United States Agency For International Development

The Hashemite Kingdom of Jordan Ministry of Education

Jordan Schools Construction & Rehabilitation Program

Scoping Statement for Southern Governorates Schools

July 2008

This Publication was produced for review by the United States Agency for International Development. It was prepared by CDM International Inc. in association with Engicon.

USAID Contract No.: 278-C-00-06-00326-00
CDM PROJECT NO.: 3029-53947

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ACRONYMS AND ABBREVIATIONS

DOA	Department of Antiquities
EA	Environmental Assessment
EMP	Environmental Management Plan
MOE	Ministry of Education
USAID	United States Agency for International Development

1. INTRODUCTION

The Ministry of Education (MOE) of Jordan, with the co-operation of the United States Agency for International Development (USAID), is implementing the Jordan Schools Construction and Rehabilitation Program. The Program aims to provide up to 28 new schools by 2010, with approximately 24 classrooms in each. This will immediately benefit about 18,200 students. The Program will also undertake the renovation of around 100 existing schools. This study addresses Phase 4 of the program with 12 new schools. For the southern governorates (except Aqaba), Phase 4 includes 3 new schools in the areas of Karak (Al-Marj), Wadi Mousa (Petra), and Southern Ghours (Ghour As-Safi). CDM International is managing the project and co-operating with Engicon for environmental studies.

In accordance with Jordanian and USAID regulations, an Environmental Assessment (EA) for the proposed project is being prepared. The EA process includes conducting a Scoping Session to identify and discuss the significant environmental issues associated with the project activities. Participants in the session generally include representatives of government, public and private institutions, as well as other stakeholders that have expertise or interest in the project's environmental issues and uses of the school buildings, such as teachers, students, principals, parents, and non-governmental organizations. The results of the session are incorporated into this Scoping Statement, and will be included in the Environmental Assessment report.

1.1 SCOPING OBJECTIVES

The objectives of the Scoping Statement, as required by USAID environmental regulations 22CFR 216.3 (a) 4, are summarized as follows:

- Determine the scope and significance of issues to be analyzed in the EA
- Identify the significant and non-significant environmental issues that will be analyzed further in the EA, including direct and indirect environmental effects.
- Provide a schedule and methodology for preparation of the EA.
- Provide a description of the environmental analysis to be conducted and the disciplines required.

The scoping process serves to identify the significant and non-significant environmental issues that will be addressed in detail in the EA. Based on the results of a preliminary environmental review; a list of significant environmental issues for

the Project was developed. A Pre-Scoping Brief available in English and in Arabic (Appendix A) was distributed to all participants of the Scoping Session. The Brief described the Project, as well as the relevant environmental issues that were identified during the preliminary investigations

Invitations to the Scoping Session were sent out to 39 agencies, and a total of 42 people attended, excluding presenters and organizers (Appendix B). The session was held on January 28, 2008 from 9.30 am to 2.00 pm, at Crown Plaza Resort, Petra.

Following opening remarks by the MOE, represented by Eng. Jihad Al-Ramlawi, USAID representatives, Mr. David Bruns and Dr. Amal Hijazi, the Project Manager, CDM, presented the Project Description, focusing on the new learning system and the concept design of the proposed schools. After that, a presentation on the identified environmental issues associated with the Project was made by Engicon. This was followed by a discussion period designated for technical issues. The session was held in Arabic language in order to maximize participation and facilitate communication.

1.2 DESCRIPTION OF STUDY AREA

The study area is located in the South of Jordan, in the governorates of Ma'an and Karak (Figure 1.1). The following is a brief review of the elements that will be covered in greater detail in the EA.

1.2.1 Population and Housing

The project will serve a total population of over 130,000, around 52% of which are rural.

Table 1.1: Projected Population Distribution by Area and Sex, 2008

District / Governorate	Males	Females	Total
Karak District / Karak Governorate	35,448	35,161	70,609
Southern Ghours / Karak Governorate	18,098	17,229	35,327
Petra District (Wadi Mousa) / Ma'an Governorate	13,658	12,831	26,489

Source: Based on Department of Statistics Census of 2004 and projected population growth rates.

Figure 1.1: Map of Jordan Showing Southern Governorates

1.2.2 Climate

The climate varies in the areas under consideration, since the project includes schools that are distributed in a wide region. Table 1.2 shows selected climatic information provided by the Jordan Meteorological Department from 3 stations located in the southern governorates.

Table 1.2: Climatic Information

Parameter	Southern Ghours	Wadi Mousa	Ma'an
Mean maximum temperature (°C)	31.0	21.5	24.8
Mean minimum temperature (°C)	19.4	11.5	10.1
Total annual rainfall (mm)	75.8	177.2	42.5
Mean annual relative humidity (%)	50.3	49.5	52.4
Prevailing annual wind direction (°)	336	N.A.[1]	290
Mean annual wind speed (Knots)	1.3	N.A.	6.3

Source: Jordan Meteorological Department, Jordan Climatological Handbook, 2000

1.2.3 Economic Activity

The economic activity ranges in the areas under concern. For example, the unemployment rate for the Governorate of Karak is 22.3%, which is more than that of the Governorate of Ma'an. It is worth mentioning that the Kingdom's unemployment

[1] N/A: Not Available

rate is estimated at 14%. Therefore, in general, unemployment in the project areas is considered to be relatively high.

Table 1.3: Unemployment Rate by Sex and Governorate, 2006

Governorate	Male (%)	Female (%)	Total (%)
Karak	19.1	34.9	22.3
Ma'an	16.4	23.5	17.5

Source: DOS, Employment and Unemployment Survey, Annual Report 2006

The types of activities in the governorates under consideration for the year 2006 are detailed at Table 1.4 below. Numbers given are in percent distribution. As the table clearly shows, elementary occupation is the dominant type of activity in both governorates, followed by professionals in the Governorate of Karak. In the Governorate of Ma'an, these are followed by professionals and plant, machine operators and assemblers.

Table 1.4: Activity Status by Governorate, 2006

Type of Activity	Karak	Ma'an
Legislators, Senior Officials & Managers	0.0	0.0
Professionals	21.2	14.2
Technicians & Associate Professionals	9.6	10.5
Clerks	6.8	8.0
Service Workers, Shop & Market sales Workers	7.1	6.7
Skilled Agricultural and Fishery Workers	4.6	2.7
Craft and related Trade Workers	8.8	8.6
Plant, Machine operators and Assemblers	11.1	14.2
Elementary Occupation	30.7	35.1

Source: Department of Statistics, Employment and Unemployment Survey, Annual Report 2006

1.2.4 Education

For the scholastic year 2006/2007, the number of students and schools for the relevant Education Directorates are found in Tables 1.5 and 1.6 below, respectively. As indicated in the tables, Karak houses the highest number of students followed by the Southern Ghours, and finally Wadi Mousa.

Table 1.5: Distribution of Students in MOE Schools by Directorate and Sex

Education Directorates	Total	Female	Male
Karak	20,916	10,506	10,410
Southern Ghours	10,491	5,104	5,387
Wadi Mousa (Petra)	6,836	3,373	2,463

Source: Ministry of Education, Education Statistics for Scholastic Year 2006/2007

The number of schools varies among the different areas, but it is worth mentioning that the number of schools at Wadi Mousa district is higher than that of Southern Ghours district, even though the total number of students at Wadi Mousa district is lower than the total number of students at Southern Ghours district.

Table 1.6: Distribution of MOE Schools by Type and Directorate

Education Directorates	Females	Male	Co-ed	Total
Karak	14	32	49	95
Southern Ghours	7	15	8	30
Wadi Mousa (Petra)	6	11	22	39

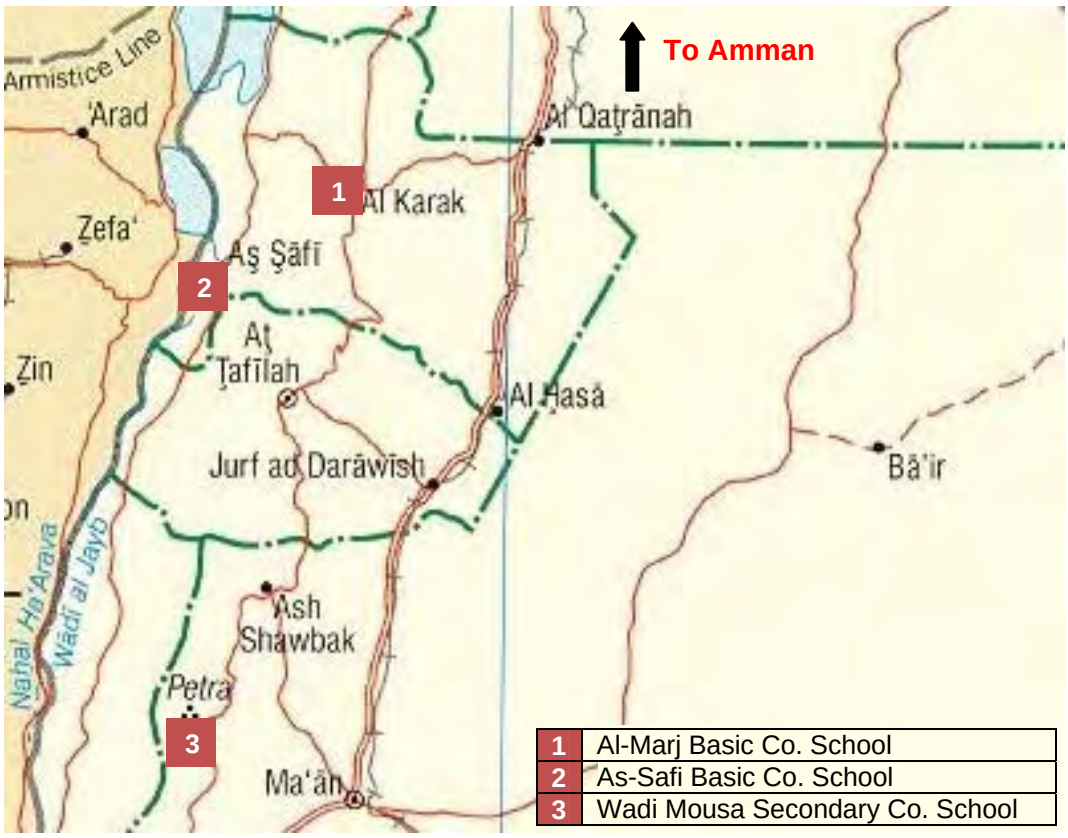
Source: Ministry of Education, Education Statistics for Scholastic Year 2006/2007

Co-ed is defined as a school hosting girls and boys between the 1st and 3rd grade and girls only between the 4 h and 12th grade.

1.3 PROJECT DESCRIPTION

The project under study consists of the construction of 3 new schools in the southern governorates of Jordan (Figure 1.2).

Figure 1.2: Locations of Propsed Schools



1.3.1 Karak Governorate

1.3.1.1 Al-Marj Basic Co-Ed School

This school is located in Al-Karak City, specifically in Al-Marj area. Its type is basic co-ed including grades 1st through 10th with 22 classrooms. The reason for selecting this school is the need to evacuate nearby rented schools. Therefore, it is expected that the school's construction will help in solving the crowding problem in surrounding schools, since there is lack of governmental schools in the area such that the nearest school, which is Al-Marj Basic Co-Ed, is 1 km away.

The proposed land for constructing the school is 5,900 m^2 and is suitable for the purpose. Sand type is partly rocky covered by superficial deposits, and the land is slightly sloping (Figure 1.3).

Figure 1.3: Land Area of Proposed Al-Marj Basic Co. School

1.3.1.2 As-Safi Basic Co. School

The proposed type for this school is basic co-ed, including grades 1st through 6th with 18 classrooms. It is going to be located in the Southern Ghours, specifically in Ghour As-Safi, which is highly populated. There is a need for this school, and the purpose for building it is to solve the crowding problem in surrounding schools such as Ghour As-Safi School, As-Safi Basic Boys School, and As-Safi Basic Girls School.

The first option of land plot suggested for this school had an area of 2,500 m^2. However, upon carrying out the proposed design, it was found that the proposed land parcel is too small to fulfill the essential school facilities and services (Figure 1.4). Therefore, the Ministry of Education proposed a second option of a land plot that has an area of 9,782 $m^{2,}$ which is only 500m away from the land parcel proposed earlier (Figure 1.5).

Figure 1.4: Old Site for As-Safi Basic Co. School

Figure 1.5: New and Old Sites for As-Safi School

The land has a complex type of fill, and different soil types, such as rocky sand, sandstone, silty sand, huge rocks and a portion of it is covered with fill (Figure 1.6).

Figure 1.6: Proposed Land Area for As-Safi Basic Co. School

1.3.2 Ma'an Governorate

1.3.2.1 Wadi Mousa Secondary Co-Ed School

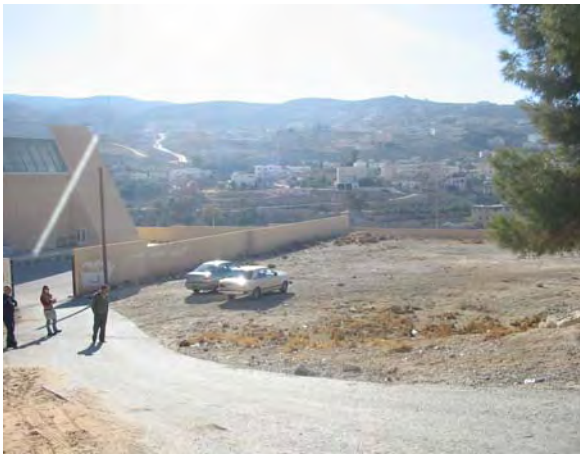
This school is located in Wadi Mousa region, specifically Petra City. Its type will be basic co-ed, including grades 1st through 12th with 14 classrooms.

The aim behind constructing this school is to solve the crowding problem in surrounding schools such as Hamza Bin Abdel-Muttaleb Basic Male, Al-Isra' Basic Co-Ed, Arwa Bnt Abdel-Muttaleb Basic Co. and Banat Wadi Mousa Secondary. Another reason is the lack of governmental schools in the region such that there are only two schools that can be considered near.

The area of the proposed land plot for building the school is 3,800 m^2 (Figure 1.7) However, there are about 700 m^2 available at the side of an adjacent sport center (Figure 1.8). Therefore, the widening process through removing the wall can make the total size of the land about 4,500 m^2 (

Figure 1.9).

Figure 1.7: Land Area of Proposed Wadi Mousa Secondary Co. School



The suggested location is very strategic in Wadi Mousa, and is expected to serve most of the mentioned schools of the MOE. Regarding vegetation, the land is not cultivated; it can be described as partly being paved and the rest covered by silt sandy soil. However, there are two pine trees at the edge of the land which must be considered during construction.

Figure 1.8: Sport Center Adjacent to the Proposed Land Plot

Figure 1.9: Wall Separating the Land Plot from the Adjacent Sport Center

2. SIGNIFICANT AND NON-SIGNIFICANT ENVIRONMENTAL ISSUES

This section presents the environmental issues for the Project, which were identified prior to and following the Scoping Session. These issues, as well as the methods used to evaluate their significance, are described herein, along with comments made by the participants during the discussion.

The environmental issues presented were divided into three categories: Construction, Socio-economic, and Public Health & Safety. Following an open discussion, the participants then met in four breakout groups to discuss the relevant issues in greater detail. The breakout group topics were devoted to the three categories presented earlier, in addition to a fourth group which was added later on for discussing the issues of Green Building Design. Following presentation of the conclusions in each of the breakout groups, the participants filled out an Environmental Issues Questionnaire (Appendix C).

The Scoping Session allowed people who have an interest or expertise in the environmental issues pertaining to the Jordan Schools Project to learn more about the project and to voice their opinions on the identified, as well as other, issues of concern.

2.1 PRELIMINARY LIST OF ENVIRONMENTAL ISSUES

The following is a list of the environmental issues related to the proposed schools that were identified prior to the Scoping Session. The list consists of issues outlined in the Pre-Scoping Brief and the Environmental Issues Questionnaire:

Construction Issues	Socio-economic Issues	Public Health and Safety Issues
Occupational safety and health Worker sanitation Traffic Noise Dust pollution Water demand Soil and water pollution Water stagnation Waste generation Employment opportunities	Interaction between students / classes Student psyche inside the classroom Monitoring of student behavior by supervisors Employment and economic development Land use Archaeological resources Traffic Travel time to and from school Energy saving	Communicable disease prevention Potable water supply and distribution Sanitary facilities Indoor and outdoor safety issues for students Injury from car accidents Protection from intruders Safety in workshops and laboratories Provisions for students with special needs

Construction Issues	Socio-economic Issues	Public Health and Safety Issues
	Water demand Irrigation of Vegetation	Earthquake protection measures Solid waste Noise

Furthermore, the issue of Green Building Design was discussed, some of the issues that were raised include:

- Water Saving
- Energy Conservation
- Air Quality
- Climate Control
- Reflection of Culture and Traditions

Maintenance and cleanness of different schools facilities, as well as the use of schools building by community after school hours were also discussed by participants.

2.2 DETERMINATION OF ISSUE SIGNIFICANCE

At the end of the Scoping Session, participants were requested to fill out an Environmental Issues Questionnaire in which they were able to evaluate the identified issues pertaining to the Project, during both construction and operation.

The level of significance of each issue was rated according to an evaluation scheme ranging from "Irrelevant Issue"(0) to "Strongly Agree" (5). The responses were given by filling in from 0 to 5.

Thirty Eight (38) questionnaires were collected at the end of the session, compared to a total number of 42 participants (excluding the presenters and organizers). However, all the participants of the Scoping Session had the opportunity to voice their opinions on the environmental issues, whether during the open discussion or the breakout groups or by handing in written notes. This Scoping Statement incorporates all these opinions, in addition to the results of the questionnaires, with the aim of determining each issue's significance. If more than fifty percent of the respondents agreed that the issue was of concern, it was considered significant. However, some issues were considered significant by the Consultant even though less than fifty percent of the respondents agreed they were of concern.

In summary, all of the issues that were identified in the Pre-Scoping Brief were rated by the participants as significant, either during construction or operation. Appendix D contains the detailed minutes of the Scoping Session as well as a summary of the questionnaire responses.

2.3 RESULTS OF THE ANALYSIS

Since there is more than one school under discussion, and taking into account the similarity of the study methodology, the session focused on general issues pertaining to all the schools, with references to particularities in some schools. Therefore, the sections that follow show the results for the 3 schools together.

2.3.1 Construction Issues

The environmental impacts during the construction phase of a project are usually negative. Fortunately, most of these impacts are temporary and can be mitigated by taking the necessary precautions, and applying proper management.

2.3.1.1 Occupational Safety and Health

Forty three percent (43%) of the respondents agreed (22% strongly) that there are possible risks to the health and safety of the workers onsite, while 38% were neutral concerning this issue, and only 14% thought it was irrelevant. According to the responses to the questionnaires, the issue is considered insignificant; however, this issue will be addressed in the EA.

One respondent stated the importance of providing enough sanitary facilities onsite. Another referred to the fear of accidents that might take place onsite, and how to deal with it since workers are of main issue in this case. One respondent suggested offering life insurance for workers.

