be interesting to know whether this factor was recognized at the time the site was planned and whether the dam constructed to convey storm drainage away from the site is showing any signs of instability. While Oued-Fes is an early project, problems with expansive soils were also observed at Skhirat, in the Rabat region.

3 3 3 Proposed Land Use and Overall Site Planning

ANHI has exercised a leadership role in the matter of wastewater in Marrakech. However, it appears that little, if any, cooperative planning for Sraghna has taken place to integrate the land use planning of the municipality, ERAC, private developers and ANHI. The sector is also an example of an opportunity for the FEC to influence municipal infrastructure choices.

Although a map of site conditions was prepared, it is unclear to what extent site environmental conditions, other than those related to drainage and waste transport and disposal, were analyzed in preparing the plan for ANHI's proposed project. For example, it appears that the dense

streamside and wetland vegetation along the southern edge of the site will be removed by the ERAC project. If so, this raises questions about whether a more integrated planning effort could have saved some of this vegetation by increasing densities elsewhere.

3.3.4 Connection with the Urban Area

The Oued-Fes project contains no open space because a city park was designated in the vicinity and development was promised by the municipality. However, the designation has since been changed. No provision for bus stops was evident, despite the distance of the site from the city.

At least one project, Skhirat, was visited which had been developed prematurely in terms of the pattern of urbanization in the nearby metropolitan area. The distance to jobs and the absence of bus service have kept most of the lots unsold for an unacceptably long period.

3.4 SUMMARY OF OBSERVATIONS OF PROJECTS IN STUDY CITIES

After visits to some dozen projects in six cities, the general impression is that much of what ANHI does is sensitive to the environment. However, there is both a lack of consistency from project to project and a frequent lack of comprehensiveness and imagination about how environmental factors are addressed in project plans.

The greatest attention, of necessity, has been given to matters of wastewater collection and disposal, followed by storm drainage. Additional attention needs to be given, through a partnership involving ANHI, FEC and affected municipalities, to treating liquid wastes and to improved collection as well as treatment of solid wastes. In addition, there is a need to address a greater range of environmental factors in order to save costs, protect health and safety, and create a sense of place in each project that will speed sales and contribute to the general quality of life.

The following are a preliminary set of lessons learned from the site visits (Annex D).

1 Site/Project Selection

- a Where possible, select projects early enough to be able to guide a plan coordinated with other producers and to guide their activities (case in point: Al Manar),
- b Ensure that sites are not impacted by wastewater discharge areas or streams or downwind of uncontrolled landfills,
- c Select projects based on a consideration of growth patterns and rates, the availability of jobs and transportation and competitive projects (case in point: Skhirat),

2 Site Suitability/ Project Concept

- a Prepare an assessment of site conditions and identify constraints, are there areas that should not be developed or where site preparation will be too costly?
- b Determine early what the target market wants, tie market studies with environmental considerations in developing and refining the project program and project concept -- if densities can be increased in part of the site in order to leave others open, will they sell?
- c Consider early whether the costs of needed infrastructure can be shared and whether there is the potential to reduce costs, for example, by retention of natural drainage channels.

3 Site Assessment/Design

- a Having prepared an analysis of site conditions, use it, make sure to identify opportunities as well as constraints (contrasting cases in point Al Manar and Sidi Yahia des Zaers),
- b Consider whether required open space can perform more than one function -- storm drainage and protection from flooding, aquifer recharge, protection of natural vegetation, avoidance of areas with problem soils, buffers for historic structures, etc
- c Consider what existing or potential residents consider important For example, in the Sraghna douar, it is clear that much money had been spent on installing wide sidewalks but that there were no gutters It would be interesting to know whether the residents were consulted regarding their preferences and what wet weather conditions are like

4 THE USE AND EFFECTIVENESS OF ENVIRONMENTAL REVIEW PROCEDURES

4.1 THE USE OF ENVIRONMENTAL REVIEW PROCEDURES BY ANHI

4.1.1 The Introduction of Checklists and Related Environmental Review Procedures at ANHI

As noted in the Introduction, the checklist was introduced by the Programmatic Environmental Assessment in July 1993 and included in ANHI's Environmental Plan of Action in October 1994. From that date on, all eligible projects under the HG-004 loan were accompanied by a project profile, of which the checklist was an integral part.

In principle, the checklists are to be completed by project managers at the regional antenna level and transmitted to ANHI's head office. In practice, a majority of the checklists were completed in the head office by the Director of Projects who manages all information regarding the characteristics of ANHI's various projects. (See Annex F for a sample completed checklist.)

The program workplans developed for the program by ANHI⁶ established environmental studies, databases and analyses based on the findings of the checklist on each project. These analyses assembled and analyzed the responses to the questionnaire in the nine broad areas: geology and soils, drainage and water supply/quality, flora and fauna, slope and aspect, land use, urban infrastructure, services, cultural features, and other considerations.

The environmental studies allowed the development of a series of environmental protection policies and procedures aimed especially at the collection and treatment of liquid wastes.

Even though the questionnaire is easy to complete, its use has attracted the attention of the project managers, and in some cases effectively sensitized them, offering a better understanding of the problem of nuisances and the need to respect the natural world.

The other notable aspect of ANHI's new practices has been the use, since 1995, of an environmental section in all feasibility studies and evaluations of newly identified projects. In the terms of reference for these studies, a supplementary requirement has been introduced which calls for the analysis of the impacts of implementation of a future project on the natural environment and of mitigation measures which can reasonably be anticipated at the urban level or put in place by ANHI as part of the project.

The new approach is taken further in many cases by performing feasibility or impact studies on specific topics which allow further integration of environmental considerations into the context for project identification and design. The interceptor sewer study for the Al Manar sector in Marrakech is a good recent example.

⁶ Plan d'exécution de la première tranche et Re-actualisation du plan de 1994

4 1 2 List of ANHI Projects for Which Checklists have been Used

Table 1 shows the projects for which checklists have been used All of the HG-004 projects must receive an environmental evaluation for each annual implementation plan

TABLE 1 ANHI PROJECTS WITH COMPLETED CHECKLISTS

YEAR	# PROJECTS	PROJECT NAMES	CITY
Premier Debloquage	13	Al Qods 2 Al Qods 3 Koucha- Saada Koucha Extension Chouiber Oued-Fes Anbar Rgaia Ben Dibane Riad Al Qods 2? Al Massira Mahgreb Al Arabi R mel	Taza Taza Taza Taza Guercif Fes Tanger Tanger Bouznika Khouribga Beni Mellal Kenitra Inezgane
1994	5	Assaka Dayat Begra 1 Amal El Kheir 1 Ain Lhayat 2	Tikioune Khemisset Attaouia Tanger Skhirat
1995	5	Assara Dayat Begra 1 Al Inbiat Al Fath 1 Ennouzha	Khenifra Meknes Khouribga Khouribga Ait Ourr
1996	4	Bikkaren S Yahia Zaers Al Wahda 1 Fedalat	Agadir S Yahia Zaers Ouled Tama Fedalat
TOTAL	27		

4 1 3 General Needs Reported by ANHI

The senior staff of ANHI report that they find the availability of a checklist useful. However, they are anxious to see more details added and more factual information and studies indicating why environmentally sensitive planning is beneficial. In addition, they wish to see the use of checklists conveyed on a more systematic basis to the younger project managers throughout ANHI and its regional antennas.

In the course of discussions during the consultants' mission, questions have been raised about whether a single checklist is suitable and effective for every sort and size of project, whether it is possible to answer a checklist for a project of only 200 hectares if the important decisions have already been made at an earlier stage and a larger scale, especially within the SDAU and SDA, and whether it is useful to require a project manager to go through the exercise even if not much can be altered. A positive answer can be given to each question. However, the fact that the questions are being asked underscores the need for training in site and project environmental assessment.

4 2 GENERAL EXPERIENCE AND NEEDS REPORTED BY FEC

As a lender of funds for infrastructure projects, the FEC offers advice on the choice of facility and determines whether adequate financing can be made available. It thus has the capacity for important direct and indirect effects on the environment. The FEC's General Policy Statement has identified wastewater collection and treatment, collection and treatment of solid wastes, and the construction of abattoirs, souks and markets as project types which have potential adverse impacts on the environment and thus require an environmental impact study.⁷ The FEC's procedures, which are still in preparation, note that, in addition, the Ministry of the Environment requires impact studies for industrial districts and other urban public works projects. The list prepared to date is not exhaustive and the need for an impact study for other types of projects needs to be determined on a case by case basis. For example, the protection and development of public open spaces would not normally require an impact study unless it contained a feature, such as a large swimming pool, with potential for altering the environment.

The FEC recognizes that the procedures proposed by the Ministry of the Environment for environmental impact studies could be a burden on municipalities and possibly act as a constraint to the initiation of projects by municipalities. Thus, to assist municipalities, it recommends that standardized and simplified procedures be developed to guide the stages of a project:

- determining the need for the project,
- determining, through a preliminary review, whether a full impact study or a simple environmental assessment will be required, and
- establishing terms of reference for the impact study.

The agency also recommends, appropriately, a proactive approach to impact assessment, incorporating it into the planning and engineering activities rather than placing the main emphasis on an environmental assessment or impact study after completion of the plan.

The first step, determining the need for a project, requires the FEC to understand the environmental conditions of the types of projects eligible for their financial assistance. This activity is presently guided by a series of questions posed to the decision makers of the municipality concerned regarding the collection and transportation of wastewater and solid waste, the road system, and impacts on the natural environment of a city. The questionnaire is still verbal only and lacks a formal structure. A well-structured questionnaire or checklist could be valuable in rationalizing overall demand for infrastructure improvements, taking account of the

⁷ Projet de Procedure d'Etude d'Impact sur l'Environnement des Projets Municipaux. FEC, no date.

specific needs of each municipality, as well as helping ensure the environmental soundness of development and infrastructure projects. This could then guide a municipality in preparing the environmental component of the feasibility study for the project for which it is seeking financing.

The technical staff of the FEC have indicated that they see checklists as a valuable means of communicating with mayors and city engineers regarding choices among facility types, and ways to save and recover costs. They have also indicated, as they did earlier in 1996, that they would welcome the development of sector-specific checklists, addressing specific project types, such as abattoirs and markets. However, while the consultants are not recommending it yet on a systematic basis, the possibility of requiring preparation of a comprehensive environmental assessment at the overall city level to accompany a loan document may need to be considered in some cases. At a minimum the checklist or lists should serve to guide a municipality's decisions on funding priorities and the interpretation of municipal master plans which tend to lack guidance on the efficient phasing of development. The FEC could thus play a significant role in the sensitization of the cities, who represent important partners in the overall strategy for protection and enhancement of the environment, and reinforce the set of actions recommended for ANHI.

The design of specific checklists, which could be incorporated into annual implementation plans, should collect together the environmental information necessary to guide investigations in an appropriate direction, provide part of the rationale for funding decisions to be added to the set of files on each project financing request, and contribute to a greater sensitivity to environmental matters on the part of the project partners. The design of tailored checklists and the potential for grants from other donors to support specific environmental studies, will be addressed by the consultants in a future mission.

4.3 GENERAL OBSERVATIONS OF THE CONSULTANTS

The ANHI projects visited as case studies suggest that procedures to ensure systematic environmental planning are needed at several scales, ranging from

- assisting municipalities, other GOM housing providers and private developers with preparation of integrated plans for large sections of cities, and
- preparing site plans for large and medium-sized projects, to
- inclusion of environmentally-sensitive features in the detailed design of small projects

ANHI is undergoing significant changes as it grows. Practices which were carried out as a matter of course when the organization operated on a collegial basis need to be institutionalized as part of the new corporate culture. Mechanisms for achieving this institutionalization of good practices include

- training,
- inclusion of practices and procedures in manuals, and
- establishment of criteria for promotion which address experience and performance

These means all offer opportunities for reinforcing the benefits of assessing and responding to environmental factors in project planning, design and implementation, beginning at the earliest possible time in the project cycle. In addition, as responsibility for land management is increasingly devolved to local government, there will be increasing opportunities for ANHI to take a leadership role in developing partnerships with municipalities in order to assure improved environmental quality. Among the functions that ANHI can perform are assisting in coordinating the plans of public and private sector entities and providing training to municipal staff.