In the breakout group discussion, the following issues were raised:

- Health and safety of workers, i.e. not exposing workers to diseases such as asthma.
- Using public safety equipment, such as helmet, safety shoes, gloves, glasses and muzzles.
- Installing direction signs for workers and citizens.

- Taking into consideration age group and experience of workers hired for the project.
- Security check must be implemented for foreign workers, especially in Wadi Mousa, since it is a critical area.
- Construction equipment must be in good condition.

2.3.1.2 Workers' Sanitation

Around 84% of the respondents agreed (45% strongly) that workers' hygiene on site does have an impact on the environment. Only 5% disagreed to that. The issue is therefore considered significant. One respondent stated that continuous monitoring and follow-up for provided sanitary units is a must, especially if maintenance was required.

The breakout group recommended the following:

- Providing temporary sanitary units for workers onsite, and preferably having them connected with a sanitary network instead of septic tanks.
- Providing drinking water onsite.
- Providing workers with convenient temporary housing units.

2.3.1.3 Traffic

Eighty four percent (84%) agreed (21% strongly) that traffic generated from construction activities will negatively affect normal traffic in the area. The issue is considered significant. One respondent referred to the importance of avoiding rush hour during the movement of construction machines and vehicles.

The breakout group stated the following:

- It is worth noting that road infrastructure in Wadi Mousa is very weak, specifically regarding access to the proposed site. Routes are narrow and unprepared for major construction activities. A solution might be to rehabilitate the roads conducive to the location of the school site.
- Specifying certain hours for the movement of construction vehicles, thereby avoiding rush hour.
- Installing warning signs and constructing speed bumps.

2.3.1.4 Noise

Seventy four percent (74%) of the respondents agreed (26% strongly) that noise generated during construction activities will drastically affect the residents of the neighbouring areas. According to the respondents, the issue is considered significant. One respondent suggested using noise dampers in order to reduce noise generated from site activities.

During the breakout group discussion, the participants agreed on specifying acceptable working hours for excavation works, and when using noisy equipment such as drills.

2.3.1.5 Dust Pollution

Around 74% agreed (40% strongly) that dust generated from excavation and construction related activities will have a negative impact on neighbouring areas; the issue is therefore considered significant. However, one respondent thought that the effect of dust will be minimal since the proposed locations are not highly populated. On the other hand, another respondent stated that dust is an issue that will cause major diseases, especially those related to allergy. Additionally, one respondent suggested using dust control devices and filters in order to prevent the spread of dangerous residues such as Particulate Matter (PM_{10}).

During the breakout group discussion, participants suggested the following:

- Covering the construction site with barriers, pavilions and tins.
- Sprinkling water onsite continuously.
- Covering construction vehicles and machines when transporting material.

2.3.1.6 Water Demand

Fifty eight percent (58%) agreed (16% strongly) that there would be a burden on water resources as a result of construction activities. Accordingly, the issue is considered significant. One respondent indicated that resources are limited in the area of the project. Another pointed out that the Contractor is responsible for providing water onsite; this could be achieved through buying water from private tankers in order to cover demand.

The breakout group participants recommended the following:

- The Contractor should be able to arrange for alternative means of water resources so as to avoid any crisis in the area.
- Using water tankers.
- If the Contractor decides to use public water utilities, then he should be charged for it.

2.3.1.7 Soil and Water Pollution

Different opinions appeared regarding the issue of soil and water pollution, such that 36% of the respondents agreed that there would be a chance of soil or water pollution due to construction activities, whereas 31% of the respondents were neutral, 17% disagreed, and 16% thought that this issue is irrelevant. The issue was therefore considered insignificant by participants but will be addressed in the EMP. One respondent indicated that investigating the location of the main water pipes and avoiding drilling and excavation around them is a must. Another respondent thought that impact will be noticed mostly if surface water bodies existed nearby. Moreover, one of the respondents stated that Wadi Mousa has neither surface water resources nor groundwater, and another respondent mentioned that the most vulnerable area among the three proposed locations is Southern Ghours.

In the breakout group discussion, participants pointed out the following:

- The Contractor must be responsible for washing nearby trees after any activity that produces dust.
- Scattering and dispersion of construction waste might contaminate nearby lands.
- If any groundwater resources were close to any of the proposed sites, then contamination by chemical leakage is expected, therefore preventive measures must be taken.
- Retaining walls might be needed to support soil.

2.3.1.8 Water Stagnation

Sixty three percent (63%) of the respondents agreed (26% strongly) that water stagnation as a result of on-site activities poses a risk to neighbouring areas. The subject is considered significant, as it might constitute a breeding medium for disease-carrying insects. In addition to voicing concerns over the negative impacts of on-site stagnant water, one respondent voiced out the importance of using

insecticides, another referred to the importance of minimizing the effect as much as possible, specifically in the location of Southern Ghours. One of the respondents thought that this issue is irrelevant since the Contractor will be in the need of all water supplied to the site, therefore stagnation will not take place.

In the breakout group discussion, it was pointed out that a water course must be provided onsite for the purpose of draining excessive amounts of water. This must be done according to the slope of the land, and if possible to be connected to a close wastewater network or into a valley and that drainage must be done appropriately. Additionally, some participants suggested spraying pesticides, if applicable.

2.3.1.9 Waste Generation

Around 66% of the respondents agreed (26% strongly) that construction waste will pose a nuisance to neighbouring areas of the new schools. Only 11% disagreed. Therefore the issue is considered significant. One respondent stated that removal of waste should take place once the waste is produced in order to maintain the cleanliness of the area where the project is located.

In the breakout group discussion, it was agreed that the proper disposal of construction waste should be done on a regular basis and in an organized manner. It was also suggested to separate waste according to its type (paper, wood, metal, demolished construction material, etc.) in a convenient way.

2.3.1.10 Employment Opportunities

Seventy nine percent (79%) of the respondents agreed (47% strongly) that job creation during construction activities will positively impact in the surrounding areas; 11% were neutral and only 5% disagreed. According to numbers obtained, the issue is considered significant. Many respondents preferred hiring local workers for each school construction project, and one respondent suggested that the employment of Jordanian citizens in this project should be set as a condition in the contract, where by the Contractor would be obliged to comply and abide by this condition.

2.3.2 Socio-economic Issues

A development project can result in many socioeconomic benefits for the community that will house its facilities. These could range from job creation to decreasing the daily transport time to a similar facility situated further away, in this case, the school.

The following are the socio-economic issues identified and discussed during the Scoping Session.

2.3.2.1 Interaction between Students

Eighty nine percent (89%) of the respondents to the questionnaire agreed (50% strongly) that there are concerns regarding the interaction between students of different grades; it is therefore considered significant. One respondent suggested that classrooms must be spacious in order to prevent overcrowding.

During breakout group discussion, participants suggested the following:

- Providing chairs with wheels to facilitate student's movement around the classroom during different activities.
- Providing computers and facilitate access to libraries so as students would participate in the educational process actively.
- Assigned a specified age group for each floor.
- Certain school activities would take place among different age groups under the supervision of the administration or school staff.

2.3.2.2 Student Psyche

Around 95% of the respondents agreed (66% strongly) that the student's psyche inside the classroom is important. Questionnaire results indicated that participants believe that student psyche issue is significant. This is influenced by the color of classroom walls, lighting, temperature, and the amount of dust in the room.

The majority of the respondents agreed that non-traditional colors such as light pink, baby blue, and light violet are preferable. One respondent stated that type and distribution of light is also essential.

In the breakout group, the participants made the following suggestions:

- Participants agreed that heating systems should be installed in classrooms during winter, in addition to providing air-conditioning systems for schools in the Southern Ghours area, where it is extremely hot during summer.
- The majority of the participants preferred using white boards over traditional chalk boards in order to minimize student exposure to dust, while others suggested using overhead projectors.

- Some participants stated that students with special educational needs are of main concern, and should be taken into consideration.
- One participant stated that educational and learning models must be provided for all students for the sake of equality in the learning process.
- Some participants stated that providing internet access for students may contribute in developing research skills and aid the students in completing their daily assignments and projects.
- A number of participants agreed that teachers must acknowledge different teaching techniques in order to overcome problems associated with students who are shy or face learning difficulties.

2.3.2.3 Monitoring Student Behavior

Eighty four (84%) of the respondents agreed (47% strongly) that monitoring of student behavior by school supervisors is an important issue and therefore of significance. One respondent stated that this issue must be taken into consideration during the design of the school. During the general discussion and breakout group session, the majority of participants agreed that schools must be provided with surveillance cameras in halls and yards. Additionally, teachers must be available around students during recesses and breaks.

2.3.2.4 Employment and Economic Development

Over 76% of the respondents agreed (34% strongly) that constructing the schools will contribute to increasing the employment and economic opportunities in the area. The results showed that the issue is considered significant by participants.

Participants in the general discussion and breakout group session indicated that many types of jobs will be generated as a result of constructing the schools, and that employment priority should be given to local teachers and staff. Moreover, some participants added that certain businesses, such as libraries, shops, and restaurants might be created near the schools. One suggestion was to plant fruit trees within school premises and by selling the crops, the school's income will increase.

2.3.2.5 Land Use

Fifty eight percent (58%) of the respondents agreed (32% strongly) that building the schools will affect land use in the surrounding areas. It is therefore considered

significant. Respondents stated that the construction of the schools will lead to an increased population in surrounding areas; furthermore, one respondent acknowledged that the area may thrive as a result of building the school, where demand on different shops will increase.

Breakout group participants expected that land prices in commercial zones will rise, while land prices in residential zones around the school will decline.

2.3.2.6 Archeological Resources

Fifty eight percent (58%) of the respondents disagreed that school construction will cause any damage to archaeological resources, while around 24% were neutral. According to findings, the archaeological resources issue is considered insignificant; nevertheless, it will be addressed in the EA.

Breakout group participants indicated that if any archaeological sites where discovered near the proposed schools, then there is a possibility that chaos resulting from visitors and tourists will affect the educational process negatively. Others suggested that having an archeological site near the school might lead to a positive cultural outcome where field visits could be arranged regularly, therefore, promoting positive behaviors such as protecting natural heritage.

2.3.2.7 Traffic

Around 63% of the respondents agreed (24% strongly) that there will be traffic congestion in the vicinity of the school during drop off and pick up hours. Participants believe the matter to be significant. The extent of the traffic will depend on the location of entrances and exits of the school structure and whether they are located on a main or a secondary road. One respondent confirmed that traffic may occur due to the fact that streets surrounding the proposed locations are very narrow.

Breakout group participants proposed encouraging volunteers to help students in crossing streets near the school. It was also suggested that a service road would be constructed as part of the school for the purpose of students' pick-up and drop-off hours. This would also enhance the safety of students. In addition, it was proposed that a school committee would take part in managing the traffic within the immediate vicinity of each school. This could be achieved through providing suitable parking lots and regulating students’ exit time.

2.3.2.8 Travel Time

Sixty eight (68%) of the respondents agreed (32% strongly) that the new schools will decrease travel time for students. The matter was considered significant by the participants. One respondent stated that schools must be located in central areas where it can be easily accessed by the students.

Breakout group participants proposed choosing appropriate locations; others indicated that providing buses for transportation will result in decreasing the time to get to school, and reducing the load on public transportation.

2.3.2.9 Energy Saving

Seventy three percent (73%) of the respondents agreed (41% strongly) that energy saving technologies and programs within the new schools are important, and therefore of significance. One respondent suggested designing the schools in a manner that maximizes the utilization of sun light energy. Others confirmed that taking this issue into account may lead to increased cost of construction, but in the long run, it will reduce the demand on energy, thus, reducing operational costs.

Participants in the breakout group suggested using solar panels and tanks for water heating purposes. Some suggested the use of photovoltaic cells for the purpose of electricity generation. Sufficient heating systems with proper insulation were also proposed. Moreover, some participants proposed that equipment used during operation of the school should be environmentally-friendly, therefore consuming low amounts of energy.

2.3.2.10 Water Demand

Seventy three percent (73%) of the respondents agreed (35% strongly) that demand on water will increase as a result of building schools; therefore the issue is considered significant. One respondent suggested installing grey water models inside the schools.

In the breakout group discussions, participants agreed that water rationing programs must be implemented. They also recommended constructing wells, designing inclined roofs to collect rain water, and applying other water harvesting techniques.

2.3.2.11 Irrigation of Vegetation

Around 37% of the respondents agreed, 29% were neutral and 34% disagreed that irrigation of landscaped areas with vegetation within the schools will have a negative impact on water resources in nearby areas. Participants therefore considered the matter to be insignificant. However, the issue will be addressed in the EMP as some respondents proposed using grey water in order to irrigate these green areas.

Participants during the breakout group discussion proposed applying water harvesting methods, and constructing a well for the purpose of collecting rain water. Others suggested providing efficient irrigation techniques, alongside planting vegetation that require minimal amounts of water.

2.3.3 Public Health and Safety

An essential requirement for building any school is to provide a safe and healthy environment for the students, teachers, and the staff working in the school.

2.3.3.1 Communicable Disease Prevention

Seventy eight percent (78%) of the respondents agreed (49% strongly) that there is a relation between the school facilities and the spread of diseases; the issue is thus considered significant. Some respondents suggested that regular ventilation of classrooms will prevent the distribution of diseases to some extent.

In the breakout group discussion, participants pointed out that providing spacious classroom will avoid the problem of crowdedness and help in reducing the spread of diseases among students. Others suggested providing a room for medical examination, with a full time doctor in order to examine students who are suspected of having an infectious disease. Some participants suggested that the school should be well equipped and must be provided with enough staff to ensure cleanliness of the school facilities.

2.3.3.2 Potable Water Supply and Distribution

Twenty one percent (21%) of the respondents disagreed that the method used for distributing potable water may pose a risk on the students, while 35% thought of the matter to be irrelevant. Accordingly, the issue is considered insignificant but will be addressed in the EMP. One respondent advised to regularly monitor the quality of water at the schools.

During the breakout group discussion, participants suggested that a well should be constructed for use by the school. Furthermore, water saving devices must be installed. In addition to that, many indicated that drinking water should meet the Jordanian drinking water standards.

2.3.3.3 Sanitary Facilities

Eighty two percent (82%) of the respondents agreed (47% strongly) that sanitary facilities may become a source of odour and contamination in the schools, rendering the issue of sanitary facilities of significance. Respondents preferred designing the schools in such a manner that restrooms are away from classrooms to avoid foul odour issues, and if they were located within the school building, it is best to separate them by a corridor. They also stressed the importance of properly ventilating restrooms and classrooms.

Participants of the breakout group indicated considering student age when designing sanitary facilities. Some participants preferred the oriental toilets over the regular ones since they are safer and cleaner. One suggestion was to separate the tanks used for sanitary facilities from those used for other purposes, and providing them with antiseptic material in order to ensure the cleanliness and safety of facilities.

2.3.3.4 Indoor and Outdoor Safety Issues

Around 61% of the respondents agreed (32% strongly) that there is a risk of accidents to students inside the school building; participants consider the issue to be significant. One respondent suggested minimizing the number of floors and stairs, and designing wide entrances and hallways, as well as using anti-slip pavements. Some suggested using white boards instead of chalk boards. In general, the majority of the respondents agreed that awareness supervision, and follow-up is what matters most.

The breakout group participants suggested avoiding sharp edges when selecting the furniture. Others indicated that a cafeteria should be included in the design of the schools so as to discourage students from leaving the school for the purpose of purchasing food. In addition, participants stressed the importance of providing more than one access to the cafeteria in order to prevent overcrowding and stampeding of students. Participants also concentrated on a particular issue, and that is the quality of food offered by the cafeteria, stating that the type of food provided directly affects

the safety of students. Therefore, measures to ensure the safety of food provided are essential.

Participants also recommended designing high retaining walls around the school building to ensure students' safety and avoid intruders. They also stated that the main gates of the schools should be designed in a manner that prevents the immediate onrushing of students into the street. Moreover, courtyards should be covered and secured. Finally, abiding by the Jordanian building codes was one of the issues highly stressed by all participants.

2.3.3.5 Injury from Car Accidents

Forty seven percent (47%) of the respondents believed that there is a risk of injury on the students from car accidents, while 42% thought the matter was irrelevant, accordingly, the issue is considered insignificant by participants. However, the issue will be addressed in the EA and the EMP anyway. One respondent recommended having a service road, as well as proper signage in order to overcome this problem. Another participant recommended having a pedestrian crossing zebra lines. However, it is worth mentioning that none of the proposed schools is located on a main road.

The breakout group participants stated that awareness campaigns should be organized by each school's administration. This can best be accomplished by assigning a committee to be responsible for traffic awareness campaigns; another suggestion was to avoid placing the main entrance gate of the school at a main road, and providing proper fencing for court yards will surely help in preventing students from leaving the school premises.

2.3.3.6 Protection from Intruders

Fifty three percent (53%) of the respondents agreed (24% strongly) that intruders to the school are a cause for alarm. Results of the questionnaire showed that participants think of the matter as significant. Breakout group participants emphasized that school gates must be guarded at all times. Others recommended designing high retaining walls around the schools, and installing alarm systems in order to prevent intruders from coming in. Some suggested that administration offices must be located in a position that enables overlooking the main entrance, so that visitors entering the school facilities would be monitored easily.

2.3.3.7 Safety in Workshops

Over 65% of the respondents agreed (16% strongly) that safety in workshops is a significant issue; the percentage indicates that the issue is considered significant. One respondent stated that the safety of students at workshops might be jeopardized in case of lack of appropriate equipment. Others suggested that equipment with poor quality is considered hazardous, and poses a threat to students.

The breakout group participants recommended the following:

- Provide workshops with safety equipment such as glasses and coats.
- Proper ventilation by using suitable fans and ventilators.
- Alarm system should be installed for different purposes (fire, gas leak, etc.)
- First aid tools and well-trained personnel must be available at all times. Training students on first-aid basics was also proposed.
- The issue of toxic chemicals and hazardous materials was stressed; suggestions made were supplying the schools with special containers so that these materials would be disposed in a proper manner. This can be achieved through cooperation between the school and health directorates.

2.3.3.8 Provisions for Students with Special Needs

Ninety two percent (92%) of the respondents agreed (71% strongly) that facilities for students with special needs must be provided in the schools. The majority of participants agree that the issue is significant. One respondent suggested that transportation should be provided for students with special needs to and from schools.

Most breakout group participants encouraged considering students with special needs. Therefore, it was perceived important to provide a proper design that enables them to access all school's facilities. For example, one participant recommended providing rooms equipped with sport machines that suit the physically challenged students.

2.3.3.9 Earthquake Protection Measures

All respondents agreed (71% strongly) that there is a need for earthquake protection measures in the school; respondents agreed that the subject is significant.

Participants during the breakout discussion proposed installing alarm systems, and also emphasized on the importance of abiding by Jordanian codes of building.

2.3.3.10 Solid Waste

Eighty seven percent (87%) of the respondents agreed (53% strongly) that special measures should be taken to dispose of solid waste generated during the operation phase of the schools. The issue under concern is considered significant by participants. Some respondents recommended immediate disposal of generated waste, and that accumulation of waste must be avoided.