The FEC can perform similar functions and, as indicated in the previous section, it may be especially suited to do so because of its role in municipal finance.

TABLE 2

**SUMMARY OF REPLICABLE TECHNIQUES, LESSONS LEARNED
AND REVIEW PROCEDURE EFFECTIVENESS**

Replicable Techniques

- Effective incorporation of environmental concerns into project planning

Examples

- Al Manar Leadership in seeking solution to wastewater collection,
- Marjane Cost saving through use of natural drainage channel,
- Sidi Yahia des Zaers Comprehensive analysis of site conditions and appropriate design response

Lessons Learned

- Inconsistent attention to environmental issues in project planning,
- Lack of comprehensive attention to environmental issues

Examples

- Al Manar site analysis not used to guide site plan,
- Marjane missed opportunity to create multi-purpose drainage/open space corridor,
- Oued-Fes and Skhirat expansive soils and drainage treatment may create problems
- All continuing need to address wastewater treatment

The Effectiveness of Environmental Review Procedures

- Increased importance of the environment to ANHI & FEC since 1993
- Checklist formally incorporated into ANHI procedures, checklist informally used by the FEC
- Checklist and need for environmental review procedures not yet disseminated widely among ANHI staff
- Checklist regarded by ANHI staff as a task, not an aid
- Recognition by FEC staff of the need for refinements to checklists and of the potential value of checklists in guiding communication with municipalities on environmental aspects of project identification and planning

5 RECOMMENDED CHANGES TO THE ENVIRONMENTAL EVALUATION PROCESS

5.1 PHASED PROJECT PLANNING & DESIGN CHECKLISTS & ANNOTATION

As indicated in the previous chapter, a checklist should only be regarded as a means to an end, not an end in itself. If it is viewed as the latter, it will be justifiably regarded as no more than an additional burden of the project manager, serving little valuable purpose. Rather, the environmental checklist should be seen as one tool that accompanies training, technical studies and written policies and procedures. As such, it can be an aide-memoire or a device that prompts the asking of questions in a systematic manner.

In order to fulfill its purpose, two important refinements to the tool presented in the PEA are necessary:

- First, simple completion of the form is insufficient -- annotation is critical,
- Secondly, it is clear that different types of checklists, or evaluation frameworks, may be valuable at different stages of a project or for projects of different sizes.

5.1.1 Project Selection and Conceptualization

The most critical time in the realization of an environmentally sound development is the period of conceptualization. It is then that ANHI has the opportunity to make several key determinations that will affect its ability to effectively use the site, relate efficiently to its neighbors, save money on-site and off-site infrastructure and equipment costs, and create a project that will be absorbed rapidly because its environmental quality appeals to the target market.

ANHI's identification of project targets in the past has tended to represent a simple response to housing needs and site selection in those target areas may have been somewhat opportunistic. In future, ANHI will have a greater need to consider a balance of factors, including:

- the cost of site development and on-site infrastructure,
- the availability of alternative approaches to site development and infrastructure provision that would cut costs,
- the cost of and off-site infrastructure and the potential for cost sharing with partner organizations,
- potential threats to the health and safety of residents that will require special measures to overcome,
- the desires of the target market in terms of housing type -- offering potential opportunities to increase densities locally in order to avoid, rather than modify, environmentally constrained areas of a site,
- special opportunities to create a pleasant and perhaps unique ambiance and provide convenient social services, in order to develop a competitive project, recognizing the increasing need for rapid absorption of lots or units.

Incorporation of all these considerations into the decision about whether and how to use a site may influence the program -- the numbers, sizes and types of lots. To some extent, the information needed to answer these initial questions is available in the SDAU and SDA. However, local investigations and early feasibility studies are likely to be needed to augment the master plans.

A mechanism for systematic early environmental review should be of value to ANHI's decision makers as the need grows for management of cash flow and careful scheduling of projects.

In order to make effective early assessments, it will be important to have staff with an understanding of how environmental factors can be treated as opportunities and the extent to which they will represent costly, unavoidable constraints. To a large degree, such a sense is developed only through practice in working at the more detailed scales described below -- on site assessment and site design once projects have been selected and programmed. As project

managers and their staff gain experience in assessments, they will be able more effectively to assist in site selection and conceptualization decisions made by ANHI's head office

5 1 2 Site Assessment

A systematic site assessment, with maps showing conditions and features and how they represent constraints or opportunities for development, should become a part of each package of project development documents

The maps can be reproduced at a small scale but it is important to be maintain a clear record of how decisions have been made

5 1 3 Site Design

At the detailed site design stage, the checklist can ensure that important aspects of the on- and off-site environment are not overlooked. Annotations can show how constraints have been addressed constructively to assist the reviewer in determining whether alternative designs might be more effective

5 2 KEY DATA OR INFORMATION GAPS

Review of municipal and sewer and water master plans shows that a majority lack the detailed mapping and systematic assessment of environmental factors that would provide a sound basis for land use decisions. Some, such as the Schema Directeur d'Amenagement for Marrakech, show an admirable sensitivity to the environmental and economic imperatives of protecting key elements of the natural and cultural patrimony of the city and the nation. Those features are described and, although not in sufficient detail, mapped, providing a clear basis for the plan's recommendations regarding the direction of growth. Many master plans, however, lack such a clear and defensible analysis

The scale of most master plans is such that insufficient detail is provided on which to base the design of major areas of new development or renovation. This means that an intermediate-scale master plan may be required to provide adequate guidance for a site plan for an area the size of a typical ANHI project. When base data and maps describing the natural and man-made environment are inadequate, additional data collection and analysis are required to support the preparation of a more precise area plan, often called a "Specific Plan."

A quite comprehensive map of site conditions, was prepared as the basis for developing the Al Manar site plan. The map shows, contours, rocky areas, drainage channels, palm trees, other trees, a variety of crops, structures and settlements, roads, sewers, irrigation canals, power lines, and a cemetery. However, it does not appear that these elements were analyzed on a separate map in terms of whether they represented constraints or opportunities to be addressed in the plan. In fact, as discussed in section 2.6, the site plan pays relatively little attention to the factors shown on the site conditions map.

5 3 THE RECOMMENDED CHECKLISTS/PROCEDURES

To assist in preparing the checklist and environmental review procedure, the PEA noted that the draft checklist it presented could be expanded to address the full range of issues from site selection to monitoring activities after construction (see Table 3)

<p style="text-align: center;">TABLE 3</p> <p style="text-align: center;">APPLICATION OF PROPOSED CHECKLIST FOR ANHI PROJECT ENVIRONMENTAL PLANNING, REVIEW AND MITIGATION</p>					
PROJECT TYPE	SITE SELECTION	SITE ASSESSMENT	SITE PLANNING	CONSTRUCTION	MONITORING
BIDONVILLE REMOVAL				●	●
BIDONVILLE REHOUSING PROJECT	●	●	●	●	●
CLANDESTINE UPGRADE		●	●	●	●
CLANDESTINE PREVENTION (SITES & SERVICES)	●	●	●	●	●
MEDINA DEDENSIFICATION AND REHABILITATION		●		●	●

It was recognized that the list would also require refinement, perhaps on a regional basis, to reflect special environmental and regulatory conditions. The list should also address issues related to the full range of ANHI project types. Modifications and improvements will be made in consultation with the staff of ANHI, FEC and the Ministry of the Environment. Once again it should be noted that what is contained in the sample checklist, and whatever is added or modified in a final version, is largely being done by ANHI already. However, no manual or standardized procedures exist to ensure continued consistency or to provide a framework within which ANHI staff can insert improvements based on experience, new information or technical studies.

A preliminary proposed revision to the basic checklist is presented in Annex F, together with the sample of a checklist completed for a HG-004 project (Other examples, previously presented in the PEA, may be found in Annex E.)

6 PLAN OF ACTION FOR ANHI AND FEC

6.1 PROPOSED APPROACH TO ENVIRONMENTAL QUALITY TRAINING FOR ANHI AND FEC

The HG004 PEA noted, it is "most important to design an efficient program [of technical assistance and training] that strengthens an understanding on the part of each agency of the needs, roles and capabilities of other agencies" ⁸ To meet that objective, the great challenge is to achieve an instinctive sensitivity to environmental issues at all levels of government and throughout the population affected by urban policy, from private developers to housing consumers

The consultants recognize that a number of staff members at ANHI and FEC are already sensitive to environmental matters and with training as trainers can become effective in passing on their knowledge and skills to others. Other members of staff, private sector planners and municipal officials who have received relatively little exposure to the need for and techniques of environmental planning will need both initial sensitization and a systematic program of training and technical support

Therefore the following plan of action is recommended

- An effort by ANHI to extend and deepen the use of the current checklist,
- An initial workshop aimed at sensitizing staff and initiating the training of trainers,
- A series of training sessions throughout 1997 scheduled around the conceptual planning stages of new projects,
- Examination of the potential for development of a cooperative pilot wastewater treatment plant using low technology to serve Al Manar in Marrakech,
- Identification of an appropriate university training course or courses in environmental analysis, planning and design in a francophone country which would offer appropriate experience to selected members of staff, and
- Establishment of a Center of Environmental Studies at ANHI to provide ongoing support, information and analysis

In addition, ANHI should aim, with the assistance of TSS and other partner organizations, to organize a national seminar in planning the urban environment by mid 1997. Each of these elements is described below

6.2 PROJECT EVALUATION

It is recommended that ANHI's senior staff undertake an effort to ensure that project managers take at least a first cut at completing and annotating the current checklist for their projects, taking note of the recommendations presented in Section 5.1 above. This will help to sensitize participants in the proposed training workshop described below

⁸ Four areas of needed training and technical assistance were identified by the PEA: sanitation, environmental sensitization, environmental planning and impact evaluation, and environmental monitoring

6 3 INITIAL TRAINING WORKSHOP IN ENVIRONMENTAL PLANNING

TSS proposes to organize, in the first half of 1997, an initial training workshop for technical staff of ANHI, FEC, the Ministry of the Environment, target municipalities and other partner agencies. The workshop will follow the format of a similar USAID sponsored workshop, described in Annex G, which was conducted successfully in Lisbon for the national housing agency of Portugal.

The one-day workshop should be for approximately 50 participants from ANHI, FEC, the Ministry of the Environment, Ministry of Housing, municipalities and private A & E firms and should address essential principles of environmental assessment and project planning, emphasizing technical approaches and skills. The objective should be to address the practical concerns of these individuals, rather than to offer an academic approach, and to reinforce the presentation of principles of environmental analysis and planning by devoting the afternoon to one or more group exercises directed at ANHI and FEC projects or modified versions of projects.

With illustrations taken from projects and historic sites in Morocco and, where appropriate, elsewhere, participants would be provided with the concepts needed to address a small group project planning exercise. Much of the available environmental information for the proposed case study site and its surroundings, as well as regional and local planning information, has been gathered and will be mapped. Preparation for the workshop, including development of a site assessment and an evaluation of the currently proposed site plan, would offer an opportunity to train up to five ANHI and FEC staff as future trainers. Trainee trainers would then gain practical experience as facilitators at the workshop. A more complete description of the training of trainers and the workshop is presented in Annex H.

6 4 CONTINUING TECHNICAL TRAINING

The principles presented in the initial workshop will need to be reinforced on a regular basis to ensure that they become internalized. TSS recommends that follow-up informal one-day workshops take place on at least a bi-monthly basis throughout 1997, assisted by the TSS local environmental consultant and the ANHI staff who will have received initial training as trainers.

Ideally, these informal workshops or seminars should take place every time a new project is considered. In this way, all of ANHI, FEC and selected municipalities will benefit not only from the longer-term effects of the increased sensitization of their staff but from projects which may be selected and planned for greater efficiency and cost effectiveness.