During the breakout group discussion, participants stated that whenever possible, waste should be separated and recycled.

2.3.3.11 Noise

Fifty five percent (55%) of the respondents agreed (24% strongly) that noise during school hours will negatively impact nearby residents. Hence, the issue is considered significant.

Breakout group suggestions were as follows:

- Creating a buffer zone by planting trees to reduce the effect of noise on neighboring areas.
- Insulating the walls.
- Discipline in school premises is essential, especially during recesses. This can be achieved through cooperation between the administration, teachers, and students as well.

2.3.4 Green Building Design

In addition to the above issues, the attendees were given a chance to voice their opinions regarding the design of the school structure in an environmentally-friendly manner. Interesting ideas and recommendations were made during the discussion covering issues of energy saving, water saving, air quality, and surrounding culture. These are shown in detail in the sections that follow.

Water Saving Issues

- Installing a wastewater treatment plant.

- Use of grey water after treatment.
- Harvesting of rain water.
- Distributing and posting pamphlets promoting water conservation.

Energy Conservation

- Designing the schools to allow for maximum use of sunlight.
- Utilizing the concept of lit areas in order to conserve electrical energy.
- Using thermal isolation materials.
- Usage of reversible energies.
- Using filters on the windows of the classrooms for the purpose of air ventilation.
- Regular maintenance for air conditioning system.
- Designing wide windows.
- The direction of the structure to be compatible with the surrounding environment.

Air Quality

- Reducing the crowding problem as much as possible.
- Having the green areas close to the windows of the classrooms.
- Using high windows, and taking into consideration wind direction when choosing the location.

Climate Control

- Installing fans or air conditioning.
- Planting trees and green areas.
- Thermal insulation.
- Using the basement during summer and winter.
- Using central heating.
- Taking into consideration the problem of the operating cost for central air conditioning system.

Reflection of Culture and Traditions

- Choosing rocks that are compatible with the surrounding environment.

- Utilizing the school structure to provide shade in the outdoor courts.
- Planting trees near the schools, in particular the school located in Ghour As-Safi, and choosing xeroscaping trees that may not require considerable amounts of water.

2.4 OTHER ISSUES OF CONCERN

During the Scoping Session, a number of issues that were not previously identified were raised. These issues came up during open discussions and breakout group meetings.

2.4.1 Maintenance and Cleanliness of the Building

This issue was raised during the breakout group discussion, and participants suggested the following:

- Providing a sufficient number of cleaning staff.
- Assigning a school committee that is responsible for cleanliness of the school.
- Lectures and presentations for students must be provided in order to emphasize on the importance of maintaining school cleanliness.
- Making use of the summer vacation to launch school maintenance programs.

2.4.2 Use of School Building by Community

Due to the fact that the schools constructed are not conventional, the possibility of using the school after school hours was discussed. Participants proposed the following:

- Renting the school for local societies, where this will contribute to communities' sense of ownership of the school, as well as generate income.
- Using schools as a learning site, where lectures and awareness programs can be conducted.

3. CONCLUSIONS OF SCOPING

Based on the results of the questionnaire completed by participants in the scoping session, most of the environmental issues were considered to be significant while others were added. Only few were considered as insignificant. However, all of the issues that were considered insignificant by participants will be further addressed in the EMP. Tables 3.1, 3.2, 3.3, and 3.4 below summarize the issues that will be addressed in the EMP and show whether they were found to be significant or insignificant by participants.

Table 3.1: Significance of Construction Issues

Issue	Significance	Will be addressed in the EMP
Occupational health and safety	Significant	Yes
Workers sanitation	Significant	Yes
Traffic	Significant	Yes
Noise	Significant	Yes
Dust pollution	Significant	Yes
Water demand	Significant	Yes
Soil and water pollution	Insignificant	Yes
Water stagnation	Significant	Yes
Waste generation	Significant	Yes
Employment opportunities	Significant	Yes
Archeological resources	Significant	Yes

Table 3.2: Significance of Socioeconomic Issues

Issue	Significance	Will be addressed in the EMP
Interaction between students/ classes	Significant	Yes
Student psyche inside the classroom	Significant	Yes
Monitoring of student behavior by supervisors	Significant	Yes
Employment and economic development	Significant	Yes
Land use	Significant	Yes
Traffic during operation	Significant	Yes
Travel time to and from school	Significant	No
Energy conservation	Significant	Yes
Water demand	Significant	Yes
Irrigation of vegetation	Insignificant	Yes

Table 3.3: Significance of Public Health & Safety Issues

Issue	Significance	Will be addressed in the EMP
Communicable disease prevention	Significant	Yes
Potable water supply and distribution	Insignificant	Yes
Sanitary facilities	Significant	Yes
Indoor and outdoor safety issues	Significant	Yes
Injury from car accidents	Significant	Yes
Protection from intruders	Significant	Yes
Safety in workshops for males and females	Significant	Yes
Provisions for physically challenged students	Significant	Yes
Earthquake protection	Significant	Yes
Solid waste	Significant	Yes
Noise	Significant	Yes

Table 3.4: Significance of Other Issues of Concern

Issue	Significance	Will be addressed in the EMP
Maintenance and cleanliness of the building	Significant	Yes
Use of school building by community	Significant	Yes

4. PROPOSED ENVIRONMENTAL ASSESSMENT METHODOLOGY

The EA will deal with all the issues identified as significant throughout the Scoping Process. These issues will be analysed and discussed for the three schools separately. The results of the EA will be incorporated into the engineering study in order to contribute to the design process.

4.1 DATA SOURCES AND ANALYSIS

Most of the data pertaining to the environmental conditions at the project site and vicinity have been collected during the scoping stage. Further details on socioeconomic conditions and climate will be obtained for the EA.

Sampling (water and soil) or other fieldwork is not considered to be necessary for the purposes of this EA, which will rely on existing data. This is due to the fact that the proposed areas for school construction are not affected by contamination (industrial facilities or polluting facilities not present) and because the project itself is not expected to contaminate the proposed areas.

4.2 DISCIPLINES REQUIRED

The following experts, whose curricula vitae are provided in Appendix F, are expected to participate in the preparation of the EA:

- Environmental Assessment Team Leader.
- Project Manager / Architect.
- Environmental Specialist / Environmental Geologist.
- Environmental Engineer.
- Field Assistant.

4.3 PROPOSED EA REPORT OUTLINE

The following proposed EA Report Outline is based on the guidelines in USAID Handbook 3, Appendix 2D, Part 216.6 (c):

The resultant EA report will incorporate all the findings of the environmental investigations described thus far. The report structure will be as follows:

Executive Summary: This section summarizes the report's conclusions, any areas of ongoing discussion and any outstanding issues to be resolved.

1. Introduction

1.1. Objective and Scope of Work

1.2. Environmental Assessment Requirements

2. Project Description

3. Environmental Laws & Regulations: This section will include the applicable institutional and regulatory framework in Jordan, including related standards, laws and regulations, in addition to US regulations for foreign country assistance.

4. Environmental Setting: This section provides a brief description of the environment in the project area, which will be affected by the proposed project or any of the alternatives. The amount of data and analyses included in this section will be in keeping with the relative significance of the impact. More general, background information will be summarized or referenced. The following are the subsections:

4.1. Biophysical Environment

4.1.1. Location and Climate

4.1.2. Geomorphology and Geology

4.1.3. Land Use

4.1.4. Archaeological Findings

4.1.5. Biodiversity System

4.1.6. Prevalent or Adaptive Vegetation

4.2. Socioeconomic Context

4.2.1. Population and Major Economic Activities

4.2.2. Quality of Life and Infrastructure

4.2.3. Cultural Issues

4.2.4. Prevalent Architectural Images

4.2.5. Health and Other Community Services

4.2.6. Educational Services

4.2.7. Transportation

4.2.8. Water and Electricity Supply

5. **Environmental Impacts:** This section includes the environmental impacts of the proposed action. Most of this section concentrates on the significance of short-term and long-term effects of the proposed project, and direct and indirect effects. Other considerations will include possible conflicts between the proposed project and any other land-use plans and policies, energy requirements, conservation measures, and socio-economic impacts. The following are the subsections:

5.1. Assessment of Overall Impacts

5.2. Expected Environmental Impacts

5.2.1. Construction

5.2.1.1. Socioeconomic

5.2.1.2. Public Health and Safety

5.2.1.3. Pollution, Consumption, and Waste

5.2.2. Operation

5.2.2.1. Socioeconomic

5.2.2.2. Public Health and Safety

6. **Environmental Management Plan:** will outline the steps needed in order to ensure construction and operation of the project in accordance with the recommendations of the EA. It will also delineate responsibilities for each measure.

6.1. Proposed Mitigation Measures

6.1.1. Design

6.1.2. Construction

6.1.3. Operation

The report will also appendix the following:

- List of Preparers: The names and qualifications of the people responsible for preparing the EA.
- Bibliography of references used.
- List of meetings held and names of attendees.
- Any relevant technical data not included in the main report.

4.4 SCHEDULE

Work on the EA is scheduled to commence after approval of this Scoping Statement (expected 2 weeks after this submission) and the final EA will be submitted four weeks after approval of this statement. The following Table 4.1 summarizes the main activities in the EA and the expected duration of effort required for each.

Table 4.1: Schedule for EA Activity

Activity	Week						
	1	2	3	4	5	6	7
Gathering Data							
Conducting Environmental Issues Analysis							
Developing Mitigation and Monitoring Plan							
Preparation of Draft EA Report							
Client Review							
Preparation of Final EA Report							

Appendix A
Pre-Scoping Brief

United States Agency
For International Development

The Hashemite Kingdom of Jordan
Ministry of Education

Jordan Schools Construction & Rehabilitation Program

Pre-Scoping Brief / Southern Governorates

January 2008

CDM International Inc.
In association with
Engicon

1. Introduction

The Ministry of Education (MOE) of Jordan with the co-operation of the Untied States Agency for International Development (USAID) is implementing the *Jordan Schools Construction and Rehabilitation Program*. The Program aims to provide by 2008 up to 28 new schools with approximately 24 classrooms each. This will immediately benefit about 18,200 students. The Program will also renovate around 100 existing schools. In this session, the proposed construction of 3 new schools in the southern region of Jordan is discussed, which includes the areas of Karak (Al-Marj area), Wadi Mousa (Petra), and Southern Ghors (Ghor Al-Safi). CDM International is managing the project in cooperation with Engicon. An Environmental Assessment (EA) for the proposed project is currently under preparation in accordance with Jordanian and USAID regulations.

2. Scoping Objectives

The purpose of the scoping process is to identify the significant and non-significant environmental issues that will be addressed by the environmental assessment. This Pre-Scoping Brief provides a summary of the proposed project and presents the preliminary environmental issues that have been identified.

The Scoping Session will require the participants to discuss the identified environmental issues and suggest others that may be relevant. The participants will also propose preventive and mitigation measures for these issues. The session will serve as a medium for the community to voice their opinions and concerns regarding the project and fill in any remaining gaps. The results of the Scoping Session will be incorporated into the Scoping Statement and the Environmental Assessment.

3. Project Area

The project components will be located in the southern governorates of Jordan, namely Ma'an and Karak (Figure 1). Table 1 summarizes the population distribution in the project area.

Table 1: Projected Population Distribution by Area and Sex, 2007

Area	Males	Females	Total
Karak District	10,605	9,675	20,280
Ghour AL-Safi District	8,645	8,111	16,756
Wadi Mousa District	7,394	6,768	14,162

Source: Based on Department of Statistics (DOS) Census of 2004 and projected population growth rates.

Figure 1 Location Map of Jordan

3.1 Climate

The climate varies in the areas under consideration, since the project includes schools that are distributed in three different locations, each having its own characteristics. Table 2 shows the selected climatic information for relevant stations according to the data provided by the Jordan Metrological Department.

Table 2: Climatic Information

Parameter	Ghour Safi	Wadi Mousa	Ma'an
Mean maximum temperature (°C)	31.0	21.5	24.8
Mean minimum temperature (°C)	19.4	11.5	10.1
Total annual rainfall (mm)	75.8	177.2	42.5
Mean annual relative humidity (%)	50.3	49.5	52.4
Prevailing annual wind direction (°)	336	N.A.[1]	290
Mean annual wind speed (Knots)	1.3	N.A.	6.3

Source: Jordan Meteorological Department, Jordan Climatological Handbook, 2002

[1] N.A.: Not Available

3.2 Education

For the scholastic year 2006/2007, the number of students and schools for the relevant Education Directorates are found in Tables 3 and 4 below respectively. As indicated in the tables, Karak houses the highest number of students followed by Ma'an, South Aghwar, and finally Petra. One of the things that distinguish Ma'an from all other governorates is that the total number of female students is higher than the total number of male students.

Table 3: Distribution of Students in MOE Schools by Directorate and Sex

Education Directorates	Total	Female	Male
Karak	20,916	10,506	10,410
South Ghors	10,491	5,104	5,387
Ma'an	17,200	9,658	7,542
Petra	6,836	3,373	3,463

Source: Ministry of Education, Education Statistics for Scholastic Year 2006/2007

The number of schools varies among the different areas, but it is worth mentioning that the number of schools at Petra district is higher than that of Southern Ghors district, even though the total number of students at Petra district is lower than the total number of students at Southern Ghors district.

Table 4: Distribution of MOE Schools by Type and Directorate

Education Directorates	Total	Females	Male	Co-ed
Karak	95	14	32	49
Southern Ghors	30	7	15	8
Ma'an	95	13	28	54
Petra	39	6	11	22

Source: Ministry of Education, Education Statistics for Scholastic Year 2006/2007

Co-ed is defined as a school hosting girls and boys between the 1st and 3rd grade and girls only between the 4th and 12th grade.

3.3 Economic Activity

The economic activity ranges in the areas under concern, where, for example, the unemployment rate for the Governorate of Karak is 4.9% which is more than double that of the Governorate of Ma'an. Unemployment rates for the Governorate of Ma'an were surprising, as the unemployment rate for females was lower than that for males. It is worth mentioning that the Kingdom's unemployment rate is estimated at 14. Therefore, in general, unemployment in the project areas is considered to be relatively low.

Table 5: Unemployment Rate by Sex and Governorate, 2007

Governorate	Male	Female	Total
Karak	4.3	6.1	4.9
Ma'an	2.6	1.4	2.2

Source: DOS, Employment and Unemployment Survey – February 2007

The types of activities in the governorates under consideration for the year 2006 are detailed at Table 6 below. Numbers given are in percent distribution. As the table clearly shows, elementary occupation is the dominant type of activity in both governorates, followed by professionals in the Governorate of Karak. In the Governorate of Ma'an, these are followed by professionals and plant, machine operators and assemblers.

Table 6: Activity Status by Governorate, 2006

Type of Activity	Karak	Ma'an
Legislators, Senior Officials & Managers	0.0	0.0
Professionals	21.2	14.2
Technicians & Associate Professionals	9.6	10.5
Clerks	6.8	8.0
Service Workers, Shop & Market sales Workers	7.1	6.7
Skilled Agricultural and Fishery Workers	4.6	2.7
Craft and related Trade Workers	8.8	8.6
Plant, Machine operators and Assemblers	11.1	14.2
Elementary Occupation	30.7	35.1

Source: Department of Statistics, Employment and Unemployment Survey, Annual Report 2006

4. Proposed Project

The project under study consists of the construction of 3 new schools in two of the southern governorates of Jordan. The schools will be distributed as shown in Table 7 and are described in the sections that follow.

Table 7: Name and Location of Proposed Schools

Name of School	Directorate
Wadi Mousa Basic Co. School	Petra District
Al-Marj Basic Co. School	Karak District
Ghor Al-Safi Basic Co. School	Southern Ghors District

4.1 Karak Governorate

4.1.1 Al-Marj Basic Co-Ed School

This school is located in Al-Karak City, specifically in Al-Marj area. Its type is basic co-ed including grades 1st through 9th with 20 classrooms. The reason for selecting this school is the need to evacuate nearby rented schools. Therefore, it is expected that the school's construction will help in solving the crowding problem in surrounding schools, since there is lack of governmental schools in the area such that the nearest school, which is Al-Marj Basic Co-Ed, is 1 km away.

The proposed land for constructing the school is 5,900 m^2 and is suitable for the purpose. Sand type is partly rocky covered by superficial deposits, and the land is slightly sloping.

Figure 4.6: Land Area of Proposed Al-Marj Basic Co. School

4.1.2 Ghor Al-Safi Basic Co. School

The proposed type for this school is basic co-ed, including grades 1st through 6th with 18 classrooms. It is going to be located in the Southern Ghors, specifically in Gour Al-Safi. There is a need for this school, and the purpose for building it is to solve the crowding problem in surrounding schools such as Gour Al-Safi School, Al-Safi Basic Boys School and Al-Safi Basic Girls School.

The land plot suggested for this school has an area of 2,500 m^2 and is suitable for the purpose. Vegetation cover includes some scattered bushes, and the soil is covered with artificial fill material.

Figure 4.1: Land Area of Proposed Ghor Al-Safi Basic Co. School

4.2 Ma'an Governorate

4.2.1 Wadi Mousa Basic Co-Ed School

This school is located in Wadi Mousa region, specifically Petra City. Its type will be basic co-ed, including grades 1st through 12th with 14 classrooms.

The aim behind constructing this school is to solve the crowding problem in surrounding schools such as Hamza Bin Abdel-Muttaleb Basic Male, Al-Isra' Basic Co-Ed, Arwa Bnt Abdel-Muttaleb Basic Co. and Banat Wadi Mousa Secondary. Another reason is the lack of governmental schools in the region such that there are only two schools that can be considered near.

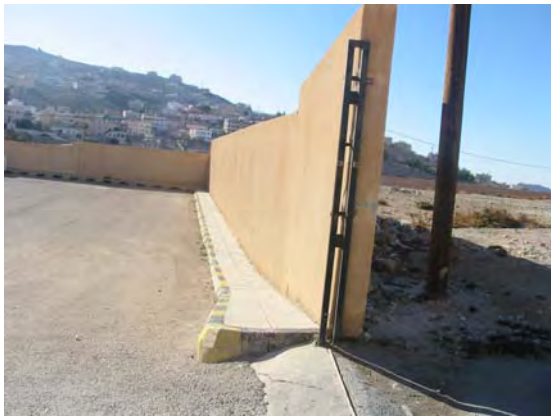
The area of the proposed land plot for building the school is 3,800 m^2. However, there are about 15-20 meters available at the side of an adjacent sport center (See Figure 4.4). Therefore, the widening process through removing the wall can make the total size of the land about 4,500 m^2 (See Figure 4.5).

The suggested location is very strategic in Petra City, and is expected to serve most of the mentioned schools of the MOE. Regarding vegetation, the land is not cultivated; it can be described as partly being paved and the rest covered by silt sandy soil. However, there are two pine trees at the edge of the land which must be considered during construction.

Figure 4.2: Land Area of Proposed Wadi Mousa Basic Co. School

Figure 4.3 The Sport Center adjacent to the Proposed Land Plot

Figure 4.4 The Wall seperating the Land Plot from the adjacent Sport Center



5. Preliminary Environmental Issues

After visiting the sites and conducting a preliminary research of existing information on the project, many environmental issues proved to be of concern to the construction of the proposed schools. These issues are presented below, and will be discussed during the session. Other issues identified during the Scoping Session discussion will also be added. Mitigation and preventive measures for issues of concern will be proposed.