6 5 CONTINUING COOPERATIVE PLANNING

Regular half-day ANHI-FEC planning sessions are recommended, perhaps on a bi-monthly basis, as illustrated in the chart at the end of this section of the report. These meetings could address specific topics or select projects for one-day planning workshops. In either case, they should assist in strengthening the partnership between ANHI and FEC, sharpen their ability to work creatively with municipalities, and help identify opportunities for environmental improvements.

6 6 SANITATION PROJECTS

a Wastewater Treatment Pilot Project The PEA recommended short-term assistance on the location, design and operation of small, low-cost, low-maintenance wastewater treatment solutions. As part of the action plan, design of a pilot project is recommended to provide experience in both the technology and the development of cooperative projects. An appropriate target would be Al Manar in Marrakech where, as described in section 3.1.1 and Annex D, ANHI has already shown leadership with its sewer relocation and extension feasibility study.

The FEC could lead an effort, or guide the effort of the municipality, to prepare a feasibility study for the early development of pre-treatment ponds. The resulting improvement in water quality over what farmers are now using might allow for some cost recovery. With the addition over time of lagoons and reed beds and/or artificial wetlands, high quality water could be available for aquifer recharge and cleansing and for low-cost potable water treatment. Funding may be available through the USAID Water Resources Sustainability (WRS) Project.

- b Solid Waste Collection and Disposal** The following actions are proposed:
- I FEC staff could use the landfill site selection criteria in the Dohrman reports as the basis for a draft sector-specific checklist,
 - II ANHI staff could incorporate into the general planning checklist lessons regarding the location and physical design of projects in relation to solid waste dumps and the facilitation of solid waste collection found in the Dohrman reports
 - III Based on experience gained in the target municipalities, it is recommended that FEC and ANHI work with local authorities to design a program of solid waste management for a selected ANHI project, such as Sharj-Gnaoua. This could be the subject of a half-day ANHI-FEC planning session.
 - IV Encourage the Ministry of the Environment, perhaps in collaboration with FEC, to seek funding for the more specific solid waste studies recommended by the PEA and the Dohrman reports.⁹

67 OVERSEAS TRAINING IN ENVIRONMENTAL ANALYSIS, PLANNING AND DESIGN

TSS recommends that two to three of ANHI's staff who already have a strong background in environmental matters receive further training in environmental planning. In the United States, the premier institutions offering the desired combination of environmental analysis, land planning and site design include the University of Pennsylvania, the Harvard Graduate School of Design (GSD), and two to three other universities. However, it would be preferable for the training to be provided in a francophone country.

TSS will investigate the availability of courses at universities in Canada, France, Belgium and Switzerland which are similar to the three-month summer course offered by the Harvard GSD.

68 ESTABLISHMENT OF AN ENVIRONMENTAL STUDIES BUREAU AT ANHI

The ANHI Director of Projects, Mr. Najeeb Benyahia, has stressed the need for technical studies supporting the need for addressing environmental quality in project plans. TSS recommends that ANHI consider establishing an Environmental Studies Bureau within ANHI.

69 ORGANIZATION OF A NATIONAL ENVIRONMENTAL AWARENESS SEMINAR

The previous action items largely address the technical staff of ANHI, FEC and their partners, both in terms of sensitization to environmental issues and techniques for addressing them. In addition, there is a need for ANHI to assist with the sensitization of decision makers at the national and local levels regarding the importance of the urban environment and the need for cooperation.

⁹ The former included site selection and design of future landfills (done by Dohrman under the MUES Project in the three target municipalities), methods of waste reduction, involving sensitization, separation and composting, and methods of landfill closure and restoration. The latter included national waste management standards, institutional and financial guidelines, a national medical waste policy, and institutional issues associated with improving collection systems and constructing and operating controlled landfills.

By the time of the seminar, ANHI should be in a position to show a series of examples of what it has accomplished in terms of incorporating environmental sensitivity into its projects and to present a well-reasoned case for the need for support from the relevant ministries and for greater cooperation among its partners

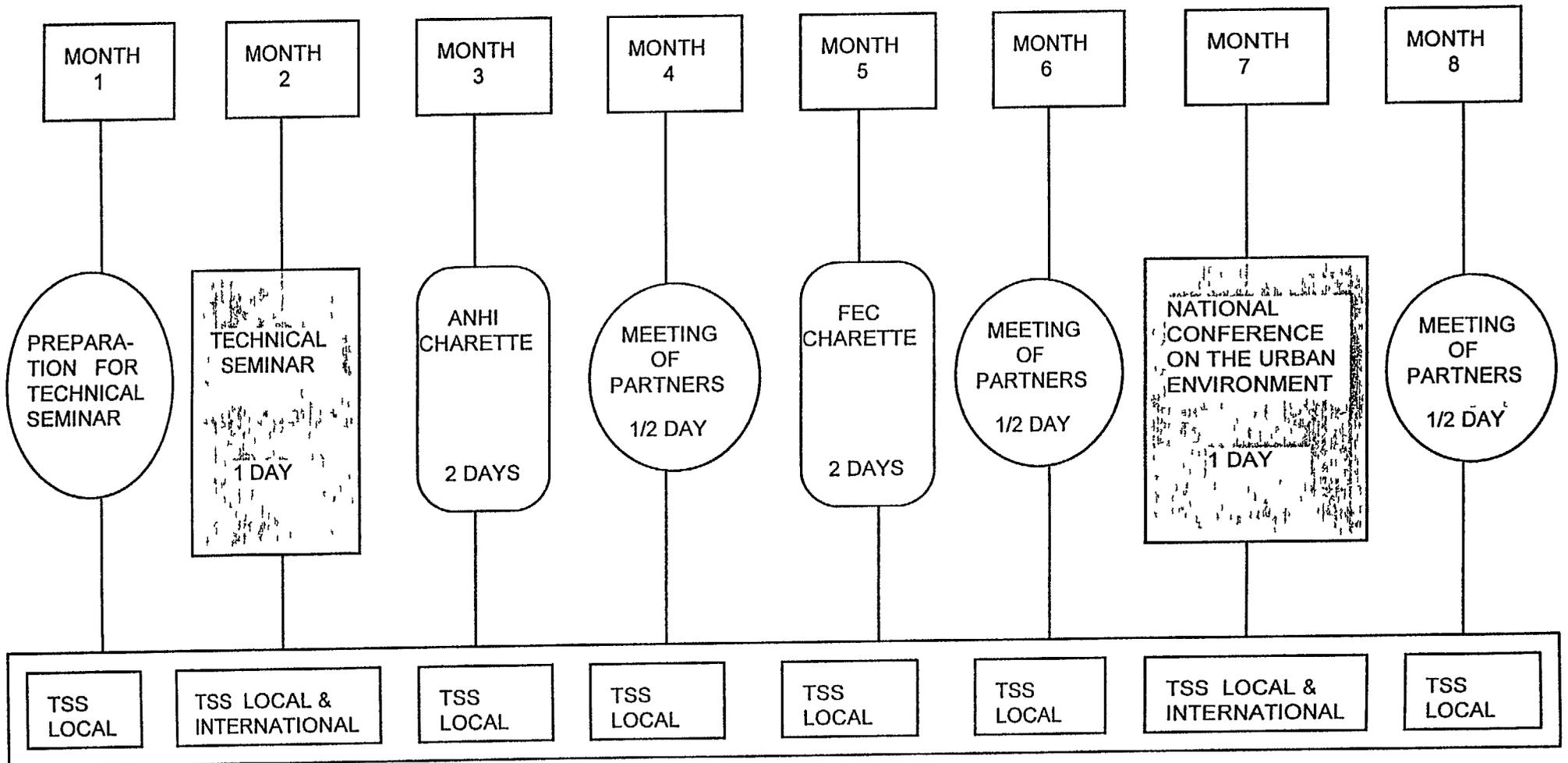
6 10 SUMMARY

The proposed sequence of activities in the action plan is illustrated in the diagram on the following page

MUNICIPAL AND URBAN ENVIRONMENTAL SERVICES PROJECT

ACTIVITY #5 IMPROVING THE QUALITY OF URBAN PROJECTS

PROPOSED ENVIRONMENTAL PLANNING ACTION PLAN



28

ANNEXES

ANNEX A

MUES WORKPLAN MODIFICATIONS RELATIONSHIP OF ORIGINAL ENVIRONMENTAL FUNCTIONAL ACTIVITIES TO NEW WORKPLAN

A IMPROVED WATER RESOURCES MANAGEMENT IN THE AGRICULTURAL, URBAN AND INDUSTRIAL SECTOR (SO2)

A 1 Poor Urban Households Connected to Sewerage and Potable Water

- A 1 1 Connections Evaluation and Improvement Studies (FA2031)
- A 1 2 Regional Master Plan for Upgrading Substandard Housing in the Northwest (FA 1040)

A 2 Cities with Improved Environmental Service

- A 2 1 Number of Cities with Improved Environmental Services Evaluation Procedure
- A 2 2 Improved Environmental Services
 - 1 Landfill, solid waste collection
 - 2 *Wastewater collection and treatment*

B IMPROVED POLICY REGULATORY AND INSTITUTIONAL FRAMEWORK (IR 2 1)

B 5 Incorporating Environmental Considerations into the Decision-Making Process

- B 5 1 Methods of Urban Project Assessment and Planning (FA 5011)
 - 1 Analysis of past projects
 - 2 Project Assessment Workshop
 - 3 Additional Background Studies for Sector-specific Checklist Preparation

C IMPROVED ENVIRONMENTAL TECHNOLOGIES (IR 2 2)

C 1 Environmental Impact Assessment of New Projects Prior to Development

- C 1 1 Improved Project Assessment Tools & Design Practices (FA 5012)
 - 1 Refine the Existing General Checklist
 - 2 Prepare Accompanying Guidelines
 - 3 Recommend Revisions to Norms & Standards (x-ref FA 2035)
- C 1 2 Specialized Training Environmental Planning of Urban Projects (FA 5013)

D BROADENED PUBLIC PARTICIPATION FOR ENVIRONMENTAL ACTION (IR 2 3)

D 1 Cities Holding Public Meetings on Environmental System Investment/Maintenance

- D 1 1 Sensitization of Partners and Beneficiaries
 - 1 Analysis of Environmental Awareness Efforts in Communities
 - 2 Environmental Awareness Workshops
 - 3 Initiate Identification of Pilot Projects

ANNEX B

DOCUMENTS CONSULTED¹

1 HG-004

- PROJECT PAPER + Toute la documentation produite pour le programme
- DESCRIPTION DU PROGRAMME, TUM, Dec 1993, 20 p
- PROGRAMMATIC ENVIRONMENTAL ASSESSMENT, July 1993, 85 p
- ANHI / PLAN D'ACTION POUR L'ENVIRONNEMENT, ANHI, Oct 1994, 17 p
- ANHI / PLAN D'EXECUTION DU PROGRAMME, TUM, Oct 1994, 62 p
- ANHI / REACTUALISATION DU PLAN D'EXECUTION DU PROGRAMME, URBA-SYSTEMES, Jan 1996, 30 p
- FEC / PLAN D'EXECUTION DU PROGRAMME, URBA-SYSTEMES, Dec 1995, 19 p

2 EVALUATION ENVIRONNEMENTALE DES PROJETS DU PRET

- ANHI / Check-list + Synthese des evaluation environnementale des 11 projets du programme pour les annees 1994 et 1995 - ANHI / Check-list + Synthese des evaluation environnementale des 4 projets du programme pour l'annee 1996
- FEC / Procedures d'etude d'impact sur l'environnement des projets municipaux
- FEC / Synthese des evaluations environnementales des projets eligibles

3 ETUDES DE FAISABILITE DES PROJETS

- ETUDE DE FAISABILITE DU PROJET DE RESTRUCTURATION DES QUARTIERS SOUS-EQUIPES DU CENTRE D'OULAD TAIMA, TUM, July, 1992, 39 p
- POSSIBILITES DE RESTRUCTURATION DES QUARTIERS SOUS-EQUIPES DE LA MUNICIPALITE D'OULAD TAIMA, TUM, July, 1994, 50 p
- ETUDE DE FAISABILITE DU PROJET DE RESORPTION DE L'HABITAT INSALUBRE DANS LA MUNICIPALITE DE KHEMISSSET, TUM, Jan 1993, 41 p
- ETUDE DE FAISABILITE DU PROJET DE RESORPTION DE L'HABITAT INSALUBRE A KHENIFRA - AMALOU, URBA-SYSTEMES, March 1996, 61 p
- ETUDE DE FAISABILITE DU PROJET DE RESTRUCTURATION DES QUARTIERS BEN DIBANE, BENI MAKADA et AZIB HAJ KADDOUR DE LA VILLE DE TANGER, TUM, June 1992, 52 p
- ETUDE DE FAISABILITE DU PROJET DE RESTRUCTURATION QUARTIERS CHARF, TANJA BALIA et SANIA DE LA VILLE DE TANGER, TUM, June 1992, 52 p
- ETUDE DE FAISABILITE ET D'IDENTIFICATION DE LA RESORPTION DEL'HABITAT INSALUBRE DE L'AGGLOMERATION DE MARRAKECH, TUM, Dec 1993, 81 p

¹ Documents assembled and listed by Sefiane Benyahia, as requested by TSS 10/09/96. Only those documents of relevance to the mission have been inventoried and summarized, if required, a more complete list is available and can be provided on request.

- ETUDE DE FAISABILITE DU PROJET DE RESORPTION DE L'HABITAT INSALUBRE A SIDI YAHIA DES ZAERS, TUM, Avril 1993, 21 p
- ETUDE DE FAISABILITE POUR LA RESTRUCTURATION DES QUARTIERS SOUS-EQUIPES DE LA VILLE DE TANGER, EXCOSER, Aug 1995, 2 tomes, 100 et 71 p

4 ETUDES TECHNIQUES DE VRD DES PROJETS

The technical studies on the ensemble of ANHI projects are, of necessity, easily accessible at ANHI's head office and at the relevant antenna offices

5 ETUDES D'AMENAGEMENT DES PROJETS

Like the technical studies, the project and site plans for all the projects are easily accessible

6 DOCUMENTS D'URBANISME RELATIFS AUX VILLES DES PROJETS

- Schema Directeur d'Amenagement et d'Urbanisme (SDAU) de la wilaya de MARRAKECH (Document de synthese et Extraits)
- SDAU de la wilaya de MEKNES (Document de synthese et Extraits)
- SDAU de la wilaya de FES (Document de synthese et Extraits)
- SDAU de la province de TANGER (Document de synthese et Extraits)
- SDAU de la province de KHEMISSET (Document de synthese et Extraits)

7 DOCUMENTS D'ASSAINISSEMENT LIQUIDE RELATIFS AUX VILLES DES PROJETS

- Schema Directeur d'Assainissement (SDA) de la wilaya de MARRAKECH (Extraits)
- SDA de la wilaya de MEKNES (Extraits)
- SDA de la wilaya de FES (Extraits)
- SDA de la province de TANGER (Extraits)

8 DOCUMENTS GENERAUX

- COUPURES DE PRESSE PORTANT SUR L'ENVIRONNEMENT
- MONOGRAPHIE REGIONALE DE L'ENVIRONNEMENT/Region economique du Centre/ Document 3 - Volume 2, SIGMA TECH-TERRASSOL-CBTP, Sans date, 178 p
- PROJET DE LOI SUR L'EAU
- ETUDE DE LA COLLECTE ET DU TRAITEMENT DES ORDURES MENAGERES DANS LES VILLES DE MEKNES, SEFROU et AZROU
- ETUDE DE LA DECHARGE PUBLIQUE DE LA VILLE DE TETOUAN

ANNEX C

PERSONS CONSULTED

USAID

- Tahar Berrada, Regional Housing Advisor
- Alan Hurdus, Chief of the Office of Environment
- Richard Edwards, Regional Environmental Advisor

Agence Nationale de Lutte Contre l'Habitat Insalubre (ANHI)

- Najeeb Benyahia, Chief of Projects
- A Drissi, Tanger
- Mme Zahout, Chef de Formation
- Abderrahmane Lalou, Chef d'Antenne de Rabat
- Chef d'Antenne de Marrakech
- Chef d'Antenne de Meknes
- Chef d'Antenne de Fes

Fond d'Equipement Communal

- Natalie Mahoub
- A Rahmani
- M Ouddor²

USAID Water Resources Sustainability Project

- Mario Kerby, Chief of Party

² On previous visit

ANNEX D

OBSERVATIONS OF CASE STUDY PROJECTS

a Marrakech – Al Manar

Background The growth of the City of Marrakech is significantly constrained by several important factors, including the existence of historic structures and gardens to the south and southeast, the desire to protect the Palmeraie to the east, and the airport and numerous historic and cultural features and sites to the west and south. The sector known as Sraghna to the north of the city represents one of the few remaining major opportunities for expansion and the rehousing of residents from unsound settlements.

The (800) 500-hectare Sraghna sector contains two small rural communities which are being improved and one, Sraghna itself, which has been improved by ERAC. The sector also includes the site of a recently-approved ERAC project along the southern edge, some privately-developed villas on the central-west edge, and the vacant Al Manar sector to be developed by ANHI.

Site Conditions The (270) 140-hectare site has a general southeast to northwest slope of 1% and several seasonal drainage courses, or talwegs, cross the site towards the River Tensift. Two small rocky hills interrupt the overall flatness of the site, modify drainage patterns and create the potential for locally intense runoff. One of the hills is surmounted by a large villa.

Significant vegetation, some of which suggests the presence of wetland, exists along a stream on the southern boundary. To the east of the two hills there are significant numbers of palm trees. The remainder of the site is almost barren.

The surface of the site is traversed by three enclosed combined storm and waste water sewers which are now significantly overloaded. Together the sewers carry more than 70% of the wastewater generated by the entire city of Marrakech and discharge on the western edge of the site. Because it is essentially a detention pond for most of the city's wastes, the sector has remained semi-rural. The wastewaters have been diverted by numerous channels to irrigate fields of vegetables. The water table is completely contaminated and no wells provide water suitable for drinking.

ANHI's approach In analyzing the site, particular attention has been given to the constraints imposed by the drainage pattern, by existing sewage collection and storm drainage facilities, and by projects needs for storm drainage and sewerage.

ANHI's intervention cannot avoid or reverse the situation. However, ANHI commissioned a feasibility study to examine solutions for the entire sector. The study recommends, with the participation of its public and private partners, construction of new sewers that will intercept all three collectors and extend them to the site proposed for a sewage treatment plant for the city. However, the timing and financial feasibility of constructing a treatment plant are uncertain, meaning that wastewater will be discharged untreated to the ground once again. Attention needs to be given to possibilities of building a low-cost, low-technology detention pond(s) to

provide at least primary treatment. Ideally, creation of artificial wetlands would provide a higher level of treatment and opportunities for cost recovery.

Proposed Land Use and Overall Site Planning ANHI has exercised a leadership role in the matter of wastewater. However, it appears that little, if any, cooperative planning for the sector has taken place to integrate the actions of the municipality, ERAC, private developers and ANHI in terms of land use planning.

Although a map of site conditions was prepared, it is unclear to what extent site environmental conditions, other than those related to drainage and waste transport and disposal, were analyzed in preparing the plan for ANHI's proposed project. For example, it appears that the dense streamside and wetland vegetation along the southern edge of the site will be removed by the ERAC project. If so, this raises questions about whether a more integrated planning effort could have saved some of this vegetation by increasing densities elsewhere.

Storm Drainage and Green Space In presenting the site plan for Al Manar, staff of the local ANHI office suggested that drainage patterns had been respected and that extensive green space had been provided. The plan suggests at least a recognition of the presence of the talwegs. However, major streets, with narrow central green strips, are located within each one. Clearly, this defeats several purposes of the concept of maintaining and enhancing natural drainage.

- the green spaces will be difficult to maintain,
- they will not be accessible and usable,
- the costs of storm drainage will not be reduced because site runoff will need to be conveyed underground, and
- the storm drainage will not be detained and allowed to percolate into the aquifer to help cleanse the ground water over time.

There are several other small green spaces located in inaccessible or barely accessible places. They look attractive on a formal site plan. However, some rethinking of the location, recreational and aesthetic use, and other functions of open space is in order. By concentrating the green spaces, perhaps adjacent to a landscaped talweg, they could be made larger, more usable and easier to maintain.

At present, all the plans turn their backs on the two hills. Could portions of the hills be used to increase the interest of the site? Possibilities include planting trees to reduce runoff and erosion, and creating a trail to a park and viewpoint. Because Marrakech is predominantly flat, the opportunity to enjoy a view over a part of the city could be an attractive aspect of the development.

b Marrakech -- Sraghna Improvement

In the improvement of this douar, it is clear that much money had been spent on installing wide sidewalks but that there were no gutters. It would be interesting to know whether the residents were consulted regarding their preferences and what wet weather conditions are like. The huge accumulations of solid waste in the streets and all round the settlement were a clear illustration of the need both to develop effective garbage collection and disposal services and to educate residents about more appropriate garbage disposal.

c Meknes -- Marjane I, II and III

Marjane (Marjane I, an 85-hectare serviced sites project, Part II, 120 hectares, and Part III, 60 hectares) has become significantly more developed in the three years since the consultant's first brief visit for the PEA in 1993.

The most prominent feature on the site is the wall of Moulay Ismail. The wall has been retained and beautified by plantings of flowering shrubs along the main entrance road, as suggested in the PEA. The plantings provide a welcome feeling of shelter and sense of place, distinguishing Marjane from other areas. However, the impression remains that an opportunity to fully incorporate the wall as a feature into a system of green spaces has been missed, the required 3% green space having been located in the center of the site. Site plan modification could have made a feature of the wall, using it to create a sense of enclosure for the open space.

While more could have been made of the opportunity, ANHI's special attention to preservation of the wall (which was omitted from the original survey of the site) is believed to have been beneficial. Although the city's walls are classified as historic monuments, prohibiting alteration or destruction, damage has occurred in other projects as a result of inadequate construction supervision. Now the residents need to be sensitized to the history and value of the wall as it is being allowed to become a receptacle of solid waste.

Marjane is also an example of a project where advice to maintain a natural drainage channel has been followed. It has been determined that this approach represents a substantial cost savings despite the need to install large gabion walls at a bend in the stream. In addition, it preserves some semblance of a natural ambience on the site and adds significantly to its character. A wider open space corridor to contain the creek could have led to greater cost savings (through the construction of gabion baskets rather than a wall), more usable and imageable open space and greater potential for contributing to ground water recharge. In future projects, it would be instructive to conduct a cost benefit study comparing the value of such effects with that of increased lots. Examination of alternative configurations of open space and densities would also be valuable.

A particularly serious concern is that since 1993 pressures to maximize developable area have led to decisions to permit building on some of the designated green space. As a result the required overall 3% ratio of green space has been cut by approximately 50%. This is a significant impact on the urban environmental quality of a relatively dense development and underscores the importance of using every opportunity to plan for multi-purpose open space.

d Fes -- Oued-Fes

Oued-Fes, is a very early ANHI prevention scheme on the edge of the city, providing 1,980 housing units and sites for 27 villas on a 99-hectare site. Although a substantial amount of construction is going on, the appearance of Oued-Fes has changed relatively little since 1993 when the Programmatic Environmental Assessment made the following comments

The design of the architectural model was of high quality, providing a strong facade with pleasing articulation and variation along the main entrance road. Site finish and furnishings, such as street lights, were also pleasing. Although construction is ongoing, construction debris was not evident on this site.

From the point of view of the project concept and site planning, Oued-Fes raised two particular concerns. The site lies at the foot of a slope, which, although neither particularly long or steep, nevertheless shows clearly drainage channels. The roads and plots have been laid out across the channels. According to ANHI, this was not considered to be a problem because of the height of the hills. However, it appeared to be another indication of the need for greater attention to storm drainage, preferably using natural drainage patterns.

The project does not contain any open space because a city park was designated in the vicinity and development was promised by the municipality. However, the designation has since been changed. No provision for bus stops was evident, despite the distance of the site from the city.