For the purpose of the Scoping Session and the Breakout Groups, the environmental issues have been distributed into three categories as follows: Construction, Socioeconomic, and Public Health & Safety Issues. Each issue must be evaluated for its potential significance taking into consideration both direct and indirect impacts.

5.1 Construction Issues

In general, the environmental impacts during the construction phase of a project are usually negative. Fortunately, most of these impacts are temporary and can be mitigated by taking the necessary precautions. For this project, the following issues relating to construction activities were identified:

- Occupational safety and health
- Workers sanitation
- Traffic
- Noise
- Dust pollution
- Water demand
- Soil and water pollution
- Water stagnation
- Waste generation
- Employment opportunities
- Timing of construction activities

5.2 Socioeconomic Issues

A development project can produce many socioeconomic benefits for the community that will house its facilities. These could range from job creation to decreasing the daily transport time to a similar facility situated further away, in this case, the school. The following were the main issues identified during the preliminary research phase:

- Interaction between students / classes
- Student psyche inside the classroom (color of walls, lightly, temperature, dust)
- Monitoring of students by supervisors
- Employment and economic development
- Land use
- Archaeological resources and cultural heritage
- Traffic
- Travel time to and from school
- Maintenance and cleanliness of the school building
- Watering of the green areas
- Energy saving
- Water conservation for irrigation and toilets (Grey water use, water saving devices, xeroscaping)
- Use of school for after hour activities

5.3 Public Health & Safety Issues

An essential requirement for building any school is to provide a safe and healthy environment for the students, teachers and all workers at the school. For that purpose, a list of elements that need to be tackled has been prepared. The final list developed after the Scoping Session should be comprehensive. The following were the identified issues:

- Communicable disease prevention
- Potable water supply and distribution
- Cleanliness of sanitary facilities
- Indoor and outdoor safety issues for students (tripping, falling, sunstroke)
- Car accident prevention
- Protection from intruders
- Safety in workshops for males and females
- Provisions for physically challenged students
- Earthquake, floods and fire protection measures
- Solid waste generated by the school and procedures for getting rid of it
- Noise generated by the school

6. Preliminary Description of Scoping Statement

The items to be included in the Scoping Statement are based on Jordanian and USAID environmental regulations. The results of the Scoping Session will be evaluated and incorporated into the Scoping Statement. The Environmental Assessment for the project will be based on the Scoping Statement.

The statement will include the following main items:

- Brief description of the project.
- Description of the site.
- Proceedings of the Scoping Session (including participants, agenda and activities, etc.).
- Results of the Scoping Session including the questionnaires, highlighting significant and non-significant issues.
- Proposed methodology for the EA including proposed table of contents and schedule.

وزارة التربية والتعليم

الوكالة الأمريكية للتنمية الدولية

برنامج إنشاء وإعادة تأهيل مدارس في الأردن

تقييم الأثر البيئي– الجلسة الحوارية لتحديد المجال
ملخص المشروع/محافظات الجنوب

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Engicon

١. مقدمة

تقوم وزارة التربية والتعليم في الأردن، وبالتعاون مع USAID بتنفيذ برنامج إنشاء وترميم مدارس في الأردن. يهدف البرنامج الى إنشاء حوالي (٢٨) مدرسة جديدة حتى عام ٢٠٠٨، تحتوي كل مدرسة على ما يقارب (٢٤) غرفة صفية. ومن المتوقع أن ينعكس هذا الأمر على (١٨,٢٠٠) طالب وطالبة. كما أن المشروع سيقوم بترميم حوالي (١٠٠) مدرسة قائمة حالياً في كافة أنحاء الأردن.

في هذه الورشة سيتم مناقشة إنشاء (٣) مدارس جديدة في منطقة الجنوب في الأردن، والتي تشمل على مناطق في الكرك (منطقة المرج)، والأغوار الجنوبية (غور الصافي)، ووادي موسى(البتراء). يقوم بإدارة المشروع شركة CDM العالمية بالتعاون مع شركة المستشار للهندسة Engicon. كما تجري حالياً دراسة تقييم الأثر البيئي للمشروع المقترح حسب التشريعات الأردنية ومنظمة الـ USAID.

٢. أهداف الجلسة الحوارية

الهدف من الجلسة الحوارية هو تحديد الأمور البيئية ذات الأهمية و المتعلقة ببناء المدرسة و استقطاب أفكار المشاركين التي ستدرس وتحلل في دراسة تقييم الأثر البيئي.

المُلخص التالي يقدم نبذة عن المشروع المقترح والأمور البيئية التي تم تحديدها مبدئيا. من المطلوب في هذه الجلسة الحوراية أن يقدم المشاركون ملاحظاتهم فيما يخص القضايا البيئية التي تم تحديدها، واقتراح قضايا أخرى قد تكون لها علاقة أو تأثير بيئي، كما أن من الممكن أن يقدم المشاركون حلولاً لمنع أو تخفيف الآثار الناتجة عن هذه القضايا.

سيتم توظيف كافة وقائع الجلسة الحوارية في تقرير الجلسة الحوارية (Scoping Statement) وفي تقرير التقييم البيئي اللاحق.

ستكون الجلسة وسيلة للمجتمع المحلي لإبداء آرائهم وإهتماماتهم فيما يخص المشروع.

٣. منطقة المشروع

تقع العناصر الأساسية للمشروع في محافظتين من محافظات جنوب الأردن , هما الكرك ومعان (شكل رقم ١). الجدول رقم (١) في الأسفل يلخص توزيع السكان في منطقة المشروع.

جدول (١): متوقع توزيع السكان حسب المساحة والجنس، ٢٠٠٧

المنطقة	ذكور	إناث	المجموع
الكرك	١٠,٦٠٥	٩,٦٧٥	٢٠,٢٨٠
الغور الصافي	٨,٦٤٥	٨,١١١	١٦,٧٥٦
وادي موسى	٧,٣٩٤	٦,٧٦٨	١٤,١٦٢

المصدر: التعداد السكاني لعام ٢٠٠٤، و متوقع معدل النمو السكاني، دائرة الإحصاءات العامة.

الشكل رقم ١: خريطة الأردن مبيناً الموقع العام لمحافظات الجنوب

١-٣ المناخ

يتفاوت المناخ في المناطق قيد الدراسة، حيث أن المشروع يحتوي على مدارس متفرقة في منطقة واسعة. جدول رقم (٢) يبين المعلومات المناخية المتوفرة لمحطات ذات علاقة.

جدول (٢): المعلومات المناخية

العنصر	معان	غور الصافي	وادي موسى
معدل درجة الحرارة العظمى (°س)	٢٤,٨	٣١,٠	٢١,٥
معدل درجة الحرارة الصغرى (°س)	١٠,١	١٩,٤	١١,٥
مجموع كميات الأمطار (مم)	٤٢,٥	٧٥,٨	١٧٧,٢
المعدل السنوي للرطوبة النسبية (%)	٥٢,٤	٥٠,٣	٤٩,٥

اتجاه الرياح السنوي السائدة بالدرجة	٢٩٠	٣٣٦	غير متوفرة
المعدل السنوي لسرعة الرياح بالعقدة (ْ)	٦,٣	١,٣	غير متوفرة

المصدر: دائرة الأرصاد الجوية الأردنية، كتاب المناخ، الأردن

٢-٣ التربية والتعليم

في العام الدراسي ٢٠٠٧/٢٠٠٦، بلغ عدد الطلبة والمدارس في مديريات التربية التابعة للمشروع كما هو وارد في الجداول رقم (٣) و(٤) في الأسفل بالترتيب. من الواضح أن الكرك تحتوي على أكبر عدد من الطلبة يليها معان والأغوار الجنوبية والبتراء بالترتيب. من الجدير بالذكر أيضا, أن منطقة معان تتميز عن غيرها من المناطق بأن أن المجموع الكلي لعدد الطلبة الإناث أكثر من المجموع الكلي لعدد الطلبة الذكور.

جدول رقم (٣): توزيع الطلبة في مدارس وزارة التربية والتعلية حسب المديرية والجنس

	الطلبة		
مديريات التربية	**المجموع**	**الإناث**	**الذكور**
الكرك	٢٠,٩١٦	١٠,٥٠٦	١٠,٤١٠
الأغوار الجنوبية	١٠,٤٩١	٥,١٠٤	٥,٣٨٧
معان	١٧,٢٠٠	٩,٦٥٨	٧,٥٤٢
البتراء	٦,٨٣٦	٣,٣٧٣	٣,٤٦٣

المصدر: وزارة التربية والتعليم، الإحصاءات التربوية للعام الدراسي ٢٠٠٧/٢٠٠٦

عدد المدارس يختلف من منطقة إلى أخرى، ولكن ما يثير الدهشة هو أن الأغوار الجنوبية تحتوي على مدارس أقل عدداً من البتراء مع أنها تحتوي على عدد طلبة أكثر.

جدول رقم (٤) توزيع المدارس في وزارة التربية والتعليم حسب المديرية والجنس ٢٠٠٧/٢٠٠٦

	المدارس			
مديرية التربية	**المجموع**	**الإناث**	**الذكور**	**مختلط**
الكرك	٩٥	١٤	٣٢	٤٩
الأغوار الجنوبية	٣٠	٧	١٥	٨
معان	٩٥	١٣	٢٨	٥٤

	المدارس			
مديرية التربية	المجموع	الإناث	الذكور	مختلط
البتراء	٣٩	٦	١١	٢٢

المصدر: وزارة التربية والتعليم، الإحصاءات التربوية للعام الدراسي ٢٠٠٧/٢٠٠٦

المدارس المختلطة تعرف بالمدارس التي تشمل ذكور وإناث من الصف الأول وحتى الصف الثالث وعلى إناث فقط من الصف الرابع وحتى الصف الثاني عشر.

٣-٣ النشاط الاقتصادي

يتراوح النشاط الإقتصادي في المناطق قيد الدراسة. مثلا معدلات البطالة في الكرك هي (٤,٩%) وهذه أكثر من ضعف معدلات البطالة في معان. بالإضافة، معدلات البطالة بين الإناث في معان أقل مما هي للذكور بينما في الكرك هي أعلى. من الجدير بالذكر أيضا أن معدل البطالة لكامل المملكة يقدر بـ (١٤%). لذا, بشكل عام , فإن معدلات البطالة في مناطق المشروع تعتبر منخفضة نسبيا.

جدول رقم (٥): معدل البطالة حسب المحافظة والجنس، ٢٠٠٧

المحافظة	ذكور	إناث	المجموع
محافظة الكرك	٤,٣	٦,١	٤,٩
محافظة معان	٢,٦	١,٤	٢,٢

المصدر: دائرة الإحصاءات العامة، مسح العمالة والبطالة – التقرير السنوي – شباط ٢٠٠٧

جدول رقم (٦) في الأسفل يلخص نوع النشاط الإقتصادي في المحافظات قيد الدراسة لعام ٢٠٠٦. الأرقام المعطاة تمثل نسب مئوية. يمكن ملاحظة أن المهن الأولية تحتل النسبة الأكبر في كلا المحافظتين، يليها المتخصصون لمحافظة الكرك. أما بالنسبة لمحافظة معان، فإن نسبة المتخصصون و مشغلو الآلات ومجمعيها تأتي ثانيا.

جدول رقم (٦): الوضع الإقتصادي حسب المحافظة(نسبة مئوية)

النشاط	الكرك	معان
المشرعون وموظفو الإدارة العليا والمديرون	٠,٠	٠,٠
المتخصصون	٢١,٢	١٤,٢
الفنيون والمتخصصون المساعدون	٩,٦	١٠,٥
الكتبة	٦,٨	٨,٠
العاملون في الخدمات والباعة في المحلات التجارية والأسواق	٧,١	٦,٧
العاملون المهرة في الزراعة وصيد الأسماك	٤,٦	٢,٧
العاملون في الحرف وما اليها من المهن	٨,٨	٨,٦
مشغلو الآلات ومجمعوها	١١,١	١٤,٢

المهن الأولية	٣٠,٧	٣٥,١

المصدر: دائرة الإحصاءات العامة، مسح العمالة والبطالة، التقرير السنوي ٢٠٠٦

٤. المشروع المقترح

المشروع قيد الدراسة يتكون من إنشاء (٣) مدارس جديدة في محافظات الجنوب في الأردن، حيث ستوزع المدارس كما هو مبين في الجدول رقم (٧) وكما هو موصوف في البنود اللاحقة.

جدول رقم (٧): إسم وموقع المدارس المتقرحة

إسم المدرسة	المحافظة
مدرسة المرج الأساسية المختلطة	محافظة الكرك
مدرسة غور الصافي الأساسية المختلطة	محافظة الكرك
مدرسة وادي موسى الأساسية المختلطة	محافظة معان

٤-١ محافظة الكرك

٤-١-١ مدرسة المرج الأساسية المختلطة

تقع المدرسة في مدينة الكرك، تحديداً في منطقة المرج. نوعها أساسية مختلطة تشمل صفوف الأول حتى التاسع مع (٢٠) غرفة صفية. سبب اختيار هذه المدرسة يتمثل في الحاجة لإخلاء المدارس المجاورة. لذا، من المتوقع أن إنشاء هذه المدرسة سيساعد في حل مشكلة الازدحام في المدارس المجاورة، حيث هنالك نقص في المدارس الحكومية في المنطقة، فأقرب مدرسة تبعد (١) كم.

تبلغ مساحة القطعة المقترحة لإنشاء المدرسة ٥,٩٠٠ م^2 وهي ملائمة للهدف.نوع التربة للقطعة المقترحة جزئيا صخري مع ترسبات سطحية, و الأرض مائلة قليلا.

الشكل رقم (٤-١): الموقع المقترح لمدرسة المرج الأساسية المختلطة

٤-١-٢ مدرسة غور الصافي الأساسية المختلطة

النوع المطلوب لهذه المدرسة هو أساسية مختلطة، تشمل صفوف الأول حتى السادس مع (١٨) غرفة صفية. ستقع المدرسة في الأغوار الجنوبية، تحديداً في غور الصافي، منطقة الرملة. هناك حاجة لهذه

المدرسة، والهدف من بناؤها هو حل مشكلة الازدحام في المدارس المجاورة كمدرسة غور الصافي ومدرسة الصافي الأساسية للبنين ومدرسة الصافي الأساسية للبنات.

تبلغ مساحة قطعة الأرض المقترحة لهذه المدرسة ٢,٥٠٠م^2 وهي ملائمة للهدف. الغطاء النباتي يحتوي على بعض الشجيرات المتفرقة, ومغطى بطمم إصطناعي.

الشكل رقم (٤-٢): الموقع المقترح لمدرسة غور الصافي الأساسية المختلطة

٤-٢ محافظة معان

٤-٢-١ مدرسة وادي موسى الأساسية المختلطة

تقع المدرسة في منطقة وادي موسى، تحديداً في مدينة البتراء. نوعها هو أساسية مختلطة، تشمل صفوف الأول حتى الثاني عشر مع (١٤) غرفة صفية.

الهدف من إنشاء هذه المدرسة هو حل مشكلة الازدحام في المدارس المجاورة كمدرسة حمزة بن عبد المطلب الأساسية للبنين، ومدرسة الإسراء الأساسية المختلطة، ومدرسة أروى بنت عبد المطلب الأساسية، ومدرسة بنات وادي موسى الثانوية. وسبب آخر لإنشائها هو نقص المدارس الحكومية في المنطقة حيث أن هنالك مدرستان فقط يمكن اعتبارهما قريبتان من سكان المنطقة.

تبلغ مساحة قطعة الأرض المقترحة لإنشاء هذه المدرسة عليها ٣,٨٠٠م^2 ، بالإضافة إلى ١٥-٢٠م طولي إضافي متوفر على جهة مركز رياضي مجاور للقطعة (انظر شكل رقم ٤-٤)، حيث تصبح المساحة الكلية للأرض ٤,٥٠٠م^2 في حال تمت التوسعة عن طريق إزالة الجدار الفاصل (انظر شكل رقم ٤- ٥). الموقع المقترح استراتيجي للغاية في مدينة البتراء، ومن المتوقع أن يخدم أكبر عدد ممكن من مدارس وزارة التربية التي ذكرت.

الشكل رقم (٤-٣): الموقع المقترح لمدرسة وادي موسى الأساسية المختلطة

الشكل رقم (٤-٤): المركز الرياضي الملاصق لقطعة الأرض المقترحة

الشكل رقم (٤-٥): الجدار الذي يفصل بين المركز الرياضي وقطعة الأرض المقترحة

٥. القضايا البيئية

بعد زيارة المواقع وإتمام البحث المبدئي للمعلومات المتوفرة عن المشروع، ظهرت أمور بيئية عديدة والتي ثبت أنها ذات أهمية لعملية إنشاء المدارس المقترحة. هذه الأمور موضحة في الفقرات التالية وسيتم مناقشتها خلال الجلسة. أما فيما يخص الأمور الأخرى التي سيتم تحديدها خلال المناقشات فسيتم إضافتها لاحقاً. كما سيتم عرض حلول لمنع وتخفيف الآثار السلبية التي قد تطرح من خلال الجلسة.

لغايات الجلسة تم توزيع الأمور البيئية الى ثلاث فئات كما يلي:

- القضايا المتعلقة بأعمال التنفيذ
- الشؤون الإجتماعية والإقتصادية
- القضايا المتعلقة بالصحة والسلامة العامة

٥-١ القضايا المتعلقة بأعمال التنفيذ

بشكل عام، تكون التأثيرات البيئية خلال مرحلة التنفيذ للمشروع سلبية. لحسن الحظ، معظم هذه التأثيرات مؤقتة ويمكن تخفيفها عن طريق أخذ الاحتياطات الضرورية. بالنسبة لهذا المشروع، تم تحديد الأمور التالية التي لها علاقة بأعمال التنفيذ:-

- سلامة وصحة العمال
- نظافة العمال
- زيادة حركة السيارات
- الضجيج الناتج عن عمليات التنفيذ
- تلوث ناتج عن الغبار
- زيادة الطلب على المياه
- تلوث التربة والمياه
- ركود المياه في برك مكشوفة
- النفايات الصلبة الناتجة عن أعمال التنفيذ
- توفير فرص العمل
- توقيت أعمال التنفيذ

٥-٢ الشؤون الإجتماعية والإقتصادية

أي مشروع تطويري قد ينتج عنه الكثير من الفوائد على الناحية الاجتماعية والاقتصادية للمجتمع المجاور. تتراوح هذه الفوائد من خلق فرص عمل الى تخفيض وقت التنقل اليومي. فيما يلي الأمور الأساسية التي تم تحديدها خلال مرحلة البحث المبدئية:

- التفاعل بين الطلاب والصفوف
- الوضع النفسي للطالب داخل الصف (من حيث ألوان الجدران والإنارة ودرجة الحرارة والغبار)
- تسهيل مراقبة الطلاب من قبل المدراء والمشرفين
- فرص العمل والتنمية الإقتصادية للمنطقة
- استعمالات الأراضي

- مناطق أثرية وتراثية
- زيادة حركة السيارات عند بداية ونهاية الدوام
- تقليص المسافة والوقت للوصول الى المدرسة
- نظافةوصيانة مبنى المدرسة
- توفير الطاقة (مثل استخدام إنارة الشمس بدلاً من الإضاءة والمراوح بدلاً من التكييف)
- زيادة الطلب على المياه لغايات الري وللاستعمالات في دورات المياه (مثل استعمال المياه الرمادية)
- ري المناطق الخضراء
- مدى إمكانيةإستخدام المبنى المدرسي خارج أوقات الدوام

٣-٥ القضايا المتعلقة بالصحة والسلامة العامة

من المتطلبات الأساسية لإنشاء أي مدرسة هو توفير بيئة صحية وسليمة للطلاب والمعلمين وكل من يعمل فيها. لتحقيق هذه الغاية، تم تحضير لائحة للعناصر التي تحتاج إلى الانتباه عند التصميم والتنفيذ والتشغيل. ومن هذه الأمور التي تم تحديدها:

- الوقاية من الأمراض المعدية
- توفير مياه الشرب وطريقة توزيعها
- نظافة الحمامات والمراحيض
- سلامة الطلاب داخل و خارج المبنى
- الوقاية من حوادث السير
- الحماية من الدخلاء الى المدرسة
- السلامة في مشاغل البنين والبنات
- توفير تسهيلات للطلاب ذوي الحاجات الخاصة
- الحماية من الزلازل والفياضانات والحريق
- النفايات الصلبة الناتجة من المدرسة و كيفية التخلص منها
- الضجيج الناتج عن المدرسة

٦. الوصف المبدئي لتقرير الجلسة الحوارية

البنود التي سيتم وضعها في تقرير الجلسة الحوارية (Scoping Statement) تستند على التشريعات البيئية الأردنية وتشريعات منظمة USAID. حيث سيضم التقرير الأمور التالية:

- وصف مقتضب للمشروع
- وصف للموقع
- وقائع الجلسة الحوارية (يشمل أسماء المشاركين، المكان، جدول الأعمال، النشاطات، الخ).
- نتائج الجلسة الحوارية ويشمل تحليل للإستبيانات، بالإضافة الى القضايا البيئية المهمة التي نتجت عن الجلسة.
- طريقة العمل المقترحة لتقييم الأثر البيئي وتشمل قائمة المحتويات والجدول الزمني المبدئي.

Appendix B

List of Agencies Invited and Attendees to the Scoping Session, Letter of Invitation, and Agenda

List of Agencies Invited to the Scoping Session

1. Civil Defense
2. Consolidated Consultants
3. Electricity Sector Regulatory Commission
4. KFW school project
5. ESP project
6. Friends of Archaeology
7. Friends of the Earth
8. Friends of Environment Society
9. General Federation of Jordanian Women
10. General Union for Voluntary Societies
11. USAID support programmes: (Save the Children & INJAZ / Jordan)
12. Jordan Environment Society
13. Jordan Health Communication Partnership
14. Jordan Society for Sustainable Development
15. Jordan Society for Prevention of Road Accidents
16. Ministry of Awqaf & Islamic Affairs
17. Ministry of Energy & Mineral Resources
18. Ministry of Environment (EIA Committee & Eng. Ahmad Qatarneh)
19. Ministry of Health/School Health Directorate
20. Ministry of Interior/Public Security Directorate and Relevant Governors
21. Ministry of Planning & International Cooperation
22. Ministry of Social Development
23. Ministry of Tourism & Antiquities / Directorate of Archaeology
24. Ministry of Water & Irrigation
25. Water Authority of Jordan
26. Petra Regional Authority
27. Municipality of Karak

28. Municipality of Ma'an
29. Municipality of Ghor Safi
30. Natural Resources Authority
31. Royal Society for the Conservation of Nature
32. United States Agency for International Development
33. Environment Rangers
34. Mu'ta University
35. King Hussein University
36. Jordan Health Communication Partnership
    Johns Hopkins University
37. World Health Organization
38. United Nations Development Programme

List of Attendees to the Scoping Session

Agency/Organization	Name
Civil Defence Directorate / Ma'an	Eng. Ma'an Mohammad Abu-Karaki
	Abd Al-Naser Mohammad
Environment Rangers	Mohammad Al-Faou'ri
	Mohammad Al-Qroom
General Union for Voluntary Societies / Ma'an	Sabbah AL-Ne'mat (President of the Union)
	Salem Al-Rawajfeh
Consolidated Consultants	Eng. Lina Wakeeleh
	Eng. Mona Al Khateeb
King Hussein University	Dr. Mohammad AL-Huweity
Municipality of Ma'an	Mohammad Adnan Al-Tamri
	Abd Al-Razaq Al-Mohtaseb
Petra Regional Authority	Eng. Issa Al-Hasanat
Karak Education Directorate	Eng. Nabeel Bsharah Al-Odat
	Amer Sameeh Al-Kawi
	Samar Abdalla AL-Sou'b
	Dr. Odeh Mousa Mbaideen
	Eng. Majed Al-Ma'ayta
	Shahad Ahmad Al-Jarajrah
Southern Ghours Education Directorate	Mohammad Awwad Al-Nawaisheh
	Eng. Thaer Al-Mawajdeh
	Shadi Jbara Al-Shamalat
	Zeinab Isma'il
	Isra' Salman Al-Shamalat
	Kafiyah Isma'il
Petra Education Directorate	Dr. Awad Al-Nawafleh
	Mohammad Khaled AL-Salameen
	Hasan Mousa Al-Mashae'n
	Ziyad Ali Al-Masha'leh
	Mohammad Ammawi
	Eng. Mansour Basheer Al-Hasanat
	Eng. Yaseen Al-Shobaki

Agency/Organization	Name
	Eng. Jihad AL-Ramlawi
Wadi Mousa Female School	Rula Odeh Al-Hasanat
	Amneh Ahmad Al-Alayah
Wadi Mousa Male School	Mohammad Haza' Al-Falahat
Sumayyah Bint Al-Khayyat School / Petra	Hadeel Yousef Masa'deh
	Na'mat Khaled Al-Masa'deh
	Faten Ali Al-Farjat (Teacher)
Amir Hasan School	Thafer Odeh Mbaideen (Student)
Rafeedah Vocational School	Itaf Al-Khashman (Teacher)
Ministry of Health – Health Directorate / Ma'an	Dr. Abd Al-Rahman
Ministry of Health – Environment Health Directorate	Reem Al-Rowes
USAID	Dr. Amal Hijazzi
	Dr. Issam Omar
	David Bruns

Jordan Schools Construction and Rehabilitation Programme -
Environmental Scoping Session

ورشة عمل لتقييم الأثر البيئي– برنامج انشاء وإعادة تأهيل مدارس الأردن

Registration of Participants
تسجيل المشاركين

Signature التوقيع	Phone number رقم الهاتف	Agency/Organization الجهة	Name الاسم
Samer	06 5664177	CDM International Inc	م. سنا دوطاية
[illegible]	077771 6638	Petra Region Au.	م. يسرى الحسنات
[illegible]	0777073624	مدرسة وادي موسى الثانوية	محمد حمزاني العقلة
السلمان	٠٧٩٥٤٧٠٥٩	الدفاع المدني	م. محمد أبو ركبة
[illegible]	٠٧٨٨/٠٢١٥٠٣	مندوب الدفاع المدني/المديرية	[illegible]
[illegible]	0788770530	C.C.	م. منى الخطيب
[illegible]	٠٧٧٧/٥٥٧٤٦٨	رئيس ق المحاسبات العمومية/صحة	صباح فالح السعيدات
[illegible]	٠٧٧٦٣٥٠٥٠٠	ادارة الاقليم/البترا	محمد حسين ... القادري
[illegible]	٠٧٩/٥٩٤٤٣٦	ادارة اقليم البترا	[illegible] الشرع
[illegible]	٠٧٩١٥٠٨٤٠٠٩	جامعة الحسين بن طلال	د. محمد الحويطي
[illegible]	٠٧٧٩/١٥٨٧٩٧	مديرية التربية والتعليم	م. يحيى الرواضية
[illegible]	٠٧٧٧/١٠٩٩٤٧	مديرية التربية والتعليم/البترا	م. منصور رشيد الحسنات
[illegible]	٠٧٧٧٨٤٥٠٤١	اكاديمية الحرس الجمركي	عميد سامي علي ابراهيم
[illegible]	٠٧٧٦٠٨٠٦٨١	مدرسة سكينة بنت الحسين/الثانوية	نعمات خالد المساعيد
[illegible]	٠٧٧٦٠٨٠٦٨١	مدرسة سكينة بنت الحسين/الثانوية	هديل يوسف المساعدة
[illegible]	٠٧٧١٤٤٩٦٣	روضة المهيدات/البتراء	عطاف محمود الحسنات
[illegible]	٠٧٧٧١٠٠٤٦٠	مدرسة بنات وادي موسى الثانوية	رسمية عودة الحسنات

Jordan Schools Construction and Rehabilitation Programme -
Environmental Scoping Session

ورشة عمل لتقييم الأثر البيئي- برنامج انشاء وإعادة تأهيل مدارس الأردن

Registration of Participants
تسجيل المشاركين

Signature التوقيع	Phone number رقم الهاتف	Agency/Organization الجهة	Name الاسم
[signature]	٠٧٧٧٣٠١٨١٣	مدرسة سمية الثانوية	فاتن علي الرجبات
[signature]	٠٧٧٧٥٢٥٢٤١	مدرسة بنات وادي موسى الثانوية	آمنة أحمد الصلايا
[signature]	٠٧٧٧٢١٤٧٧٧	آثار البترا	لينا ذيابات
[signature]	٠٧٩٩٠٣٢١٤٧	ر.ت. الإسلامية	د. جمال أحمد الدلابيح
[signature]	٠٧٨٥٨٤٤١٢٩	متصرف الشراة	محمد عيسى محاميد
[signature]	٠٧٨٥٤٥٠٥٩٥	تربية لواء البتراء	حسين أحمد السلامين
[signature]	٠٧٧٧٧٤٥٧٤٨٨	تربية البتراء	نايف علي الحسنات
[signature]	٠٧٩٦٦٩٦٦١٦	تربية قصبة معان	د. نبيل الشامي العوضات
[signature]	٠٧٩٥٦٩٤٤١٨٩	تربية قصبة الكرك	عامر صبيح الكافي
[signature]	٠٣٢٠٣٤	تربية قصبة الكرك	محمد عبدالله الصعوب
[signature]	٠٧٩٦٦٠٤٤٦٠	محمية ضانا	د. محمد محمود السلطان
[signature]	٠٧٨٥٤٣٢٥٠٠	مدرسة الأمير الحسن	ظافر عودة الحسنات
			عاصم الكلالدة
[signature]	06 5906376	USAID	Bruns, David
[signature]	0795201313	USAID	Issam Omar
		USAID	Amal Hijazi

28/1/2008

Jordan Schools Construction and Rehabilitation Programme -
Environmental Scoping Session

ورشة عمل لتقييم الأثر البيئي- برنامج انشاء وإعادة تأهيل مدارس الأردن

Registration of Participants
تسجيل المشاركين

Signature التوقيع	Phone number رقم الهاتف	Agency/Organization الجهة	Name الاسم
[illegible]	٤١٥٠٦٦٧٢	وزارة التربية/ البيئة	د. عوض النوافلة
[illegible]	٠٧٧٧٦٧٩٤٠٥	وزارة التربية/ البيئة	محمد السلامين
	٠٧٧٧٢٩٦٨٨	م. م / الكرك	د. ماجد حجيلة
	٤٣٦ .. ٣٣	تربية قصبة الكرك	مشهور احمد الجراجرة
آمال حجازي	٥٩٠٦٦٩٤	USAID/WRE	آمال حجازي
[illegible]	٠٧٩٩٠٥٠٢٦٧	مديرية صحة	د. عبدالرحمن الصمادي
[illegible]	٠٧٧٧٧١٠٦٠٤	بلدية معان	محمد عدنان التميمي
[illegible]	٠٧٧٧٣٠٢٣٤٦	بلدية معان	عبدالرزاق العتيبي
د/ الرويسي	٠٧٧٧٦٠٧١	وزارة الصحة/ مديرية صحة معان	د/ الرويسي

Jordan Schools Construction and Rehabilitation Programme -
Environmental Scoping Session
ورشة عمل لتقييم الأثر البيئي- برنامج انشاء وإعادة تأهيل مدارس الأردن

Registration of Participants
تسجيل المشاركين

Signature التوقيع	Phone number رقم الهاتف	Agency/Organization الجهة	Name الاسم
[signature]	٠٧٨٨٦٦٧٥٠٤٣	مؤسسة الأنواء الجوية	عواد النوايسة
[signature]	٠٧٩٩٤٧٤٧٩٢	//	م. ثائر [illegible]
[signature]		//	[illegible] جبارة الشمالات
[signature]	—	[illegible] الأنواء الجوية	[illegible]
			جبارة [illegible]

Jordan Schools Construction and Rehabilitation Programme -
Environmental Scoping Session
ورشة عمل لتقييم الأثر البيئي- برنامج انشاء وإعادة تأهيل مدارس الأردن

Registration of Participants
تسجيل المشاركين

Signature التوقيع	Phone number رقم الهاتف	Agency/Organization الجهة	Name الاسم

United States Agency
For International Development

وزراة التربية و التعليم
الأردن

To:

إلى:

Subject: Environmental Scoping Session
Project: Jordan Schools Construction and Rehabilitation Program

الموضوع: ورشة عمل تقييم الأثر البيئي
المشروع: برنامج إنشاء وإعادة تأهيل مدارس في الأردن

Dear Sirs,

تحية طيبة وبعد،

The Ministry of Education of Jordan with the cooperation of the United States Agency for International Development (USAID) is executing the *Jordan Schools Construction and Rehabilitation Program.* This Program includes the construction of 3 new schools in the southern governorates of Jordan. CDM International is the provider of the Engineering Consultancy, Designer and Supervisor of the Program, and Engicon is providing consulting services on environmental issues.

تقوم وزارة التربية والتعليم بدعم من الوكالة الأمريكية للتنمية الدولية (USAID) بتنفيذ برنامج إنشاء وإعادة تأهيل مدارس في الأردن. ويتضمن البرنامج إنشاء ٣ مدارس جديدة في محافظات الجنوب. تقوم شركة سي دي إم (CDM) العالمية بتقديم خدمات الإستشارات الهندسية وأعمال التصميم والإشراف لهذا البرنامج، كما تقوم شركة المستشار للهندسة بتزويد الخدمات الاستشارية البيئية.

To this effect, our Team is preparing an Environmental Impact Assessment to evaluate the anticipated effects that the project may have on the environment and the community, as well as how the physical and cultural environment will impact our projects. As part of this process a Scoping Session will be held to encourage discussion of the possible pertinent environmental issues that have been identified.

يجري في الوقت الحالي تحضير دراسة حول التقييم البيئي ومدى تأثير هذا المشروع على البيئة. وكجزء من عملية التقييم وتقليل التأثيرات السلبية المحتملة على البيئة، ستعقد ورشة عمل يقوم المشاركون من خلالها مناقشة القضايا البيئية المتعلقة بالمشروع.

Therefore, we are pleased to invite you to participate in this Scoping Session, which will be held on Monday 28/1/2008 between 9:30 am and 2 pm, at Crown Plaza Resort / Petra. We kindly request that you inform us of the names of one or two representatives who will be attending. Please notify in advance Eng. Nancy Haddadin (Engicon) by telephone 06/4602120 or fax 06 4602130. Enclosed please find a copy of the Scoping Session's agenda.

وعليه يسرنا أن نوجه لكم الدعوة للمشاركة في هذه الورشة التي ستعقد يوم الأثنين الموافق ٢٠٠٨/١/٢٨ ما بين الساعة التاسعة والنصف صباحا والثانية من بعد الظهر في منتجع كراون بلازا / البتراء راجين التكرم بتسمية شخصين من طرفكم للحضور والاتصال للتأكيد مع المهندسة نانسي حدادين (شركة المستشار للهندسة) على هاتف رقم (٠٦/٤٦٠٢١٢٠) أو فاكس رقم (٠٦/٤٦٠٢١٣٠). مرفق طيه نسخة عن جدول أعمال الجلسة.

Please be advised that the Session will be conducted in Arabic.

يرجى التكرم بالعلم بأن الجلسة ستعقد باللغة العربية.

Yours sincerely

Dr. Ahmad Al-Battah

Secretary General of
Administrative And Financial Affairs
Ministry of Education

وتفضلوا بقبول فائق الاحترام،

د. أحمد البطاح ٢٠٠٨/١/٢٤

امين عام الشؤون الادارية والمالية
وزراة التربية و التعليم

جدول الأعمال

ورشة عمل للدراسة البيئية الخاصة ببرنامج
إنشاء وإعادة تأهيل مدارس الأردن

منتجع كراون بلازا/ البتراء
٢٠٠٨/١/٢٨

٩,٣٠ – ١٠,٠٠ صباحاً	:	تسجيل الحضور
١٠,٠٠ – ١٠,١٥ صباحاً	:	الافتتاح: كلمة مندوب وزارة التربية والتعليم كلمة مندوب الوكالة الأمريكية للإنماء الدولي
١٠,١٥ – ١٠,٣٥ صباحاً	:	وصف المشروع ومكوناته
١٠,٣٥ – ١٠,٥٥ صباحاً	:	استعراض للشؤون البيئية الأولية المتعلقة بالمشروع
١٠,٥٥ – ١١,٤٠ صباحاً	:	استفسارات ومناقشات
١١,٤٠– ١٢,٠٠ظهرا"	:	إستراحــة
١٢,٠٠ – ١,٠٠ ظهرا"	:	تقسيم إلى فرق عمل: • الشؤون الاجتماعية والاقتصادية • الشؤون المتعلقة بأعمال التنفيذ • الشؤون المتعلقة بالصحة والسلامة العامة
١,٠٠ – ١,١٥ ظهرا"	:	استعراض نتائج فرق العمل
١,١٥ – ١,٤٥ ظهرا"	:	تعبئة إستمارة الآثار البيئية
١,٤٥ – ٢,٠٠ ظهرا"	:	اختتام الجلسة
٢,٠٠ ظهرا"	:	وجبة غذاء

AGENDA

Environmental Scoping Session for Jordan Schools Construction and Rehabilitation Programme

Crown Plaza Resort / Petra
28/1/2008

9.30 – 10.00 am	**:**	Registration of Participants
10.00 – 10.15 am	**:**	Opening Remarks Representative of the Ministry of Education Representative of USAID
10.15 – 10.35 am	**:**	Project Description
10.35 – 10.55 am	**:**	Presentation of Identified Environmental Issues
10.55– 11.40 am	**:**	Questions and Discussion
11.40 – 12.00 pm	**:**	Coffee Break
12.00 – 1.00 pm	**:**	Breakout Groups: • Socioeconomic Issues • Construction Issues • Public Health & Safety Issues
1.00 – 1.15 pm	**:**	Presentation of Results of Breakout Groups
1.15 – 1.45 pm	**:**	Filling Out of Environmental Assessment Questionnaire
1.45 – 2.00 pm	**:**	Concluding Remarks
2.00 pm	**:**	Lunch

Appendix C
Environmental Issues Questionnaire

Environmental Scoping Questionnaire

Name: _____ **Agency:** _____

Instructions:
Please answer this questionnaire by evaluating each item according to the shown evaluation scheme below. Please fill in the item response by writing its grade (0-5) inside the box ☐ .