Oued-Fes is a good example of a site that could have been planned with greater more imaginatively in response to environmental factors, treating them as opportunities rather than constraints. The site lies on the lower slopes of a hillside which is drained by a series of channels. In order to lay out a relatively simple grid plan, the major drainage course has been diverted by a low dam which runs the full width of the site. The dam directs runoff to channels on either side of the site, off the ANHI property. These channels will need to be dealt with at some future time, when the adjacent parcels are developed.

It would be useful to know whether, and if so with what results, a comparison was made between the cost, and risk of failure, of the dam and retention and enhancement of the original channel as a central organizing feature of the project.

It is evident that the clay soil possesses expansive properties which are exhibiting themselves in a series of longitudinal cracks in and adjacent to the road which runs along the contour at the upper end of the site. It would be interesting to know whether this factor was recognized at the time the site was planned and whether the dam constructed to convey storm drainage away from the site is showing any signs of instability.

e Fes -- Sharij-Gnaoua

During the visit to Sharij-Gnaoua in 1993 for the PEA, major roads and sewers were still under construction. The PEA commented as follows:

This 180-hectare clandestine settlement upgrade currently houses 52,000. The upgrade has involved construction of a main road and a sewer. The original planned route for the road was found to run through the adjacent cemetery. On the ground the plan was adjusted to avoid graves. It was also recognized that the one major access road shown on the plan was

inadequate A second road was added during construction so that the site has through movement

Significant changes in topography required construction of a gallery for the main collector sewer to achieve gravity flow since electric power supply is not sufficiently reliable to support a pump station This required excavation to a depth of 18 meters, with the second major access route above it The sewer and road cross a major talweg laterally, filling it and requiring all storm drainage to be piped This was likely necessitated by the objective of minimizing removal of existing structures Only 10 houses needed to be removed for the project

ANHI anticipates that the community will become infilled and intensified to reach double the current population at build-out Already, along the principal vehicular road, there are large numbers of active stores and cafes and impressive evidence of property improvement that has been stimulated by the upgrade, Improvement of residential facades also evident on the side (pedestrian) streets

The most striking impression of this second visit was the completed entrance road which had a pleasant, urbane ambiance However, later impressions were that, in contrast to Oued-Fes, surprisingly large areas remain unbuilt and that problems of waste management, water and sanitation continue to impact the quality of the residential environment Large quantities of solid waste were evident adjacent to all of the populated areas, water was still being carried from standpipes, and a broken sewer connection was allowing sewage to flow in one street Play areas on this very large and steeply sloping site appeared to be largely absent except for a play field on the level hilltop The original olive groves only vegetation represented the only vegetation on the site, raising questions about how long they will remain

f Fes -- Ain Nokbi

ANHI is developing a serviced sites project for the Agency for the Dedensification of the Medina (ADER-Fes) The project on the outskirts of the city is being designed to accommodate artisans currently operating in the Medina Many of the artisanal activities create noise and heavy use of the narrow streets and some involve the use of toxic substances, for which the Medina is not suitable ADER-Fes aims that by inducing artisans to move, space will be freed in the Medina for housing The Ain Nokbi project marks the expansion of ANHI's activities into broader urban construction and management The expansion of skills will be increasingly important as ANHI seeks to integrate its housing activities into overall urban development plans

Unfortunately, no progress has been made over the past three years with relocation of the tanners, etc from the Medina because of difficulties in solving the chromium disposal problem

g Fes -- Dhar Lakhmis

Another example of ANHI's broadening capabilities is the reconstruction of walls at Haffat Benzakour, a municipal housing project adjacent to the walls of a disused quarry Erosion and potential slides threatened houses close to the edge of the 25 meter-high quarry walls Under contract to the City of Fes (municipality of Zonagha), ANHI completed a successful project of stabilization, planting and pathway construction The \$100,000 project was considered a good investment in insurance against loss of the houses In addition to greatly improving the safety and aesthetic quality of the surroundings of the housing project, a usable development site has

been created below on the quarry floor. The scope of the intervention may be appropriate for other ANHI projects in order to protect investment.

h Sidi Yahia des Zaers -- Sidi Yahia

A feasibility study was done prior to planning the site of this project which is part of the 1997 component of the HG-004 program. The site is a former vineyard in a rural area which is becoming urbanized. The practically vacant site lacks urban facilities.

2 OTHER CASE STUDY PROJECTS/PROJECT GROUPS

a ANHI Interventions in Tanger

This project is part of the development plan for Ben Dibane, a vast program of bidonville replacement in a zone representing the largest extension of the city. In the course of implementation, the project area will become better integrated into the urban area and given an array of facilities on and off site, such as collectors, potable water mains, and bypass roads. In addition to the specifics of the Northern Zone Project, the analysis could provide a certain number of lessons on the environmental aspects of PDU interventions.

The solutions address the extreme sensitivity of the site and its population, the violence of the wind, the effects of erosion and the particular nature of the soils.

This sector has been the subject of many feasibility and evaluation studies, including those of ANHI in 1994 and the World Bank in 1995. The Al Khair I project was part of the 1994 component of HG-004 and the municipality of Ben Dibane was party to projects programmed by the FEC for financing under a HG-004 loan.

b Tetouan -- Dersa Samsa (Observations made in 1993)

Plans for upgrading of the Dersa clandestine settlement and for private and public new housing at Samsa are in accordance with the general directions of the city's 1984 urban master plan. Plans for storm drainage and sewer lines also appear to be in accordance with the broad direction being taken in the liquid waste master plan that is currently in preparation. The principal concern is that the sewage master plan program will result in selection of a location and type of wastewater treatment plant. However, it appears unlikely that a plant will be constructed for many years.

Observations of M. Drissi, Former Chef, de Division, Division de l'Environnement de la Commune

- 1 Sanitation** Collection of solid and liquid waste is the paramount concern. However, there may be no wastewater treatment for many years. Meanwhile, the projects will contribute to river and sea water pollution.

In addition, the productivity of solid waste collection has not been significantly improved (see Marrakech paper), even though more is being collected. Physical constraints may not have been removed sufficiently for efficient collection. While education and sensitization of new owners may help to reduce the problem of indiscriminate disposal.

of garbage in the community, they alone will not be enough to control the problem
Moreover, treatment and/or satisfactory landfill conditions are not being provided

- 2 **Circulation** M Drissi is concerned about whether the Dersa plan provides sufficient points of access and whether the 8m street width is adequate for movement of municipal waste collection equipment
- 3 **Open Space** Sanitation, potable water and street lighting are a "sine qua non " In addition, M Drissi sees a need for more attention to open space and to the design of open space In Tetouan, the municipal master plan goal is 10 m² per inhabitant (How far is the city from realizing this standard and how does redesigned Dersa compare?) In addition to meeting the standard, M Drissi is concerned that inattention to design and to appropriate plant materials encourages vandalism

M Drissi was asked the identification and use of natural features, such as the main drainage channel down the Dersa hillside, to provide the structure for a multi-purpose open spaces system He agreed that should happen but has not be to date He agreed that in the case of Dersa, more houses would need to have been removed in order for the channel to function appropriately

- 4 **Storm Drainage** The city is about to develop a storm drainage model In general, the storm drainage plan will include a series of stormwater diversion channels, designed for the 50(?) -year storm One of these channels is under construction above Dersa, running east-west to divert runoff from the Dersa forest (Does this flow into the main vertical drainage channel and for what storm has the bridge in the lower part of the project been designed?) The latter is essentially a set of culverts on which the road has been laid It appeared very likely that the road could be under water and possibly washed out in a major storm
- 6 **Public Spaces** M Drissi believes that additional attention should be given to the decorative finish of public streets and spaces as well as to their ease of maintenance Again, the concern is that pride of ownership in the community as a whole would be increased by raising design standards in the publicly-owned portions of the projects
- 7 **Disaster Planning** The concern regarding the ease of solid waste collection in the narrow streets applies to the ease of access by emergency equipment Standards exist to govern the placement and spacing of fire hydrants but fire trucks and ambulances will be restricted to the widened main street Disaster planning should be a priority but there is nothing very strong in the regulations
- 8 **Housing Type** M Drissi is concerned that there may not have been sufficient attention to the type of housing that people want Have there been market studies? He believes that ANHI should be selling houses rather than lots and is critical of architects who develop site plans without really questioning what people want and how the projects will be used and serviced Again, he is concerned with the social consequences of a project

9 Other Environmental Issues In order of priority after liquid and solid waste sanitation and open space, M Drissi sees general ecological factors as the next concern, needing to address flora and fauna and improving water quality with a wastewater treatment plant (which he described as utopian)

Later, when asked about public health data, M Drissi said that the Ministry of Health had been approached for data on water-borne disease for the sewage master plan but had declined to provide any. Sous-Mission A5 of the plan refers to effects on beaches at Martil, red tides, and contamination of fish and other foodstuffs

10 Budget Allocation The team's concern that the rigidity of the 80%-20% division of AID funds between ANHI and FEC is shared by M Drissi. He believes that a more rational approach would be to look at the average per capita expenditure for municipal infrastructure and services in a given city and apply that amount to the off-site costs associated with an ANHI project. (There are clearly reasons to reject this particular approach, nevertheless, a more logical and rational division is required, perhaps preferably on a case-by-case basis.) Also, he believes that the central government should be responsible for major infrastructure via subventions, rather than emphasizing cost recovery for sewage treatment plants, for example. This is the Tunisian approach.)

11 Implementation A critical issue is what is perceived as a lack of organizational capacity (but not necessarily of leadership) on the part of municipalities or regions. M Drissi would like to see municipalities redefining their actions and/in terms of their consequences, as well as a better organized hierarchy of responsibilities and tasks at the national, regional, provincial and city levels.

Laws need to be accompanied by a detailed plan of action, providing technical clarity and clarity of responsibility on a day-to-day basis. With such regulations, municipalities would not be able to try to pass off their responsibilities for ANHI projects to the national government, for example.

Schema Directeur d'Assainissement Liquide de Tetouan

Groundwater is contaminated by water leaking in numerous places from sewer pipes that are perforated or otherwise in a poor state of repair. These are a source of potential infection through contamination of potable water sources. In terms of river and coastal water quality and its effects, the report on Sous-Mission A5 states that

- Raw wastewaters are actually pumped from the system of sewers at certain points to irrigate adjacent gardens. The practice constitutes a direct risk to the gardeners and consumers,
- Foodstuffs, and especially fish, are potentially impacted by poor water,
- Bathing on the beaches of Martil risk exposure to enteric and/or dermatological infections through ingestion of or contact with contaminated seawater,
- Wastewater could also be the cause of red tides experienced in the vicinity of Martil,

- Recent studies have shown that there are toxic shellfish (scallops) in the coastal waters at the mouths of the Oued Martil and the Oued Laou to the south

The report on Sous-Mission A12, August 1992, notes that "The fact that the beaches at Martil have to be closed periodically because of the level of pollution and the discovery that seafood is contaminated are reasons to be concerned about the regional economy "

ANNEX E

EXAMPLES OF CHECKLISTS PRESENTED IN THE HG004 PROGRAMMATIC ENVIRONMENTAL ASSESSMENT

- E-1 CALIFORNIA ENVIRONMENTAL QUALITY ACT INITIAL STUDY
CHECKLIST

- E-2 CHECKLIST OF ENVIRONMENTAL CHARACTERISTICS,
DEPARTMENT OF ENVIRONMENTAL AFFAIRS, REPUBLIC OF
SOUTH AFRICA

- E-3 SIMPLIFIED CHECKLIST PREPARED FOR THE NATIONAL
INSTITUTE OF HOUSING, PORTUGAL

APPENDIX I

ENVIRONMENTAL CHECKLIST FORM

(To Be Completed By LECC Agency)

I. Background

- 1. Name of Proponent _____
- 2. Address and Phone Number of Proponent _____

- 3. Date of Checklist Submitted _____
- 4. Agency Requiring Checklist _____
- 5. Name of Proposal if applicable _____

II. Environmental Impacts

(Explanations of all "yes" and "maybe" answers are required on attached sheets.)