Evaluation scheme

Irrelevant Issue	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
0 1 2 3 4	5				

Any further comments such as possible mitigation measures would also be useful. Please feel free to include them in the provided space for each item separately.

Construction Issues

1. *Occupational safety and health:* Are there any possible risks to the health and safety of the workers on the site? If you agree, please specify.

Response ☐ Comment: _____

2. *Workers sanitation:* Do you believe that the workers' hygiene on site may have an impact on the surrounding environment? (Ex. toilet facilities, adequacy of water supply, etc)

Response ☐ Comment: _____

3. *Traffic:* Will generated traffic as a result of construction vehicles have a high negative impact on the normal traffic in the area?

Response ☐ Comment: _____

4. *Noise:* Do you think the noise from construction activities will drastically affect the residents of the neighboring areas?

Response ☐ Comment: _____

5. *Dust pollution:* Do you think that the dust generated as a result of excavation and other activities have a high negative impact on the neighboring residents?

Response ☐ Comment: _____

6. *Water demand:* Will the increase in water demand during construction create a burden on the water supply?

Response ☐ Comment: _____

7. *Soil and water pollution:* Is there a chance of soil or water pollution as a result of construction activities?

Response ☐ Comment: _____

8. *Water stagnation:* Is stagnation of water, which may provide a breeding place for disease-carrying insects, a major issue of concern in this project?

Response ☐ Comment: _____

9. *Waste generation:* Will generation of construction waste pose a nuisance on the neighboring areas?

Response ☐ Comment: _____

10. *Employment opportunities:* Will job creation present a significant positive impact on the local community where the project will be located?

Response ☐ Comment: _____

Socio-economic Issues

1. *Interaction between students / classes:* Are there any concerns about students interacting with each other outside of their classes, particularly regarding different grades?

Response ☐ Comment: _____

2. *Student psyche inside the classroom (color of walls, sunlight, temperature, dust):* Do you think these issues are important. If you agree, please specify.

Response ☐ Comment: _____

3. *Monitoring of student behavior by supervisors:* Do you think it is important that the school supervisors be able to achieve proper monitoring of the students?

Response ☐ Comment: _____

4. *Employment and economic development:* Will the school contribute to employment and economic development in the area?

Response ☐ Comment: _____

5. *Land use:* Will the project affect the land use in the surrounding areas?

Response ☐ Comment: _____

6. *Archaeological resources:* Do you think that any sites of archeological value may be uncovered or damaged by this project? If you agree, please specify.

Response ☐ Comment: _____

7. *Traffic:* Will traffic congestion during dropping off and picking up hours have a significant impact on the neighboring area?

Response ☐ Comment: _____

8. *Travel time to and from school:* Will the location of the new schools decrease the travel time for students significantly?

Response ☐ Comment: _____

9. *Watering of the green areas:* Will water utilization for landscaping put high pressure on water resources in the area?

Response ☐ Comment: _____

10. *Water conservation for irrigation and toilets:* Is applying water conservation techniques considered essential for this project?

Response ☐ Comment: _____

11. *Energy Saving:* Is applying energy saving techniques considered essential for this project?

Response ☐ Comment: _____

Public Health & Safety Issues

1. *Communicable disease prevention:* Is there any relation between the school facilities and the spread of disease? If you agree, please specify.

Response ☐ Comment: _____

2. *Potable water supply and distribution:* Will the schools present any increased stress on water supply? If you agree, please specify.

Response ☐ Comment: _____

3. *Sanitary facilities:* Is there a possibility that odor and contamination be caused by the sanitary facilities? If you agree, please specify.

Response ☐ Comment: _____

4. *Indoor and outdoor safety issues for students (tripping, falling and sunstroke):* Is there a risk of accidents to students in the school? If you agree, please specify.

Response ☐ Comment: _____

5. *Injury from car accidents:* Is there a threat to students from being hit by passing cars on their way to and from school?

Response ☐ Comment: _____

6. *Protection from intruders:* Are intruders to the school a cause for alarm

Response ☐ Comment: _____

7. *Safety in workshops for males and females:* Are there any safety concerns regarding the school

Response ☐ Comment: _____

8. *Provisions for physically challenged students:* Should there be facilities for the physically challenged students?

Response ☐ Comment: _____

9. *Earthquake, floods and fire protection measures:* Should there be special safety measures in the school to protect from seismic activities, floods and fire?

Response ☐ Comment: _____

10. *Solid waste generated by the school:* Do you believe there should be special provisions to get rid of the waste generated by the school during operation?

Response ☐ Comment: _____

11. *Noise generated by the school:* Do you think that the noise generated by the school will be a major nuisance on neighboring areas?

Response ☐ Comment: _____

Other Comments:

_____

_____

_____

_____

استبيان الورشة البيئية

الاسـم: _____ **الجهـة:** _____

التعليمـات:

الرجاء تعبئة الاستبيان من خلال وضع الإجابة في الخانـة ☐ المخصصة للإجابـة وتكون الإجابـات من رقم (٠-٥) كالآتي:

صفر	١	٢	٣	٤	٥
لا يوجد علاقة	أعارض بشدة	أعارض	حيادي	أوافق	أوافق بشدة

إذا أردت إضـافة أيـة ملاحظـات مثل اقتراح إجراءات وقائيـة أو تخفيفيـة، هنالك بند مخصص لذلك الغرض عند كل سؤال.

أ. القضايا المتعلقة بأعمال التنفيذ

١) **سلامة وصحة العمال:** هل هنالك أية مخاطرعلى صحة وسلامة العمال في الموقع؟ إذا توافق، الرجاء التحديد.

الإجابة: ☐ ملاحظات:

_____

٢) **نظافة العمال:** هل تعتقد بأن النظافة الشخصية للعمال في الموقع قد يكون لها تأثير على البيئـة المحيطـة (مثلاً: دورات المياه، مصدر الماء الملائم)؟

الإجابة: ☐ ملاحظات: _____

٣) **حركة السير:** هل زيادة حركة السير التي ستنتج عن الجرافات والمركبات الخاصـة بعمليـة التنفيذ سيكون لها تأثير سلبي على حركة السير العادية في المنطقة؟

الإجابة: ☐ ملاحظات: _____

٤) **الضجيج:** هل تعتقد أن الضجيج الناتج عن نشاطات التنفيذ سيسبب أي ضرر على سكان المناطق المجاورة؟

الإجابة: ☐ ملاحظات: _____

٥) **تلـوث نـاتج عن الغبـار:** هل تعتقد أن الغبـار الـذي سينتج عن عمليـات الحفر وأي أعمـال أخـرى عنـد التنفيذ سيكون لها أثر سلبي على السكان المجاورين؟

الإجابة: ☐ ملاحظات: _____

٦) **زيـادة الطلـب علـى الميـاه:** هل سيؤدي زيـادة الطلـب علـى الميـاه خـلال فتـرة التنفيذ إلـى ضـغط علـى المـوارد المائية؟

الإجابة: ☐ ملاحظات: _____

٧) **تلوث التربة والمياه:** هل هناك إمكانية لتلوث المياه (السطحية أو الجوفية) والتربة كنتيجة لأعمال التنفيذ؟

الإجابة: ☐ ملاحظات: _____

٨) **ركود المياه في برك:** هل إمكانية ركود المياه تعتبر ذات أهمية بالغة بالنسبة للمشروع قيد الدراسة، علماً بأنها قد تشكل بيئة ملائمة لنمو الحشرات التي تنقل الأمراض؟

الإجابة: ☐ ملاحظات: _____

٩) **النفايات الصلبة الناتجة عن أعمال التنفيذ:** هل من الممكن أن تسبب النفايات الناتجة عن أعمال التنفيذ إزعاجاً للمناطق المجاورة؟

الإجابة: ☐ ملاحظات: _____

١٠) **فرص العمل:** هل من الممكن أن تشكل فرص العمل الجديدة الناتجة عن أعمال التنفيذ تأثير إيجابي على المجتمع المحلي المتواجد في منطقة المشروع؟

الإجابة: ☐ ملاحظات: _____

ب. الشؤون الإجتماعية والإقتصادية

١) **التفاعل بين الطلاب / الصفوف:** هل هناك أي أهمية لتفاعل الطلبة معاً خارج صفوفهم؟

الإجابة: ☐ ملاحظات: _____

٢) **نفسية الطالب داخل الصف (من حيث ألوان الجدران، أشعة الشمس، درجة الحرارة)**: هل تعتقد أن لهذه الأمور أي أهمية في المشروع؟ إذا توافق، الرجاء التحديد.

الإجابة: ☐ ملاحظات: _____

٣) **تسهيل مراقبة الطلاب من قبل المدراء والمشرفين:** هل تعتقد أنه من المهم تسهيل مراقبة الطلاب من قبل المدراء والمشرفين؟

الإجابة: ☐ ملاحظات: _____

٤) **فرص العمل والتنمية الإقتصادية للمنطقة:** هل ستؤمن المدرسة فرص العمل وتساهم على التنمية الإقتصادية في المنطقة؟

الإجابة: ☐ ملاحظات: _____

٥) **إستعمالات الأراضي:** هل سيؤثر المشروع على كيفية استخدام الأراضي في المناطق المجاورة؟ إذا توافق، الرجاء التحديد.

الإجابة: ☐ ملاحظات: _____

٦) **المناطق الأثرية والتراثية:** هل تعتقد أنه يمكن أن يؤدي المشروع الى تخريب لأية مناطق أثرية؟ إذا توافق، الرجاء التحديد.

الإجابة: ☐ ملاحظات: _____

٧) **حركة السير:** هل ستؤدي زيادة حركة السيارات عند بداية ونهاية الدوام الى أزمة سير في المناطق المجاورة؟

الإجابة: ☐ ملاحظات: _____

٨) **وقت الرحلة من وإلى المدرسة:** هل سيقلل موقع المدارس الجديدة وقت الرحلة من وإلى المدرسة؟

الإجابة: ☐ ملاحظات: _____

٩) **توفير الطاقة:** ما هي أهمية تطبيق تقنيات توفير الطاقة لهذا المشروع؟

الإجابة: ☐ ملاحظات: _____

١٠) **زيادة الطلب على المياه لغايات الري وللإستعمالات في دورات المياه:** ما هي أهمية تطبيق تقنيات توفير المياه لهذا المشروع؟

الإجابة: ☐ ملاحظات: _____

١١) **ري المناطق الخضراء:** هل ستؤدي استخدامات المياه لري المناطق الخضراء إلى ضغط على مصادر المياه المتاحة في المنطقة؟

الإجابة: ☐ ملاحظات: _____

ج. القضايا المتعلقة بالصحة والسلامة العامة

١) **الوقاية من الأمراض المعدية:** هل هناك أية علاقة بين مرافق المدرسة وإنتشار الأمراض؟ إذا توافق، الرجاء التحديد.

الإجابة: ☐ ملاحظات: _____

٢) **توفير وطريقة توزيع مياه الشرب:** هل تعتقد بأن توزيع مياه الشرب في المدرسة قد ينتج عنها أية مخاطر للطلاب؟ إذا توافق، الرجاء التحديد.

الإجابة: ☐ ملاحظات: _____

٣) **مرافق الحمامات والمراحيض:** هل هناك أية احتمالية أن تكون دورات المياه والمراحيض سبب لروائح كريهة أو أي تلوث في المدرسة؟ إذا توافق، الرجاء التحديد.

الإجابة: ☐ ملاحظات: _____

٤) **أمور السلامة الداخلية والخارجية للطلبة (عركلة، وقوع، ضربة الشمس)**: هل هناك أي خطر لوقوع حوادث للطلبة في المدرسة؟ إذا توافق، الرجاء التحديد.

الإجابة: ☐ ملاحظات: _____

٥) **الإصابات الناجمة عن حوادث السير:** هل هناك خطر حوادث مع السيارات المارة عند تنقل الطلاب من وإلى المدرسة؟

الإجابة: ☐ ملاحظات: _____

٦) **الحماية من الدخلاء:** هل هناك مخاوف من دخلاء من خارج المدرسة؟

الإجابة: ☐ ملاحظات: _____

٧) **السلامة في مشاغل البنين والبنات:** هل هناك أية مخاطر ناتجة عن المشاغل داخل المدرسة؟

الإجابة: ☐ ملاحظات: _____

٨) **تسهيلات للمعوقين جسدياً:** هل تعتقد أنه يجب الإهتمام بتوفير تسهيلات للطلبة المعوقين جسدياً؟

الإجابة: ☐ ملاحظات: _____

٩) **الحماية من الزلازل والفياضانات والحريق :** هل هناك ضرورة للحماية من الزلازل والفياضانات والحريق؟

الإجابة: ☐ ملاحظات: _____

١٠) **النفايات الصلبة الناتجة عن المدرسة:** هل تعتقد أنه يجب توفير احتياطات خاصة للتخلص من النفايات الصلبة الناتجة عن المدرسة خلال مرحلة التشغيل؟

الإجابة: ☐ ملاحظات: _____

١١) **الضجيج الناتج عن المدرسة:** هل تعتقد أن الضجيج الناتج عن المدرسة سيشكل إزعاج للمناطق المجاورة؟

الإجابة: ☐ ملاحظات:

_____

د. ملاحظات أخرى:

_____

_____

_____

_____

_____

Appendix D

Minutes of the Scoping Session & Questionnaire Results

Minutes of the Scoping Session at Crown Plaza Resort, Petra

Construction and Rehabilitation of Jordan Schools / South Governorates

- Speech of the Representative of the Ministry of Education / Eng. Jihad Al-Ramlawi
- Speech of the Representative of USAID / Mr. David Bruns
- Speech of the Mission Environment Officer of USAID / Dr. Amal Hijazi
- Presentation of the Project by CDM / Eng. Sana Batarseh
- Presentation of Environmental Issues by Engicon / Eng. Nancy Haddaden

Audience's Comments

Comment No. 1: Salem Ali Al-Rawajfeh / General Union for Voluntary Societies

1. Till what grade will there be mixing of students in the co-ed schools?
2. How many floors will the proposed school be?

Response to Comment No. 1: Sana Batarseh / CDM

1. We will be applying the system of the Ministry of Education in these new schools. Therefore, mixing will take place in the grades 1 to 3 only, and the rest of the grades will be for girls only.
2. The design of the proposed schools will not exceed three floors in order to avoid the difficulty that might be faced by the students and the teachers. Moreover, all regulations and rules are being abided by for each region separately.

Comment No. 2: Amer Makkawi / Amir Hasan School - Karak

It is recommended that outdoor courts are designed in a way that minimizes exposure to the sun, as prolonged exposure during the morning queue could negatively impact the students.

Comment No. 3: Dr. Mohammad AL-Huweity / King Hussein University

The school of Wadi Mousa is located in the center of the city, near the police station. The area surrounding the proposed location does not help in developing an environmentally friendly design. Is it possible to change the location since it is not the most appropriate location for a school?

Response to Comment No. 3: Eng. Jihad Al-Ramlawi / Directorate of Education - Petra

Preliminary studies were conducted in order to choose the best location based on several factors. Selection of the proposed location was primarily based on the fact that it is in the centre of the city, and close to an under-utilized sports centre, which could be accessed by the students.

Comment No. 4: Dr. Mohammad AL-Huweity / King Hussein University

The surrounding eco-system will be impacted. It is important to note that there are plenty of green areas and olive trees to the west of this location. We should try to minimize the impact of construction on such areas.

Response to Comment No. 4: Eng. Sana Batarseh / CDM

Vacant lands are limited in the Wadi Mousa area, which limits our options. Other options included locations that are 10 Km away, which is inconvenient.

Comment No. 5: Dr. Odeh Mousa Mbaideen / Directorate of Education – Karak

What is the capacity of each classroom in the proposed schools?

Response to Comment No. 5: Sana Batarseh / CDM International

We have raised the normal standards of the classrooms so that the area of each classroom would be 56 m^2, which would be enough to fit 36 students. It is known that in rural areas there would be 25 students / classroom, whereas in urban areas there would be 36 students / classroom.

Comment No. 6: Eng. Mansour Basheer Al-Hasanat / Directorate of Education – Petra

Why are we addressing environmental issues for a small school project?

Response to Comment No. 6: Mr. David Bruns / USAID

We feel that the educational process is affected by the environment, and vice versa. It is mandatory for us to take environmental issues into consideration and to go through a public consultation process in order to address any issues that you might identify. It is our desire to minimize these impacts.

Response to Comment No. 6: Dr. Amal Hijazi / USAID

In order to approve the construction of such a project, USAID requires holding a scoping session that involves all parties interested or affected by the project under study. In addition to that, this scoping session is in accordance with the Ministry of Environment's guidelines.

For example, one person might object to the presence of a police station near the school due to the possibility of a criminal escaping, while another person might view it as an advantage since this provides constant protection.

Comment No. 7: Mohammad Al-Faou'ri / Environment Rangers

1. We are talking about a rural society, and usually most of the conflicts are resolved before bringing the accused to the police station. Therefore, the presence of the security center beside the school could be beneficial.

2. Unfortunately, the curriculum of the Ministry of Education does not address environmental issues, nor does it raise environmental awareness. In order to compliment the suggested environmentally friendly school designs, it is important to highlight the topic of environmental awareness in the curriculum of these schools.

Comment No. 8: Abd Al-Razaq Al-Mohtaseb / Municipality of Ma'an (Researcher)

What will be the criteria that you will adopt for selecting students who will be admitted to the proposed school?

Response to Comment No. 8: Dr. Amal Hijazi / USAID

A criteria for selecting students will be formulated in due time based on several factors; including proximity to the schools.

Comment No. 9: Mohammad Ammawi / Directorate of Education – Petra

Are there any conditions made by the sponsor?

Response to Comment No. 9: Dr. Amal Hijazi / USAID

No, there are no conditions. There are many projects sponsored by the USAID in the domains of health, education, water and economics in order to help the government of Jordan in addressing increased pressures resulting from continuous immigration.

Comment No. 10: Zeinab Isma'il (student) / Directorate of Education – Southern Ghors

Will there be any consideration to weather conditions at the school in Ghor Al-Safi, since the region is extremely hot in summer? Will there be air-conditioning systems?

Response to Comment No. 10: Sana Batarseh / CDM International

Each school will be considered individually, and there will be a study regarding weather issues for each region separately. If there is a need for air conditioning, this will be implemented so as to provide a comfortable environment that enhances the learning process.

Response to Comment No. 10: Dr. Amal Hijazi / USAID

Issues including safety, colours, heating, air-conditioning and ventilation are important and shall be addressed.

Comment No. 11: A participant from Wadi Mousa Region

1. Have you considered individual differences between students? Are there any special classrooms for students of high intellectual capacity and those with special needs?