	<u>Yes</u>	<u>Maybe</u>	<u>No</u>
1. Earth. Will the proposal result in			
a. Unstable earth conditions or in changes in geologic substructures?	_____	_____	_____
b. Disruptions, displacements, compaction or overcovering of the soil?	_____	_____	_____
c. Change in topography or ground surface relief features?	_____	_____	_____
d. The destruction, covering or modification of any unique geologic or physical features?	_____	_____	_____
e. Any increase in wind or water erosion of soils, either on or off the site?	_____	_____	_____
f. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet or lake?	_____	_____	_____

		<u>Yes</u>	<u>Maybe</u>	<u>No</u>
	g Exposure of people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards?	_____	_____	_____
2	Air Will the proposal result in			
	a Substantial air emissions or deterioration of ambient air quality?	_____	_____	_____
	b The creation of objectionable odors?	_____	_____	_____
	c Alteration of air movement, moisture, or temperature, or any change in climate, either locally or regionally?	_____	_____	_____
3	Water. Will the proposal result in			
	a Changes in currents, or the course of direction of water movements, in either marine or fresh waters?	_____	_____	_____
	b Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?	_____	_____	_____
	c Alterations to the course or flow of flood waters?	_____	_____	_____
	d Change in the amount of surface water in any water body?	_____	_____	_____
	e Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity?	_____	_____	_____
	f Alteration of the direction or rate of flow of ground waters?	_____	_____	_____
	g. Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?	_____	_____	_____
	h. Substantial reduction in the amount of water otherwise available for public water supplies?	_____	_____	_____
	i. Exposure of people or property to water related hazards such as flooding or tidal waves?	_____	_____	_____

	<u>Yes</u>	<u>Maybe</u>	<u>No</u>
4. Plant Life Will the proposal result in:			
a. Change in the diversity of species, or number of any species of plants, including the following: grass, crops and decorative plants?	_____	_____	_____
b. Reduction of the numbers of any unique, rare or endangered species of plants?	_____	_____	_____
c. Introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species?	_____	_____	_____
d. Reduction in acreage of any agricultural crop?	_____	_____	_____
5. Animal Life Will the proposal result in:			
a. Change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms or insects)?	_____	_____	_____
b. Reduction of the numbers of any unique, rare or endangered species of animals?	_____	_____	_____
c. Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?	_____	_____	_____
d. Deterioration to existing fish or wildlife habitat?	_____	_____	_____
6. Noise Will the proposal result in:			
a. Increases in existing noise levels?	_____	_____	_____
b. Exposure of people to severe noise levels?	_____	_____	_____
7. Light and Glare Will the proposal produce new light or glare?	_____	_____	_____
8. Land Use Will the proposal result in a substantial alteration of the present or planned land use of an area?	_____	_____	_____
9. Natural Resources Will the proposal result in:			
a. Increase in the rate of use of any natural resources?	_____	_____	_____

		<u>Yes</u>	<u>Maybe</u>	<u>No</u>
	d. Substantial depletion of any nonrenewable natural resource?	_____	_____	_____
10	Risk of Upset Will the proposal involve:			
	c. A risk of an explosion or the release of hazardous substances (including, but not limited to oil, pesticides, chemicals or radiation) in the event of an accident or upset conditions?	_____	_____	_____
	d. Possible interference with an emergency response plan or an emergency evacuation plan?	_____	_____	_____
11	Population Will the proposal alter the location, distribution density, or growth rate of the human population of an area?	_____	_____	_____
12	Housing Will the proposal affect existing housing, or create a demand for additional housing?	_____	_____	_____
13	Transportation/Circulation Will the proposal result in:			
	a. Generation of substantial additional vehicular movement?	_____	_____	_____
	b. Effects on existing parking facilities, or demand for new parking?	_____	_____	_____
	c. Substantial impact upon existing transportation systems?	_____	_____	_____
	d. Alterations to present patterns of circulation or movement of people and/or goods?	_____	_____	_____
	e. Alterations to waterborne, rail or air traffic?	_____	_____	_____
	f. Increase in traffic hazards to motor vehicles, bicyclists or pedestrians?	_____	_____	_____
14	Public Services Will the proposal have an effect upon or result in a need for new or altered governmental services in any of the following areas:	_____	_____	_____
	a. Fire protection?	_____	_____	_____
	b. Police protection?	_____	_____	_____
	c. Schools?	_____	_____	_____

	<u>Yes</u>	<u>Maybe</u>	<u>No</u>
d Parks or other recreational facilities?	_____	_____	_____
e Maintenance of public facilities, including roads?	_____	_____	_____
f Other governmental services?	_____	_____	_____
15 Energy Will the proposal result in			
a Use of substantial amounts of fuel or energy?	_____	_____	_____
b Substantial increase in demand upon existing sources of energy, or require the development of new sources of energy?	_____	_____	_____
16 Utilities Will the proposal result in a need for new systems, or substantial alterations to the following utilities:			
a Power or natural gas?	_____	_____	_____
b Communications systems?	_____	_____	_____
c Water?	_____	_____	_____
d Sewer or septic tanks?	_____	_____	_____
e Storm water drainage?	_____	_____	_____
f Solid waste and disposal?	_____	_____	_____
17. Human Health Will the proposal result in:			
a Creation of any health hazard or potential health hazard (excluding mental health)?	_____	_____	_____
b Exposure of people to potential health hazards?	_____	_____	_____
18. Aesthetics Will the proposal result in the obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view?	_____	_____	_____
19. Recreation Will the proposal result in an impact upon the quality or quantity of existing recreational opportunities?	_____	_____	_____
20. Cultural Resources			
a Will the proposal result in the alteration of or the destruction of a prehistoric or historic archaeological site?	_____	_____	_____

Yes Maybe No

- b. Will the proposal result in adverse physical or aesthetic effects to a prehistoric or historic building, structure, or object? _____
- c. Does the proposal have the potential to cause a physical change which would affect unique ethnic cultural values? _____
- d. Will the proposal restrict existing religious or sacred uses within the potential impact area? _____

2' Mandatory Findings of Significance.

- a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? _____
- b. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time while long-term impacts will endure well into the future.) _____
- c. Does the project have impacts which are individually limited, but cumulatively considerable? (A project may impact on two or more separate resources where the impact on each resource is relatively small, but where the effect of the total of those impacts on the environment is significant.) _____
- c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? _____

I. Discussion of Environmental Evaluation

V. Determination
(To be completed by the Lead Agency)

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A NEGATIVE DECLARATION WILL BE PREPARED

I find the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required

Date

Signature

For _____

(Note: This is only a suggested form format for initial studies.)

Public agencies are free to devise their own

GUIDELINE DOCUMENT 5
CHECKLIST OF ENVIRONMENTAL CHARACTERISTICS

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1 INTRODUCTION

This checklist identifies environmental characteristics which may potentially be affected by development actions, or which could place significant constraints on a proposed development. The effect a development could have on an environmental characteristic, be it positive or negative.

While it is not intended as an endeavour to include the major characteristics and features which should be considered by the environmental analyst or planner, it is not exhaustive and the user should be aware that other characteristics significant to a particular situation may occur. Assistance or experts may be required to assess certain potential impacts and to identify unlisted characteristics which may be affected in specific cases. It is important to stress that cumulative effects should always be borne in mind (see section 1.2).

2 PHYSICAL CHARACTERISTICS OF THE SITE AND ITS SURROUNDINGS

Could the proposed development have a significant impact on, or be constrained by, any of the following?

2.1 Land

- the nature of surface (e.g. old weathered surfaces)
- the nature of substrate (eg rock, soil deposits)
- unstable bedrock or faultlines
- seismic activity
- slope of the land
- waterlogging of depressions
- the binding or bonding of soils
- stability of site
- surface subsidence
- compressive strength of soils
- rates of erosion or siltation by wind or water
- the potential of soils to be used for formal/informal agriculture purposes
- the potential of soils to be used for commercial purposes

- access to mineral deposits
- the availability of or access to construction materials such as sand and gravel
- the availability of local or regional material
- the management of mineral or rock materials
- unique geological or physical features
- moorland sand dunes
- prominent landscape features
- existing physical use, including the local environment

2.2 Freshwater systems

- streams or river channels
- river flow
- natural drainage patterns
- engineered drainage systems
- drainage basins
- the water table
- runoff as a result of the surfacing of surfaces or loss of the protective effect of vegetation
- ability to absorb runoff
- changes to floodplains
- the quality or quantity of surface water groundwater or public utility supplies
- conservation of recreational value of rivers, streams, lakes, waterfalls, dams or ponds
- threats to hydroelectricity generation through existing or planned
 - pollution
 - turbidity
 - siltation
 - chemical processes or nutrient balances
 - changes in sediment flow and siltation rates
 - canalisation
 - impoundment construction
 - water extraction

2.3 Marine and estuarine systems

- prominent coastal features such as coasts and dunes
- existing or altered features such as
 - dykes and sea walls
 - coastal defences

- sediment transport and patterns
- turbidity
- salinity
- chemical processes or nutrient balances

inherently unstable ecosystems such as mobile sand dunes, rocky and soil surfaces, the seabed and tidal areas, coastal islets, functioning of estuarine systems, river mouths

Climate

wind strength, direction and frequency
 frequency of flash-floods
 rainfall patterns
 fluctuations in temperature or humidity
 intensity of inversions
 dispersal or influx of pollutants
 global warming and sea level rise

ECOLOGICAL CHARACTERISTICS OF THE SITE AND ITS SURROUNDINGS

of the proposed development have significant impact on, or be controlled by, any of the following?

Vegetation

survival of rare or endangered plant species
 diversity of plant communities
 sand-trapping vegetation such as that found on foredunes
 vegetation communities of conservation or scientific importance
 conservation of vegetation communities of particular recreational value
 the introduction or spread of invasive alien seeds and plants
 natural replenishment of existing species
 frequency of wild fires
 frequency of use of off-road vehicles
 amount of trampling of special areas
 vegetation

- firewood collection
- overgrazing
- overexploitation
- genetically engineered organisms

3.2 Animals

- survival of rare or endangered species
- diversity of animal communities
- animal communities of particular scientific, conservation or educational value
- natural migration of species
- survival of animal communities of particular recreational value
- non-resident or migrant species
- alien species (including introduced domestic species)
- survival of animal communities of particular recreational value
 - frequency of wild fires
 - threat from poaching
 - frequency of use of off-road vehicles
 - intrusion of roads and fences
 - overexploitation
- genetically engineered organisms

3.3 Natural and semi-natural communities

- local, regional or national importance of the natural communities (e.g. scientific, conservation, educational)
- compatibility of the development with the natural communities
- appropriateness of conservation measures to be employed
- ecological functioning of natural communities due to
 - physical destruction of the natural community
 - reduction in the effective size of the natural community
 - quality and flow of ground water
 - quality of standing or flowing water
 - oxygen content of the water
 - salinity
 - turbidity
 - flow rate
 - temperature
 - level of chemical and physical pollution
 - eutrophication

- ... such as pollutants or poisons
- ... patterns
- ...
- ... of dust, pollution and deposition
- ... of logs
- ... construction of access routes, roads and paths
- ... pressure
- ... or cumulative impacts
- ... of natural communities
- ... of introduction of invasive alien species
- ... potential
- ... predator-prey relationships
- ... to animal movement or migration
- ... altered fire regime

42 Urban open space, protected and natural areas

- urban open space ...
- recreational areas
- natural features ...
- ridges
- natural heritage ...
- changes in use ...
- pressures on recreational and open space systems
- enhancement of ... and open space systems
- rehabilitation of ... sites
- improved public ...
- potential for harassment ... animals

4 CURRENT AND POTENTIAL LAND USE AND LANDSCAPE CHARACTER

Could the proposed development have a significant impact on, or be constrained by, any of the following?