2. Have you considered collecting rain water or constructing wells for the irrigation of green areas?

Comment No. 12: Thafer Odeh Mbaideen (Student) / Amir Hasan School – Karak

What do you mean by grey water?

Response to Comment No. 12: Dr. Amal Hijazi / USAID

It is wastewater generated from daily school activities that could be treated and recycled for use in toilets, for example.

Comment No. 13: Ziyad Ali Al-Masha'leh (Director of Planning Department) / Directorate of Education - Karak

It should be noted that the proposed location of the school in Petra was selected among three proposed areas because of its central location. However, is there any possibility of constructing a new school in Al-Taibeh region?

Response to Comment No. 13: Sana Batarseh / CDM International

The sites have been already selected. However, if one of the locations was assessed as having negative environmental impacts, then the next proposed site will be considered.

Comment No. 14: Shahad Ahmad Al-Jarajrah (student) / Direcotrate of Education – Karak

I propose that the cafeteria be divided into several sections, due to the assemblage that always takes place. This could help in increasing the students' access to services provided at the cafeteria in a more efficient manner.

Comment No. 15: Eng. Nabeel Bsharah Al-Odat (Director of Construction Department) / Direcotrate of Education – Karak

School vandalism by students and the community is a serious issue in Karak and should be taken into consideration. In the past, we have formed committees to increase the awareness of parents and students in order to resolve this issue.

Response to Comment No. 15: Sana Batarseh / CDM International

We have chosen durable construction materials; however, this will not supersede the importance of increasing public awareness about this issue.

Comment No. 16: Isra' Salman Al-Shamalat / Direcotrate of Education – Southern Ghors

Will there be special design considerations for the physically challenged students?

Response to Comment No. 16: Sana Batarseh / CDM International

The needs of the physically challenged students will be considered at the design stage of each school. Such considerations include developing special designs for restrooms and chairs.

Photographic Documentation

Welcoming Speech

Scoping Session Participants

General Discussion

General Discussion

Participation during General Discussion

Breakout Group Discussion

Students' Participation during Breakout Group Discussion

Findings of the Breakout Group: Construction Issues

The following issues were raised by the participants of this group:

Occupational Safety and Health

- Using personal protective equipments, such as helmets, safety shoes, gloves, safety glasses and muzzles.
- Providing regulatory and warning signs around the construction site.
- Taking into consideration the ages and experience of workers hired for the project.
- Foreign workers should be subjected to health screening and security check procedures.
- Construction equipment must be well maintained.

Workers Sanitation

- Providing temporary sanitary units for workers onsite, and preferably having them connected with a sanitary network instead of septic tanks.
- Providing potable drinking water onsite.
- Providing workers with temporary housing units that are convenient.

Traffic

- Rehabilitation of narrow and old roads around the proposed schools.
- Specifying certain hours for the movement of construction vehicles, thereby avoiding rush hours.
- Providing traffic warning signs and constructing speed bumps.

Noise

- Specifying acceptable working hours for excavation and construction works to minimize the impact of the generated noise.

Air Pollution/Dust

- Covering the construction site with barriers, pavilions and tins.
- Sprinkling water onsite continuously.

- Covering construction vehicles when transporting material.

Water Demand

- The contractor should arrange for alternative water sources so as to avoid increasing the local demand on water.
- The contractors should provide their own water tanks for water usage on-site.
- The contractor should be charged for water used from the city water supply network.

Soil and Water Pollution

- The contractor must be responsible for washing nearby trees after any activity that might cause pollution.
- Scattering and dispersion of construction waste might contaminate nearby lands.
- Enforcing mitigation measures to prevent the pollution of groundwater.
- Retaining walls might be needed to support soil.

Water Stagnation

- Draining ponds and stagnant water on-site appropriately and regularly.
- Spraying pesticides if applicable.

Waste Generation

- Disposal of waste in a regular and organized manner
- Separating wastes according to type (paper, wood, metal, and construction material).

Employment Opportunities

- Requiring the contractor to buy all raw materials locally (project area), if possible.
- Giving priority to residents of the project area when recruiting.

Timing of Construction Activities

- Establishing a time schedule for construction activities.
- Construction activities should not be carried out on holidays.
- Specifying certain time periods for executing work that might cause nuisance to neighbouring areas.

Other Issues of Concern

This group presented new issues that were not included earlier. These are as follows:

Qualifications of Contractor

- Contractors must be classified by the Ministry of Public Works and Housing.
- Reviewing the contractor's classification, curriculum vitae and recommendation letters from previous clients.
- Monitoring and follow-up of the contractor's work by authorized entities during all phases of the project.
- The Ministry of Education usually uses a form that evaluates the contractor. This group suggested considering the distribution of the form to all directorates in the governorates to choose the contractors accordingly.
- Not necessarily choosing the lowest bid when selecting contractors.
- It might be possible to consider the "Bid Shopping" procedure, which involves gathering all contractors and questioning them on all items, in order to select the best contractor for the project.
- There must be a permanent supervision engineer onsite.

Findings of the Breakout Group: Socio-economic Issues

The following issues were raised by participants of this group:

Interaction between Students / Classes

- Within the classroom:

➢ Participants encouraged increasing the interaction between students within the same classroom. They proposed that this can be accomplished by securing chairs with wheels to facilitate student movement between different sections of the classroom during various activities. They also proposed providing educational demos and small libraries and computers to allow students to participate collectively in educational activities.

- Participants also proposed adopting a classroom design that allows for interactive learning.

- Between different age groups:

- Participants proposed allocating different floors or areas within the school for classrooms of students of different age groups.

- Interaction between students of different age groups was encouraged for certain school activities under the supervision of school staff.

Student Psyche inside the Classroom

- Color of walls: participants proposed painting classroom walls with bright colours, especially for elementary students. Some even suggested providing classrooms with coloured wall curtains that could be pulled down to reflect the activity or subjects taught during that day.

- Lighting: participants stressed the importance of providing sufficient and suitable lighting for students in classrooms. They suggested that the school design should include large windows.

- Dust: participants stated that white boards should be employed in classrooms. This will prevent the students' exposure to harmful chalk dust. Moreover, the use of projectors during classes was encouraged.

- Temperature: participants stated that a heating system is essential in winter to keep the students warm. They also agreed that air-conditioning systems must be provided during summer at schools situated in extremely hot areas.

- Educational equipments and models should be made available for all students equally, thus enhancing every students participation in the learning process and minimizing by-standers.

- Assigning assistant teachers to help the principal teacher in class, thus addressing the needs of all students in the classroom, including those with special educational needs.

- Training teachers and upgrading their teaching techniques, including appropriate techniques for dealing with shy and introvert students.

Monitoring of Student Behavior by Supervisors

- Participants stated that cameras must be installed in halls and outside classrooms to monitor students' behavior and guarantee their safety.

- Once student violence is detected on camera, school officials should deal with students in a sensible manner.

- Assigning teachers to monitor students outside the classrooms and during breaks.

Employment and Economic Development

- The participants agreed that the construction of new schools will provide several job opportunities since a new cadre will be needed.
- The participants proposed giving employment priority to local teachers and staff.
- Economic development is expected to occur in the vicinity of the newly constructed schools.
- Securing schools needs from local merchants.

Land Use

- Participants expected an increase in the prices of nearby lands in commercial zones; however, they expected a decrease in the prices of lands in residential zones, since many are affected by noise from schools.
- Participants expect that the areas around the schools will witness the erection of several cultural centers and bookshops.

Archaeological and Traditional Areas

- Some participants argued that if archaeological sites are found within the neighborhood of the school then this could have a positive cultural impact on the students. Field trips to such areas could be regularly arranged.
- Some participants indicated that students could escape school to work at these archaeological places. Others indicated that noise and traffic generated by tourists could impact the students.
- Students should be made aware of proper conduct at these archeological sites. Bad habits such as faulty disposal of garbage should be discouraged.

Traffic

- Schools entrances and exits should not be located on main roads.
- Providing buses for student pick-up and drop-off, thus reducing traffic.
- Providing parking areas.
- Parents can volunteer to help students in crossing roads in the vicinity of the schools.
- Utilizing traffic signs to regulate traffic and minimize impact around schools.

- Regulating student exit time to lessen pick-up and drop-off traffic.
- Creating student traffic teams that propagate awareness amongst students.

Travel Time to and from School.

- The new schools should lessen the current transportation time to and from schools because the proposed sites were carefully chosen.
- Providing school buses will lessen transportation time for some students who use public transportation to get to their schools.

Maintenance and Cleanliness of the Building

- Providing a sufficient number of cleaning staff.
- Establishing student committees in charge of school cleanliness.
- Propagating awareness amongst students about the importance of keeping their schools clean through regular presentations or lectures.
- Designing bathrooms in accordance with student age category to allow proper and easy usage.
- Establishing regular maintenance programs, especially during the students' summer vacation.

Energy Saving

- Designing large windows and properly locating them to optimize benefits from the natural sunlight.
- Considering the use of photovoltaic cells for the purpose of generating electricity in the new schools.
- Using solar panels for heating water.
- Using efficient central heating systems.
- Providing the buildings with proper heat insulation.

Water Saving

- Constructing wells for collecting rain water and utilizing water harvesting techniques.

- Utilizing efficient irrigation techniques and planting vegetation that require minimal amounts of water.
- Use of grey water in toilets.

Use of Schools after School Hours

- Participants proposed renting the school buildings for local societies for nominal prices. This will serve the local community and generate income for the schools.
- Using the schools premises for scout camps.
- Using the schools premises for conducting lectures and awareness programs for the local community.

Other Issues of Concern

This group presented new issues that were not included earlier. These are as follows:

- Generating criteria (based on addressing student's needs) for accepting students to the new schools.
- Planting fruit trees within the schools premises and selling crops to increase incomes for the schools.

Findings of the Breakout Group: Public Health and Safety

The following issues were raised by participants of this group:

Communicable Diseases Prevention

- Proper ventilation for school facilities.
- Providing spacious classrooms in order to prevent crowdedness, as well as separating desks and providing enough spaces between students.
- Providing a room for medical examination and assigning a full time doctor.
- Providing the schools with enough staff to sustain a minimum standard of hygiene and cleanliness.

Potable Water Supply and Distribution

- Provide the school with well designed wells (since some wells are constructed in a way that allows for the well's water to get contaminated).

- Installing water saving devices or providing the coolers with automatic sensors.
- Designing the water tanks in a manner that preserves them from pollution and facilitates maintenance.
- Regular maintenance for the tanks, which can be achieved by cooperation between the Ministry of Education and the Ministry of Health.

Sanitary Facilities

- Sanitary facilities should be suitable for the age of students using them.
- Most participants agreed that sanitary facilities should be indoor and designed in a manner that minimizes the diffusion of odors.
- Participants preferred the oriental toilets over the regular type since they are safer and cleaner. They pointed out that regular types can be considered difficult to use by some students, especially those who are overweight.
- Implementing a program for regular maintenance of sanitary facilities. Moreover, assigning a committee that is responsible for raising the awareness of students on proper hygiene.
- Providing an appropriate number of sanitary units, based on the number of students.

Indoor and Outdoor Safety Issues

- Providing furniture without sharp edges and that suits the age of the students.
- The main gates of the schools should be well attended and designed in a manner that prevents the immediate rushing of students into the street.
- Including a cafeteria in the design of schools to discourage students from leaving the school to purchase food, as well as providing more than one access to the cafeteria to prevent overcrowding.
- Raising the height of walls surrounding the school premises for safety.
- Providing protection on windows and around playgrounds.
- Providing more than one playground, in addition to areas that are covered to minimize sun stroke incidents.
- Measures should be implemented to ensure the safety and hygiene of food offered in cafeteria.
- Abide by all Jordanian building codes.

Injury from Car Accidents

- Taking into consideration the guidelines provided in the worksheet developed by the "Jordan Society for Prevention of Road Accidents".
- Providing speed bumps in order to reduce the speed, alongside proper signage.
- Student entrances should be away from vehicle entrances.
- Avoid placing the main entrance of the school on a main road.
- Proper fencing of the playgrounds in order to protect students from leaving school premises.
- Review of the preliminary design must be completed by a committee for traffic safety to ensure that the design takes into consideration the issue of traffic safety.
- Traffic awareness campaigns must be offered by the school for students. This can be accomplished by forming a dedicated committee.

Protection from Intruders

- Designing high walls around the school to ensure students safety and to keep intruders out.
- A guard must be always available.
- Administration offices should be overlooking the main entrance in order to monitor schools visitors.
- Providing the schools with alarm systems to prevent intruders from entering the school premises.

Provisions for Physically Challenged Students

- The school design must take into consideration the health and safety of physically challenged students, incorporating elements that facilitate their access to all school facilities.
- Providing rooms that are equipped with physiotherapy machines that can be used by physically challenged students during the time allocated for the gym class.

Solid Waste

- Choosing the most appropriate method for the regular collection and the disposal of solid waste.

- Recycling the solid waste generated at schools.

Safety in Workshops

- Providing workshops with safety equipments such as glasses and coats.
- Installing proper ventilation systems.
- Alarm systems to be installed (fire, gas leak, etc,..)
- First aid tools and well trained staff must be available at all times.
- Proper disposal of any toxic chemicals in cooperation with health directorates.

Noise

- Creating a buffer zone by planting trees to reduce the effect of noise on neighboring areas, as well as insulating the walls.
- Discipline in school premises and during the breaks, which can be achieved by the cooperation between the administration, and students.

Earthquake, Floods and Fire Protection Measures

- Abide by the Jordanian building codes.
- Installing alarm systems.

Other Issues of Concern

Other issues raised by this group were:

- The possibility of providing the school with a water treatment facility and the use of treated water in irrigation.
- Using equipments that reduce energy consumption.
- Planting trees that are known for their high ability to absorb water.

Findings of the Breakout Group: Green Building Design

Water Conservation

- Including a treatment plant.
- Usage of grey water after treatment.

- Collection of rain water.
- Providing signs around the campus that promote water conservation.

Energy Conservation

- Designing the schools in a manner that allows for the maximum utilization of sunlight (using solar panels).
- Using thermal isolation materials.
- Regular maintenance for air conditioning systems.
- Designing wide windows.
- The orientation of the structure should be compatible with the surrounding environment.

Air Quality

- Reducing crowding as much as possible.
- Having the green areas close to the windows of the classrooms.

Temperature

- Installing fans and air conditioning systems.
- Planting trees and green areas.
- Thermal isolation.
- Providing basements to be used during summer and winter.
- Considering the location of the schools.
- Using safe central heating systems.
- Taking into consideration the operating cost for central air conditioning systems.

School Design

- Choosing building components that are compatible with the surrounding environment.
- Providing covered areas in the outdoor courts to minimize exposure to sunlight.

- Planting trees near the schools that do not require considerable amounts of water.

Elements that Motivate Students

- Building sports courts.
- Planting palm trees and irrigating them using grey water.
- Paying attention to the colors of the walls.
- Hosting summer camps during the summer vacation.
- Hosting environmental contests.
- Constructing built in closets that can be used as lockers for students.
- Conducting cleanliness campaigns inside the school and during extra-curricular classes.
- Providing boxes for separating metal, paper and glass wastes for recycling purposes.

Summary of Questionnaire Responses

Construction Issues

Issue	0	1	2	3	4	5
Occupational Health and Safety	13.51%	0.00%	5.41%	37.84%	21.62%	21.62%
Workers Sanitation	7.89%	0.00%	5.26%	2.63%	39.47%	44.74%
Traffic	0.00%	5.26%	5.26%	5.26%	63.16%	21.05%
Noise	2.63%	5.26%	7.89%	10.53%	47.37%	26.32%
Dust Pollution	5.26%	0.00%	7.89%	13.16%	34.21%	39.47%
Water Demand	7.89%	5.26%	10.53%	18.42%	42.11%	15.79%
Soil and water pollution	16.67%	2.78%	13.89%	30.56%	27.78%	8.33%
Water stagnation	2.63%	7.89%	7.89%	18.42%	36.84%	26.32%
Waste generation	5.26%	2.63%	10.53%	15.79%	39.47%	26.32%
Employment opportunities	0.00%	5.26%	5.26%	10.53%	31.58%	47.37%

Socio-economic Issues

Issue	0	1	2	3	4	5
Interaction between students / classes	0.00%	0.00%	0.00%	10.53%	39.47%	50.00%
Student psyche inside the classroom	0.00%	0.00%	0.00%	5.26%	28.95%	65.79%
Monitoring of student behavior by supervisors	0.00%	0.00%	2.63%	13.16%	36.84%	47.37%
Employment and economic development	0.00%	2.63%	2.63%	18.42%	42.11%	34.21%
Land Use	0.00%	2.63%	13.16%	26.32%	26.32%	31.58%
Archaeological Resources	10.53%	21.05%	26.32%	23.68%	10.53%	7.89%
Traffic	2.63%	0.00%	15.79%	18.42%	39.47%	23.68%
Travel time to and from school	0.00%	5.26%	2.63%	23.68%	36.84%	31.58%
Energy Savings	0.00%	0.00%	2.7%	24.32%	32.43%	40.54%
Increase water demand for irrigation and washroom	2.7%	0.00%	2.7%	21.62%	37.84%	35.14%
Irrigation of green areas	7.89%	2.63%	23.68%	28.95%	21.05%	15.79%

Public Health and Safety

Issue	0	1	2	3	4	5
Communicable disease prevention	5.41%	5.41%	5.41%	5.41%	29.73%	48.65%
Potable water supply and distribution	5.41%	0.00%	21.62%	29.73%	18.92%	24.32%
Sanitary facilities	0.00%	2.63%	2.63%	13.16%	34.21%	47.37%
Indoor & outdoor safety issues	2.63%	2.63%	2.63%	31.58%	28.95%	31.58%
Injury from car accidents	0.00%	5.26%	5.26%	42.11%	31.58%	15.79%
Protection from intruders	5.26%	13.16%	5.26%	23.68%	28.95%	23.68%
Safety in workshops for males and females	2.36%	0.00%	13.16%	18.42%	50.0%	15.79%
Provisions for physically challenged students	0.00%	0.00%	0.00%	7.89%	21.05%	71.05%
Earthquake protection measures	0.00%	0.00%	0.00%	0.00%	28.95%	71.05%
Solid waste	0.00%	2.63%	2.63%	7.89%	34.21%	52.63%
Noise	5.26%	5.26%	13.16%	21.05%	31.58%	23.68%

Appendix E

Curricula Vitae of Environmental Assessment Preparers

Curriculum Vitae

Proposed Position	Environmental Assessment / Team Leader		
Name of Firm	Engicon		
Name of Staff	Lama Bashour		
Profession	Environmental and Public Health Specialist		
Date of Birth			
Years with Firm	7	**Nationality**	Lebanese
Membership in Professional Societies	•		

Key Qualifications

Ms Lama Bashour has been working as an environmental specialist at Engicon since 2000. She has conducted several Environmental Impact Assessments for different types of projects including wastewater treatment plants, dams, highways and infrastructure developments. Ms. Bashour worked as a consultant at the Food and Agriculture Organization Headquarters in Rome, where she worked on the Forestry Outlook Study for West and Central Asia, researching and analyzing the policies and legislations in the countries of the West Asia region and their impact on the forestry sector. She also participated as a legal and policy specialist in the Preparation of the Third National Communication Report of the Convention on Biological Diversity for Jordan. Ms. Bashour was the Team Leader to assist GTZ in preparing the Volume on Water & Environment for Jordan's Ministry of Water & Irrigation's National Water Master Plan. The task required reviewing, analyzing and recommending improvements to the current environmental issues as they relate to the water sector in Jordan. Ms Bashour's educational background includes a Masters Degree in Environmental Law & Conservation from the University of Kent in the UK (2000) and a Bachelor of Sciences in Public & Environmental Health from the American University of Beirut (1997).