4.1 General considerations applicable to all development proposals

- compatibility of land uses within the area
- aesthetic quality of the landscape
- sense of place within the area
- character of the area
- compatibility with the scale of developments in the area
- compatibility with building materials used in the area
- preservation of scenic views and valued features
- rehabilitation of run down areas
- landscaping plans and/or site restoration proposals
- need for buffer zones to allow for natural processes such as coastal erosion, windblown sand and changes in river channels
- political considerations such as land claims and historical rights
- local considerations such as servitudes and ...

4.3 Residential areas

- need to displace ... existing housing
- livable, neighbourly ... stability
- quality of life ...
- effect on ...
- privacy
- effect of over-staying ... of sunlight hours
- compatibility with ... residential development
- community connections
- the needs of the ... or other special ...
- community safety ... lighting, open areas ...
- adequacy of infrastructure ... the area (see ...)
- access and ...
- change in the volume of through traffic
- property values and ...

4.4 Commercial areas

- character of ...
- volume of traffic ...
- public access
- inappropriate ...
- provision of parking
- adequacy of ...



- conflicts between vehicular and pedestrian traffic
- safety of the pedestrian surveillance
- the rate of decay, or change in character of the area

4.5 Industrial areas

- volume of traffic and adequacy of vehicular access
- provision of parking
- levels of pollution — gas emissions and effluent or solid waste
- polluted street run-off
- aesthetic quality of the area

4.6 Agricultural and silvicultural areas

- use of high potential farmland
- use of areas available for commercial forests
- a need for buffer zones or greenbelts to contain urban sprawl
- availability of water
- pollution levels of air and local water supplies by fertilisers pesticides or feedlots
- disease control activities such as crop-spraying
- levels of toxins dust and bad smells in the air
- rate of soil erosion and sedimentation
- bush encroachment
- damaged land due to overgrazing or bad farming methods
- spread of invasive alien plants
- provision of housing and educational facilities

5 CULTURAL RESOURCES

Could the proposed development have a significant impact on or be constrained by, any of the following?

- structures and sites of architectural cultural or historic heritage
- sites of archaeological or palaeontological importance
- special attraction of local sites traditions or events

- sites or areas of religious or cultural significance
- sites or areas of special cultural or natural interest
- the integrity of cultural resources

6 SOCIO-ECONOMIC CHARACTERISTICS OF THE AFFECTED AREA

Could the proposed development have a significant impact on or be constrained by, any of the following?

6.1 Demographic aspects

- growth rate of the local population
- location distribution or density of the population
- existing age or gender composition of the population
- existing biographical composition of the population
- existing migration movements
- inflow of tourists

6.2 Economic and employment status of the affected social groups

- economic base of the area
- distribution of income
- local industry
- rate and scale of employment in the area
- labour needs and the spare labour capacity of the area
- movement of labour away from or into the area
- competition through non-local labour moving into the area
- non-local labour remaining in the area after completion of the development
- pressure placed on particular age range or gender groups
- job opportunities for school leavers
- short and long term unemployment trends

6.3 Welfare profile

- incidence of crime drug

5

TRANSPORT FACILITIES

- existing facilities
- essential services and movement of people and goods
- generation of new private and public roads
- adequacy of existing road network
- adequacy of existing parking facilities
- adequacy of existing traffic management schemes
- need to and cost of additional road schemes other than those which have been planned
- temporary access roads used for the development
- facilities for the rail service
- rail capacity
- need to add additional rail links
- adequacy of harbour facilities
- need to expand harbour and related facilities
- adequacy of air transport facilities
- ability to continue and social facilities to locate along route

5 Education

- demand for specific types of technical skills training
- demand for specific types of industrial training
- adequacy of existing technical institutions
- adequacy of nursery junior and secondary education facilities
- need for additional education facilities
- demand which exceeds the planned provision of educational facilities
- pre-school facilities

7.6 Housing

- property values and levels of rates
- potential conflict over land use
- availability of housing stock
- need to release additional land for housing developments
- acceptability of such land release
- adequacy of infrastructure for further housing developments

- ability of private or local authority to provide housing
- compatibility of planned development with existing housing
- location for suitable housing sites suitable for construction
- standard of provision of facilities required by authority
- design and layout of site for use to which construction can be put after termination of construction period

77 Telecommunication

- existing telecommunication facilities
- installation of additional telecommunication transmission lines or links

78 Financial implications to region

- job creation and economic development
- enhancement of regional self-sufficiency
- financial programmes of regional authority
- comparative wage rates between existing employment in the local area and those offered by the new development
- movement away from existing employment due to higher wage rates in the new development
- insurance rates
- cost implications of the supply of energy water waste management population education housing and telecommunication

8 SOCIAL AND COMMUNITY SERVICES AND FACILITIES

Could the proposed development have a significant impact on, or be constrained by, any of the following?

8: health service facilities

- adequacy of temporary facilities during construction phase of development

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- adequacy of on-site health facilities
- adequacy of facilities for primary health care (including screening facilities for tuberculosis or AIDS, family planning advice)
- adequacy of the existing health services to cope with increased population
- projected provision of health service facilities
- need for additional facilities

8.2 Emergency services

- adequacy of existing emergency services (e.g. fire and ambulance services)
- projected provision of services to meet increased demand
- need for additional emergency services
- adequacy of the emergency and safety services provided by the developer
- ability of the local resources to deal with emergencies

8.3 Recreational facilities

- adequacy of existing facilities
- projected provision of facilities to meet increased demand
- need for additional facilities
- recreational and service facilities in the workplace

9 THE NATURE AND LEVEL OF PRESENT AND FUTURE ENVIRONMENTAL POLLUTION

Could the proposed development have a significant impact on or be constrained by, any of the following?

9.1 Air pollution

- existing levels of atmospheric pollution
- the nature of air pollution such as ozone-depleting gases, acidic compounds and toxic substances
- extent of the local build up of pollutants due to inversions

- compounds (e.g. sulphur dioxide, particulates or carbon monoxide) in the atmosphere (e.g. from power generation)
- smog formation and its effect on visibility
- quantity and type of pollutants produced (including noise) and their position and direction
- production of acid rain
- pollution of water bodies
- effects on human health (e.g. respiratory, eye irritation, etc.)
- effects on sensitive areas (e.g. protected organisms, monuments, works of art)

9.2 Water pollution

- level of water pollution
- high localised levels of pollution
- pollution of surface waters (e.g. polluted underground)
- the concentration of pollutants due to variations of water level
- localised pollution (e.g. pollutants changes in salinity, water temperature, current movement)
- effective dispersal of pollutants
- salinization of fresh water
- synergistic or cumulative effects with existing pollution
- production of offensive odours
- effect of treated effluents and effluent on the flora and fauna of the lake, canal, estuary or coastal waters
- effects on delicate plants and animals (e.g. mudflats through the use of pesticides, fauna and flora)
- effect on recreation
- effect on recreation

9.3 Noise, vibration and lighting

- increase in traffic volume and its effect on illumination
- length of time of operation
- vibration or light pollution
- exacerbation of noise levels
- noise levels
- peace and quiet

Table 6.2

DRAFT RECOMMENDED ENVIRONMENTAL IMPACT CHECKLIST

Master Plan Designation		Yes	No	Maybe	Notes
▪	Is the site appropriately designated for low cost residential use on the SDAU?	_____	_____	_____	_____
▪	Is the site appropriately designated and zoned on the PA and PZ?	_____	_____	_____	_____
Natural Environment					
1	Geology and Soils				
	Is the amount of earth moving and excavation appropriate in terms of				
▪	cost?	_____	_____	_____	_____
▪	erosion potential or instability?	_____	_____	_____	_____
	Are the soils likely to need special treatment, creating extra costs, such as				
▪	high erosion?	_____	_____	_____	_____
▪	shrink-swell?	_____	_____	_____	_____
▪	low bearing capacity?	_____	_____	_____	_____
	Is the proposed development site likely to be safe in terms of				
▪	flood hazard	_____	_____	_____	_____
▪	landslides	_____	_____	_____	_____
▪	seismic hazards	_____	_____	_____	_____
▪	toxic and/or explosive hazards?	_____	_____	_____	_____
2	Drainage				
	Does the site plan respect natural drainage patterns?	_____	_____	_____	_____

Does the site plan provide buffers along drainage channels and streams?

Are buffers sufficient to address

- erosion and sedimentation
- flood safety
- vegetation protection
- use of agricultural soils, if any
- open space/passive recreation
- storm runoff infiltration?

Could the project cause/worsen downstream hazard?

3 Vegetation

Is there a wildfire hazard?

Will there be any important impact on

- plant species and wildlife habitat?
- species diversity?

4 Slope & Aspect

Are views from units protected?

Will views towards the site be affected?

Does the project provide wind protection?

Does the orientation of the project provide

- passive solar access?
- passive cooling?

Man-Made Environment

5 Land Use

Is the site on an easily accessible public transit route?

Does the organization of the site plan provide integration among the main areas/types of units?

Does the site plan provide

- convenient access for trash collection?
- convenient access for emergency vehicles?
- evacuation routes and assembly areas?
- easy automobile circulation?
- adequate, convenient parking?
- convenient access to employment centers?
- easy pedestrian access to all services?

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Is the plan integrated with adjacent development?

_____	_____	_____	_____
-------	-------	-------	-------

Does it acknowledge future development patterns planned for adjacent areas?

_____	_____	_____	_____
-------	-------	-------	-------

6 Infrastructure

Can the site be provided cost-effectively with

- water?
- sewers?
- sewage treatment?
- storm drains?
- electricity?

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Is off-site street capacity and access adequate ?

_____	_____	_____	_____
-------	-------	-------	-------

7 Services

Are the following services or facilities adequately provided on site, or available or planned nearby

- commercial?
- recreation?
- day care?
- school(s)?
- mosque(s)?
- solid waste collection?

_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

8 Cultural Features

Are there any existing prehistoric sites or artifacts that should be preserved?

_____	_____	_____	_____
-------	-------	-------	-------

Are there any old structures, or other features that could be used or adapted to provide a focus for the development or surrounding community?

9. Special Considerations

Were alternatives considered in selecting and planning the site?

Will there be an adverse cumulative effect on

- traffic and road capacity?
- service and infrastructure capacity?
- any other topic listed above?

Does the site plan draw on solutions already available in historic patterns?

10 Construction Standards

Do building standards address seismic safety?

Do building plans and standards address incorporate

- water conservation features
- energy conservation features?

Do landscape plans emphasize low maintenance and water use?

ANNEX F

PRELIMINARY CHECKLISTS FOR ANHI AND FEC

- F-1 SAMPLE OF EXISTING CHECKLIST, COMPLETED FOR A
 HG-004 PROJECT

- F-2 PRELIMINARY VERSION OF A REVISED GENERAL
CHECKLIST

PROJECT ENVIRONMENTAL EVALUATION

1 PHYSICAL AND BIOLOGICAL ENVIRONMENT

1.1 **Existing Conditions** (Describe as precisely as possible the salient characteristics under each topic for the project site and its surroundings. Attach separate notes if necessary.)

A

TOPOGRAPHY

B

GEOLOGY/SOILS

C

CLIMATE/MICROCLIMATE

D HYDROLOGY

E

HYDROGEOLOGY

F

BIOLOGY

1 2 Risks and Hazards

1 2 1 Are the soils on and surrounding the site subject to erosion?

Yes	No	Possible
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If yes or possible, comment (is the risk minor, moderate or severe?) What can/has been done to minimize the impact?

1 2 2 Are there active surface or deeper landslides on the site or surrounding it?

Yes	No	Possible
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If yes or possible, comment (is the risk minor, moderate or severe?)

1 2 3 Are there expansive soils on any part of the site and its?

Yes	No	Possible
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If yes or possible, comment (is the risk minor, moderate or severe?)

1 2 4 Are the site or its surroundings subject to flooding?

Yes	No	Possible
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If yes or possible, comment (is the risk minor, moderate or severe?)

1 2 5 Are the site or its surroundings subject to seismic risk, due to active faults or soils with potential for liquefaction?

Yes	No	Possible
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If yes or possible, comment (is the risk minor, moderate or severe?)

1 2 6 Are there other physical risks that could affect the site or its surroundings?

Yes	No	Possible
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If yes or possible, comment (is the risk minor, moderate or severe?)

1 3 Natural Features

1 3 1 Are any parts of the site and its surroundings forested or covered with significant natural vegetation?

Yes	No	Possible
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If yes, comment on the potential effects of the proposed development (can/should any parts of the site be maintained in their natural state?)

1 3 2 Does any part of the site or its environs appear on the SDAU or have the potential to be set aside as a reserve or natural park?

Yes	No	Possible
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If yes or possible, comment on the potential effects of the proposed development (can/should any parts of the site be maintained in their natural state?)

1 3 3 Are there any other significant natural features on the site or in the vicinity of the site, such as a beach, a cliff or valley?

Yes	No	Possible
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If yes, comment on the potential effects of the proposed development (can/should any parts of the site be maintained in their natural state?)

2 MAN-MADE ENVIRONMENT

2.1 Are there any cultural or historic structures or places (e.g. ancient buildings or walls) on or in the vicinity of the site?

Yes	No	Possible
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If yes, describe them, the potential impact of the project, and how the project could be designed to incorporate or protect them

2.2 Are there any places of religious importance (mosques, mausoleums, marabouts) on or near the site?

Yes	No	Possible
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If yes, describe them and their potential relationship to the project

2.3 Are there any known or suspected archaeological features on the site or its surroundings?

Yes	No	Possible
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If yes or possible, note whether excavation will be necessary prior to development or whether a part of the site may need to be set aside

2 4 Are there any places of existing or potential tourist interest in the vicinity of the site?

Yes No Possible

If yes or possible, describe them (type, distance from the site, access, etc) and indicate how the project could impact on them or be designed to enhance them

2 5 Are the site or its surroundings crossed by an electric power transmission line or lines?

Yes No Possible

If yes, describe the size (kV), area of the site affected, potential for enlargement, etc

2 6 Are there any other existing or planned elements of public or collective infrastructure on or adjacent to the site?

Yes No Possible

If yes, describe them and how they could be affected by the project or contribute to its support

3 HEALTH AND SANITATION CONDITIONS IN THE PROJECT LOCATION

What is the system of collection of domestic solid waste?

Comments

Is there a solid waste disposal site in the general area?

If yes, comment

Is wastewater (sewage) discharged on the surface?

If yes, comment

What is the state of internal circulation in the quartier?

Comments

Are there any open spaces or public areas in the interior of the quartier?

Comments

What is the general state of sanitation and hygiene in the quartier?

Comments

4 POLLUTION ET NUISANCES

What sort of nuisances are created by the residents of the quartier?

Comments

Are there any industrial plants or other activities which affect the site with liquid or gaseous pollutants or pose any other type of risk (explosion, etc)?

Comments

Have there been any epidemics or serious outbreaks of illness in the past five years?

- Cholera

Comments

- Typhoid

Comments

- Bilharzia

Comments

- Other

Comments

ANNEX G

DESCRIPTION OF THE INH PORTUGAL WORKSHOP AND RESULTS

A workshop addressing "The Planning and Production of Environmentally-Sound Social Housing Projects" was designed and conducted for the Portuguese Instituto Nacional de Habitação (INH) in 1992, under the auspices of USAID. A site plan for a project to be constructed by a Housing Cooperative was selected as a case study. The site of the proposed project was visited and photographed. The available environmental information for the site and its surroundings as well as regional and local planning information was gathered and mapped. As a result of this study, the consultant prepared a confidential assessment of the suitability of the proposed site plan.

Invitees to the one-day workshop included national and municipal government officials and staff, the staff of the National Institute of Housing, housing cooperative staff, private sector architects, engineers and planners, and university teachers and students. A total of fifty individuals participated.

The workshop took the following form:

- 1 Introduction to the objectives of the workshop and background information on relevant national and regional planning objectives and policies
- 2 Principles of environmentally sensitive site assessment, site planning and site design. This segment focused on three key objectives--safety, cost control and amenity, and included a slide presentation.
 - illustrating the preferred systematic approach to environmental assessment,
 - demonstrating examples of unsound site selection and site use, and
 - comparing historic and contemporary examples of design approaches to environmental constraints, such as steep slopes, erodible soils, heat, and strong winds,
- 3 An introduction to the case study including
 - a slide presentation, providing an orientation to the site and surrounding conditions and necessary mapped information, and
 - instructions for the afternoon small group exercise
 - assignment, including moderators and rapporteurs, to each group of 10 participants,
 - objectives of the exercise, including questions to be answered, and
 - distribution of materials
- 4 A group exercise, using the materials provided to answer three questions about the site plan

The five groups each arrived at similar conclusions regarding the suitability of the site plan to the site and surrounding conditions and recommended changes. The housing cooperative modified the plan and later reported significant improvements in the amenity and salability of the project and, most significantly in the cost of site preparation and infrastructure. Following the Workshop, the RHUDO/NENA sent a cable (see box on following page) to USAID Washington describing the process and results. Some nine months later, the Director of the INH, Enr. Hermano Silveira Vicente, reported that Promocasa, the cooperative whose project had been used for the case study, revised the site plan in accordance with the recommendations of the workshop participants. Promocasa not only achieved a more environmentally-sound and salable project but saved substantially in site development costs.

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KEY STEPS IN ACHIEVING ENVIRONMENTALLY-SUSTAINABLE HOUSING DEVELOPMENT PROJECTS

1 SITE SELECTION -- For screening alternative sites or selecting the most developable portion of an already selected site, perform a rapid check of

- General Location -- Municipal plan designation, adjacent land uses, proximity to existing/planned employment sources, proximity to existing or planned transit, transportation routes, general potential availability of services and utilities
- Physical Conditions -- Presence of potential fatal flaws -- such as the presence of unstable soils, flood hazards, toxic wastes or hazardous materials, valued/protected resources, or endangered habitat

2 SITE ASSESSMENT -- For the selected site, assemble, map and analyze data

- Topography -- slope, elevation
- Aspect -- views, solar exposure, wind direction, speed and exposure
- Geology and Soils -- stability, erodibility, seismic response, faults, bearing capacity, rippability, etc
- Drainage -- surface streams, stream corridors, flood hazards
- Vegetation -- areas with rare plants or associations of plants important as wildlife habitat

Natural Factors	o	Topography
	o	Aspect
	o	Geology
	o	Soils
	o	Drainage
	o	Vegetation
Man-made Factors	o	Land Use
	o	Access and Circulation
	o	Infrastructure
	o	Services and Institutions
	o	Cultural Heritage

3 SITE PLANNING AND DESIGN --

- Understand site constraints
- Identify anticipated residents and their needs
- Use project goals and objectives as the guide
- Emphasize multi-purpose features to mitigate impacts
- Enhance the environment wherever feasible

**RELATIONSHIP OF ENVIRONMENTAL FACTORS
TO HOUSING PROJECT PLANNING OBJECTIVES**

Objective	Resource Conservation	Cost	Safety	Amenity	Legal
Topic					
Topography		◆		◆	◆
Geology/seismicity	◆	◆	◆		
Soils	◆		◆		◆
Drainage -- ground water	◆				
Drainage -- flood hazard			◆		◆
Vegetation	◆		◆	◆	◆
Wildlife	◆				
Aspect -- solar exposure	◆			◆	◆
Aspect -- wind direction	◆			◆	
Aspect -- views				◆	
Land Use			◆	◆	
Transportation/ transit	◆	◆	◆	◆	
Noise				◆	◆
Toxics/hazards	◆	◆	◆		
Water Quality	◆		◆		◆
Air Quality	◆		◆		◆
Water Supply	◆				
Wastewater treatment	◆				
Solid waste disposal	◆	◆		◆	
Services				◆	
Cultural	◆			◆	◆
Visual Quality				◆	

ANNEX H

PROPOSED INITIAL TRAINING WORKSHOP IN ENVIRONMENTAL PLANNING

TSS proposes to organize, in the first half of 1997, an initial training workshop for technical staff of ANHI, FEC, the Ministry of the Environment, target municipalities and other partner agencies. The workshop will closely follow the format of a similar USAID sponsored workshop, described in Annex E, which was conducted successfully in Lisbon for the national housing agency of Portugal.

Objectives of the Workshop Process

The one-day workshop, which should have approximately 50 participants from ANHI, FEC, the Ministry of the Environment, Ministry of Housing, municipalities and private A & E firms, will address essential principles of environmental assessment and project planning. The emphasis would be on technical approaches and skills.

The objective will be to address the practical concerns of these individuals, rather than to offer an academic approach, and to reinforce the presentation of principles of environmental analysis and planning by devoting the afternoon to one or more group exercises directed at ANHI and FEC projects or modified versions of projects.

With illustrations taken from projects and historic sites in Morocco and, where appropriate, elsewhere, participants will be provided with the concepts needed to address a small group project planning exercise. Much of the available environmental information for the site and its surroundings as well as regional and local planning information has been gathered and will be mapped. As a result of this study, the consultant and trainee trainers will prepare a confidential assessment of the suitability of the proposed site plan.

The workshop should take the following form:

- 1 Introduction to the objectives of the workshop and background information on relevant national and regional planning objectives and policies
- 2 Principles of environmentally sensitive site assessment, site planning and site design. This segment focused on three key objectives--safety, cost control and amenity, and included a slide presentation.
 - illustrating the preferred systematic approach to environmental assessment,
 - demonstrating examples of unsound site selection and site use,
 - illustrating opportunities for municipalities to work with ANHI and, in particular, FEC in preparing infrastructure plans to support needed developments, and
 - comparing historic and contemporary examples of design approaches to environmental constraints, such as steep slopes, erodible soils, heat, and strong winds,

- 3 An introduction to the case study including
 - a slide presentation, providing an orientation to the site and surrounding conditions and necessary mapped information, and
 - instructions for the afternoon small group exercise
 - assignment, including moderators and rapporteurs, to each group of 10 participants,
 - objectives of the exercise, including questions to be answered, and
 - distribution of materials

- 4 A group exercise, using the materials provided to answer three questions about the site plan

Outline of the Training Workshop and Initial Training of Trainers

Preparation for the workshop will offer the opportunity to work with key staff of ANHI who already have a background in environmental analysis and planning and who may, in the longer term, become trainers both of ANHI staff and of partner, municipal and private sector planners and architects. It is proposed that three to five ANHI personnel work with the international and local TSS environmental consultants for approximately one week in advance of the workshop and that these individuals then act as moderators for the small group exercise at the workshop.

The following is a tentative schedule for the interaction between the consultants and the trainee trainers

Day 1	Presentation and discussion of objectives for the week and for the one-day workshop. This introduction will include a presentation of the principles of site analysis and response to be given at the workshop. This will help the participants to become familiar with the approach to be taken at the workshop. It will also be a time when the ANHI participants are encouraged to offer ideas about problems they feel should be addressed at the workshop and suggest materials that would illustrate particular points.
Day 2	Detailed review of general presentation, with identification of any appropriate modifications or insertions of additional material, detailed review of case study or studies, including materials to be presented and questions to be posed for the group exercise.
Days 3/4	Assembly of materials for the workshop and preparation of additional maps, photographs, etc.
Day 5	Rehearsal and logistical preparations.

Recommended Case Study (Studies) and Materials

Ideally, the case study for the workshop exercise should have the following characteristics

- it should be a project for which a plan has been prepared but on which work has not yet begun,
- the plan should need and lend itself to modification without risk of offending its authors, and
- the project should allow the identification of a wide range of on-site and off-site environmental factors to be taken into account in modifying the site plan

At this time, no single project has emerged (as it did in Lisbon) that meets all these requirements. Indeed, the main constraint in the selection process has been to find a project representing a wide range of environmental issues. The Al Manar site at Marrakech most closely meets the criteria. However, the entire Sraghna sector should be considered and it may be desirable to introduce some imaginary features to ensure that the exercise is sufficiently comprehensive. At a smaller scale, the bidonville rehousing project at Sidi Yahia des Zaers would be an excellent case study. However, the presentation of more than one exercise could lead to logistical difficulties and confusion. Further consideration should be given to this matter prior to a final decision.