Education

2000	LLM (Masters in Law) with Merit in Environmental Law and Conservation, University of Kent, UK
1997	B Sc in Public and Environmental Health, American University of Beirut, Lebanon

Other Training

Dec 16 – 20, 2006	Advanced Training Workshop for Environmental Assessment Practitioners, organized by the World Bank, METAP, Tunis International Centre for Environmental Technologies, UNEP, Damascus, Syria

Employment Record

Dec 2000 – Present	Engicon, Amman, Jordan
Oct 1998 – Sept 1999	American University of Beirut, Lebanon

Experience Record

Dec 2000 – Present **Engicon, Amman, Jordan**

Environmental and Public Health Specialist. Worked on the following projects:

Jordan Schools Construction and Rehabilitation Program. Team Leader for the Environmental Assessment of this USAID-funded program, which aims to construct 28 new schools throughout the country and renovate 20 existing ones. The work included conducting 4 Scoping Sessions and Statements, consultation with the local communities and preparing an Environmental Assessment report for each school.

Environmental Assessment of Nuqul Group PM4 Tissue Paper Mill Project, Jordan. Team Leader for performing an environmental assessment study for a paper mill factory to be implemented for Nuqul Group in Eastern Urainbeh, Al-Jeeza, Amman. The EA was to be in line with European and World Bank standards as well as abide by Jordanian legislations. The European Commission Reference Document on Best Available Techniques (BAT) in the Pulp and Paper Industry was utilized as a guideline for ensuring that the proposed technology was

environmentally-friendly. The task activities were as follows:
1. Review of existing literature and available documentation on the project area.
2. Site visits to the project area.
3. Identification of the project alternatives.
4. Preliminary list of anticipated environmental impacts.
5. Consultation with relevant stakeholders.
6. Evaluation of significant environmental impacts.
7. Establishing mitigation measures.
8. Preparing an environmental monitoring and management plan.

Design of Salt/Wadi Shuaib Road and Road Connecting Wadi Shuaib to Salt Entrance. Environmental Specialist responsible for the environmental assessment of the three project components as follows:
1. Upgrading of the existing Salt/Wadi Shuaib Road with a total length 23 km into a 4-lane divided highway in order to sustain the existing traffic volumes.
2. Design of a 10-km 4-lane divided highway from Salt/Wadi Shuaib Road to Salt/Suwaileh Road.
3. Preparation of a reconnaissance study to connect Salt/Suwaileh Road with Salt Ring Road.

The tasks comprised of the examination of regulatory framework, a scoping process, analysis of the environmental impacts, proposal of mitigation measures and preparation of an environmental monitoring and management plan.

Municipal Infrastructure and Service Delivery Assessment. Project Coordinator and Environmental Specialist. The study is part of the World Bank Regional and Municipal Development Project and was conducted for the Ministry of Planning & International Cooperation, in cooperation with the Ministry of Municipal Affairs and Cities & Villages Development Bank. It includes the following three main components:
1. Preparation of an informative framework of the need for infrastructure and services that may be found in the Jordanian municipalities;
2. Development of a methodology capable of leading to the identification of a priority list of actions, taking into account the social, environmental, and economic-financial characteristics of the territories involved;
3. Definition of a priority package of investments in infrastructure and services, characterized by the requirement of feasibility, from both the technical-design standpoint and that of economic-financial and environmental compatibility

The project was financed by the International Bank for Reconstruction and Development and was implemented in joint venture with C. Lotti & Associati and Ecoter of Italy.

In Mar 2005 – June 2005, worked as a short-term consultant for the **Food and Agriculture Organization in Rome, Italy** on the **Forestry Outlook Study for West and Central Asia.** The task required was the preparation of a T*hematic Report on Lan d Use Dyna mics and Policy and Institutional Cha nges i n the W est Asia region*, which comprises the countries of Afghanistan, Bahrain, Cyprus, Iran, Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, Turkey, UAE and Yemen. The resulting report provides an overview of the key developments in land use, policy, legal and institutional changes with the objective of understanding the trends that may have direct and indirect impacts on forests and forestry in the region.

Comprehensive Basic Survey for Priority Areas of JICA Assistance. Deputy Project Coordinator and Team Leader for the sector of Environment, Health and Labour and Employment. The purpose of this project was to perform a comprehensive survey that will aid Japan International Cooperation Agency (JICA) in determining the sectors that are in most need of assistance in Jordan. The project required surveying the present situation in 23 sectors (divided into two groups: A and B), as well as the institutional and legal background under which these sectors are managed.

National Water Master Plan: Water and Environment. As part of the GTZ-funded project for the Ministry of Water and Irrigation, Team Leader for preparing the volume relating to the environmental planning framework for water sector planning in Jordan. The volume was divided into the following chapters, in accordance with the UN Guidelines for the Preparation of National Water Master

Plans:

1. Institutional and Legal Issues (including water quality monitoring)
2. Environmental Impact Assessment for the Water Sector
3. Environmental Protection and Water Development Projects (such as non-conventional water resource development, groundwater development and water storage and conveyance systems)
4. Recommendations (regarding legal and institutional improvements, environmental planning, national environmental assessment requirements, environmental monitoring and sustainable development)

Environmental Specialist responsible for the preparation of Environmental Impact Assessment reports for the following projects:

Wastewater Collection, Treatment and Effluent Reuse from Jerash and Sukhna. Environmental Specialist for the preparation of a technical and economic feasibility study, environmental assessment, final design and tender documents for the:

- Wastewater collection, treatment and effluent reuse from the municipalities of Sakib, Raymon, Al-Kitta, Nahla and Gazza refugee camps and the adjacent area
- Wastewater collection, pumping station and transmission pipeline of Sukhna town and Sukhna refugee camp

Responsibilities include performing a Scoping Process, whereby a Scoping Session was conducted regarding the possible environmental impacts of the project. Following that was the preparation of a Scoping Statement and an Environmental Assessment Report.

Karak Water Loss Reduction Programme. Environmental Specialist for the feasibility study on water loss reduction in the governorate of Karak. The study includes an actualisation of the existing water network, development of a computer model for the hydraulic network analysis, updating and extension of governorate development and population projection, development of zoning system, water loss analysis, feasibility investigation for rehabilitation of all water networks, availability of additional resources and water balance, socio-economic and environmental assessment studies and preliminary designs for rehabilitation works.

Storage Pond at Deir Alla. Environmental Specialist. The Project is located near the town of Deir Alla, east of the existing King Abdallah Canal (KAC) and aims to divert the Zai Water Treatment Plant (WTP) requirement of KAC water for preliminary treatment before pumping it to Zai via the existing Intake Pumping Station (PS) and transmission system. In addition, a 500,000 cubic meter storage pond is designed as a reserve when the KAC water quality deteriorates to levels that cannot be handled by Zai WTP. A preliminary environmental assessment report was prepared.

Zarqa / Bal'ama / Irbid Alla. Conducted an environmental assessment report for the study for upgrading and redesign of Zarqa/Balama/Irbid Road into a 4-lane divided highway with total length of 42 km from Al-Hashimiyah Bridge to Nuaimeh Bridge. The task comprised of the examination of regulatory framework, a scoping process and analysis of the environmental impacts.

Al Quds Junction-Zara Main Intersection. The project included the design of a 4-lane highway with service roads on both sides, to replace the existing road connecting Rama intersection through Quds intersection, with Sweimeh /Zara road, and designing Wadi Mukhaires Bridge. The task comprised of conducting an environmental impact assessment, including examination of regulatory framework, a scoping process and analysis of the environmental impacts.

Ma'an Wastewater Treatment Plant and Effluent Reuse. The project comprises of the rehabilitation and upgrading of an existing wastewater treatment plant (capacity 1590 m^3/day) and effluent reuse for the city of Ma'an. Responsibilities include performing a Scoping Process, whereby a Scoping Session was conducted regarding the possible environmental impacts of the project. Following that was the preparation of a Scoping Statement and an Environmental Assessment Report.

Al Shamiyeh Village Infrastructure Project. The project entailed the provision of infrastructure services for the Shamiyeh Village in the South near Aqaba. Responsibilities included preparation of an environmental assessment analysing the possible adverse environmental and social impacts of this project. Work included conducting a survey whereby a sample of the residents of the village was taken for and interviewed.

Mafraq Wastewater Treatment Plant and Reuse Application. The project, funded by USAID, entailed the rehabilitation of the existing Mafraq wastewater treatment plant and proposal of a scheme for effluent reuse. The new plant's design capacity is 6,500 CM/day. Responsibilities included organizing a Scoping Session, in accordance with USAID requirements, performing several field trips, and preparing a Pre-scoping Brief, a Scoping Statement and an Environmental Assessment report.

Storage Systems Project. Technical, economic and financial feasibility study and preliminary design of the Storage Systems Project, which required the selection of the most suitable dam site(s) on the Jordan River. Responsibilities included site visits to the four potential sites, collection of relevant information from the available literature and experts, and preparation of documents for the environmental impact assessment report.

Oct 1998 – Sept 1999 **American University of Beirut, Lebanon**

Research Assistant. Conducted research as well as laboratory work on the Leishmania parasite. Responsibilities included site visits to the north of Lebanon, where Leishmania is hypoendemic, laboratory experiments and assisting in preparation of research papers and publications.

Language Ability	*Speak*	*ing*	*Reading*	*Writing*
	Arabic	Excellent	Excellent	Excellent
	English	Excellent	Excellent	Excellent
	French	Good	Good	Good

Curriculum Vitae

Proposed Position	Environmental Specialist / Environmental Geologist		
Name of Firm	Engicon		
Name of Staff	Ronnie George Theodory		
Profession	Environmental Engineer		
Date of Birth			
Years with Firm	-	**Nationality**	Jordanian/Canadian
Membership in Professional Societies	Jordanian Engineers Association		

Key Qualifications

Ronnie Theodory is an environmental engineer with a background in environmental geology. He has Canadian and Jordanian experience in conducting Environmental Site Assessments (Phase II) and Environmental Impact Assessments. Moreover, he has experience in the desalination technology (reverse osmosis). He has conducted research on the utilization of biomonitors for tracing pollutants in aquatic systems.

Education

Jan 2000 – Oct 2002	Honours Bachelor of Applied Science, University of Windsor, Windsor, Ontario, Canada Concentration: Environmental Engineering
Jan 1999- Dec 1999	PhD level courses in Environmental Biology, University of Windsor, Windsor, Ontario, Canada
1996 – 1999	Masters of Science, University of Windsor, Windsor, Ontario, Canada Concentration: Environmental Geology
1992 – 1996	Honours Bachelor of Science, University of Windsor, Windsor, Ontario, Canada, Concentration: Biological Sciences

Employment Record

Oct 2007 - Present **Engicon, Amman, Jordan**

Study, Design and Preparation of Tender Documents for the Lajjoun Septage Treatment Plant. Environmental Engineer. The project includes an assessment of the current treatment plant and preparation of final designs and tender documents for its expansion, including assessment of current location and most feasible treatment technologies. The scope of work also includes a comprehensive Environmental Impact Assessment.

Jordan Schools Construction and Rehabilitation Program. Environmental Specialist for the Environmental Assessment of this USAID-funded program, which aims to construct 28 new schools throughout the country and renovate 100 existing ones. The work included conducting 4 Scoping Sessions and Statements, consultation with the local communities and preparing an Environmental Assessment report for each school.

Consultancy Services to Provide an Independent Review for Remediation Projects Regarding the Terrestrial Ecosystem in Jordan. Environmental Specialist for this United Nations Compensation Commission (UNCC)-funded program, which aims to implement projects that aid in the restoration of the terrestrial ecosystem impacted as a result of the Gulf War.

Sept 2004 – Oct 2007 **Osmo Sistemi for Water Treatment Technologies** – Regional Office, Amman, Jordan

Regional Representative/Manager

- Managing company activities in the Middle East and North Africa (MENA)
- Designing small, medium and large-scale seawater and brackish water reverse osmosis desalination plants
- Formulating and implementing business development strategies

- Establishing new markets in the MENA region

Feb 2003 – Sept. 2004 **CRA, Conestoga-Rovers & Associates, Toronto, Ontario, Canada**

Bellamy Industries Subsurface Investigation. Project Coordinator for this Phase II Environmental Site Assessment project. The assessment included the delineation of vertical and horizontal volatile organic compounds impact to soil and groundwater. Various field activities were carried out including the advancement of boreholes and installation of monitoring wells and gas probes.

Bellamy Industries Site Specific Risk Assessment. Environmental Engineer. The assessment included the generation of site specific clean-up/remediation criteria for the contaminated site. Intrusive field work was executed and various remediation options for soil and groundwater were assessed.

Toronto Transit Commission (TTC) Environmental Site Assessments. Environmental Engineer. The project comprised conducting Phase II Environmental Site Assessments for various TTC facilities to determine the extent of oil contamination impact. Comprehensive Health and Safety Plans were developed for conducting field activities.

Toronto Transportation Facility Monitoring Program. Project Manager. The program comprised developing and executing quarterly surface water monitoring program and developing recommendations to ensure that provincial surface water guidelines are met. Surface water samples were regularly collected and analyzed for parameters of concern.

Hydrogeological Investigations for 9th Line Trunk Sewer Construction, York Region. Environmental Engineer. The project objectives included determining the anticipated effects of dewatering during the construction phase of the trunk sewer on private wells in the vicinity of the proposed sewer route. The assessment included conducting several field activities, including pumping tests. Proactive measures were undertaken by providing residents that might be affected with new and deeper water wells. Subsequent to well advancement and installation, the quality of well water for each well was monitored and sampled until the Ontario Drinking Water Standards were met.

Hamilton Electroplating Facility. Environmental Engineer. A Phase II and Phase III Environmental Impact Assessment project that assessed on-site impact as well as delineation of off-site trichloroethylene (TCE) migration. Site clean-up and remediation included the design and installation of an air sparging system.

May – Aug 2001 **Daimler Chrysler (Engineering Materials Laboratory / Automotive Research & Development Centre), Windsor, Ontario, Canada**

Chemical Engineer (4-month training position)
- Designed and carried out experiments on "environmentally-friendly" waterborne paint
- Tested paint and motor oil physicochemical parameters for quality control purposes
- Analyzed experimental data
- Developed new method for characterization and prediction of environmentally-friendly" non-Newtonian paint performance

Jan – Dec 1999 **GLIER, Great Lakes Institute for Environmental Research, Windsor, Ontario, Canada**

Researcher
- Designed controlled experiments on zooplankton predation.
- Analyzed data on exotic and invasive zooplankton species for publishing purposes.
- Assisted in lecturing and demonstrated laboratory techniques for two first year biology courses.
- Supervised and assisted students during experimental work.

May 1997 – Dec 1999 **Department of Geology, University of Windsor, Windsor, Ontario**

Graduate Assistant / Research assistant

- Collected water and biological samples and analyzed for contaminants
- Operated a C, O, N, S analyzer and a stable isotope extraction instrument for carbonates and water
- Assisted in lecturing and demonstrated laboratory techniques for second year geochemistry courses and first year geology courses

Awards

- Dean's List, Department of Civil and Environmental Engineering
- Partial tuition scholarship, Department of Civil and Environmental Engineering
- Ontario High School Scholar

Accomplishments and Interests

- Obtained highest ranking on engineering graduation project (2002)
- One of scientists on board of Environmental Protection Agency (EPA) ship for assessing the distribution of an exotic zooplankton species (1999)
- Presented a research poster and published an abstract at the GAC-MAC 1999 conference

Relevant Skills

- C++, MS Word, Excel, Powerpoint, Reverse Osmosis Design Programs, and CAD Key
- Biological and chemical laboratory techniques
- Soil stratigraphic logging
- Groundwater, surface water and soil sampling protocols
- Excellent presentation and problem-solving skills

Publications

Abstract: Distribution of stable isotopes and heavy metals in *Dreissena polymorpha* (zebra mussels) – chemical tracers for environmental contamination in Lake St. Clair. GAC-MAC 1999 conference, Sudbury, Canada.

Language Ability	*Speak*	*ing*	*Reading*	*Writing*
	Arabic	Excellent	Excellent	Excellent
	English	Excellent	Excellent	Excellent
	French	Good	Good	Good

Curriculum Vitae

Proposed Position	Environmental Researcher		
Name of Firm	Engicon		
Name of Staff	Dina Yahya Kisbi		
Profession	Environmental Researcher		
Date of Birth			
Years with Firm	3 months	**Nationality**	Jordanian
Membership in Professional Societies	• Jordan Environment Society • Agricultural Engineering Association		

Education

June 2006	University of Jordan, Faculty of Agriculture, Amman, Jordan

Other Training

- International Association for Impact Assessment (IAIA), 2007 Seoul, Korea.
- Environment Impact assessment Course, Korea.
- TUNZA International Youth Conference, 2007, Leverkosen, Germany.
- Environment Impact Assessment Courses, Jordan Environment Society; TOR of EIA, Preparation of and EIA report, Review of EIA report
- UJCDL.

Employment Record

Nov 2007 – Present	Engicon, Amman, Jordan
Jan 2007 – Aug 2007	Jordan Environment Society, Amman, Jordan

Experience Record

Nov 2007 – Present **Engicon, Amman, Jordan**

Environmental Researcher / Consultancy and Studies Department. Worked on the following projects:

Study, Design and Preparation of Tender Documents for the Construction of Zarqa Main / Madaba Governorate and Lajjoun / Karak Governorate. The project aimed to prepare a technical, economic and financial feasibility study, and preparation of detailed design and tender documents for two dams: Zarqa-Main Dam and Lajjoun Dam with storage capacity of 1.0 mcm each.
Tasks and Responsibilities:
Conducted the Initial Environmental Examination for the 2 dams.

Environmental Assessment for Construction and Renovation of Schools in Jordan. The Jordan Schools Construction and Rehabilitation Program is implemented by the Ministry of Education of Jordan and funded by the United States Agency for International Development. The program aims to provide by 2008 up to 28 new schools in all governorates of Jordan with approximately 24 classrooms each, immediately benefiting about 18,200 students. The program will also renovate around 100 existing schools throughout the country. In accordance with USAID and national regulations, an environmental assessment was conducted for all these activities.
Tasks and Responsibilities:
Participated in the site visits, scoping session and preparation of scoping statements for the Northern and Southern schools.

Jan 2007 – Aug 2007 **Jordan Environment Society**

Training and Capacity Building Unit Coordinator

Language Ability	*Speak*	*ing*	*Reading*	*Writing*
	Arabic	Excellent	Excellent	Excellent
	English	Excellent	Excellent	Excellent