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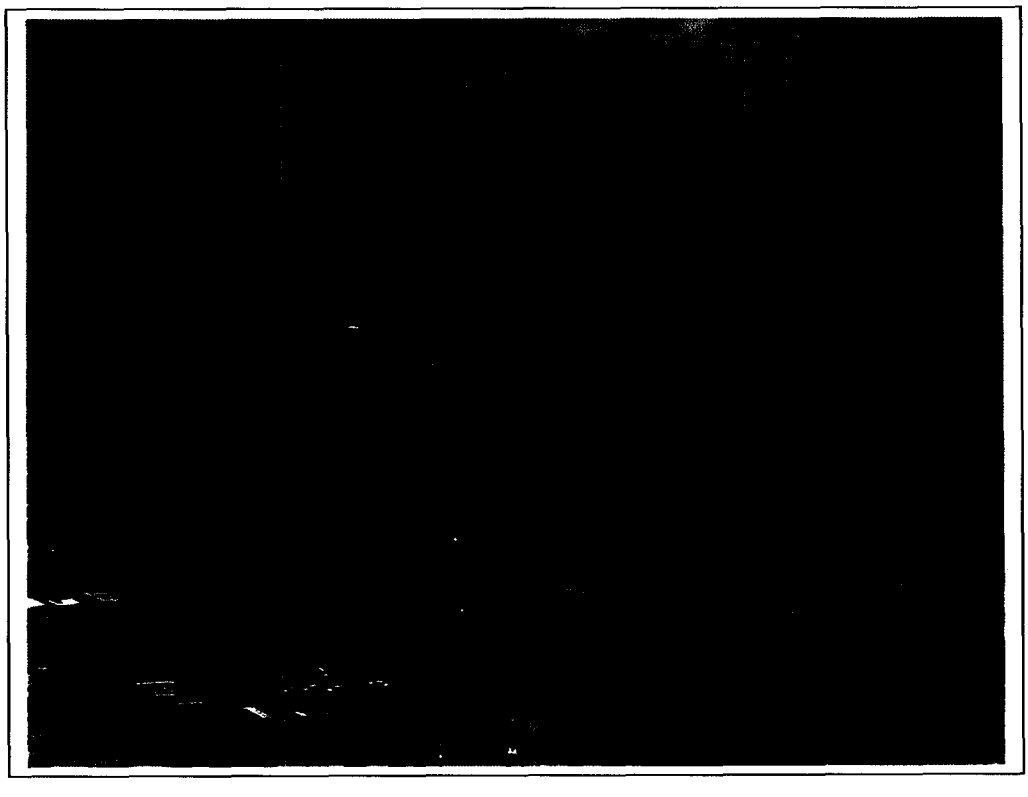
Environmental Assessment

of the

Bibi Mahro (Airport) Road Improvement Project

A part of the Afghanistan Rehabilitation of Economic Facilities and Services (REFS) Program

Contract 306-C-00-02-00500-00



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ENVIRONMENTAL ASSESSMENT
Of The:
BIBI MAHRO (MASSOUD) ROAD IMPROVEMENT PROJECT
Proposed As Part Of The
REHABILITATION OF ECONOMIC FACILITIES AND SERVICES (REFS) PROGRAM
With Funding Provided By
UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT
Contract 306-C-00-02-00500-00

Summary of Findings

Proposed Action. The United States Agency for International Development (USAID) proposes to fund the Bibi Mahro Road Improvement Project as a part of its Afghanistan Rehabilitation of Economic Facilities (REFS) Program.

Bibi Mahro Road, located in central Kabul, is a major component of the Urban Roads Program of REFS. The aim is to provide an improved gateway to Kabul from the International Airport to Massoud Circle. The actual condition of the road requires a slight realignment at one point, insertion of a concrete median, rehabilitation of side drains, leveling course and a new wearing course for operating under increasing traffic load.

Pursuant to Environmental Procedures established by Title 22 of the U.S. Code of Federal Regulations, Part 216 (22 CFR 216), USAID made a *Positive Determination* for REFS Component 1 (the Component of with the proposed Project is a part), i.e., a determination that environmental documentation will be required on a project-by-project basis. The USAID Mission in Kabul has determined that an EA is warranted for this project. In accordance with the recommended EA format, the initial section of the EA (the section in hand) presents a Summary of Findings pursuant to 22 CFR 216.6 (c) (1) 22 which states (in its entirety) that the initial section of the EA shall be a summary and that "*the summary shall stress the major conclusions, areas of controversy, if any, and the issues to be resolved*". Accordingly, the Summary of Findings is organized to present:

- **Major Conclusions** (Item 1);
- **Areas of Controversy** (Item 2); and
- **Issues to be Resolved** (Item 3).

1. MAJOR CONCLUSIONS

The Environmental Assessment finds that:

- No significant adverse impacts are likely to result from the proposed Project, provided that the actions to avoid or otherwise mitigate potential adverse impacts are incorporated in the Project as specified herein. Specific environmental provisions for the Project's contractual Conditions of Particular Application (COPA) are provided by **Appendix A.**
- Consideration of additional actions beyond the scope of the Project are warranted

including:

- Identification of specific institutional strengthening activities to ensure that the rehabilitated road is adequately maintained; and

- Establishment of a Traffic Safety Program.

2. AREAS OF CONTROVERSY

The phrase "Areas of Controversy" in this context is taken to mean areas of disagreement emerging from public comment and participation in the definition of the Project and the Proposed Action. No such areas of controversy have emerged.

3. ISSUES TO BE RESOLVED

No environmental issues are to be resolved.

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Appendix A Conditions of Particular Application (COPA) Environmental Provisions
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LIST OF ACRONYMS/GLOSSARY

A

ACCA	Afghan Assistance Coordination Authority
ACIA	Afghanistan Civil Infrastructure Assessment
ADB	Asian Development Bank
AIA	Afghanistan Interim Administration

B

C

CFR	Code of Federal Regulations
COPA	Conditions of Particular Application
CSC	Construction Supervision Consultant

D

dB	Decibel

E

EA	Environmental Assessment
EIA	Environmental Impacts Assessment

F

G

GC	General Contractor
GCOC	General Conditions of Contract
Gozar	Neighborhood
GoA	Government of Afghanistan
GPD	Gross Domestic Product

H

Ha	Hectare

I

ICB	International Competitive Bidding
IEE	Initial Environmental Examination
ISAF	International Security Assistance Forces

J

K

KM	Kilometer

L

LCB	Local Competitive Bidding

M

MHBTP	Ministry of Housing, Building and Town Planning
MIWRE	Ministry of Irrigation Water Resources and Environment
MMI	Ministry of Mines and Industry
MOC	Ministry of Communications
MOI	Ministry of Interior
MOIC	Ministry of Information and Culture
MOP	Ministry of Power
MPW	Ministry of Public Works
MSL	Mean Sea Level

N

NGO	Non-Governmental Organization
NMT	Non-Motorized Traffic

P

R

REFS	Rehabilitation of Economic Facilities and Services

S

SE	Supervising Engineer
Shura	District (typically 15-20 *gozars*)
SPM	Suspended Particulate Matter
STD	Sexually Transmitted Disease

T

TOR	Terms of Reference
TSP	Total Suspended Particulate

U

UN	United Nations
UNDP	United Nations Development Fund
UNEP	United Nations Environment Program
UNMAC	United Nations Mine Action Center
USAID	United States Agency for International Development
USAID/GC	USAID General Contractor
UXO	Unexploded Ordnance

V

W

X

Y

Z

1.0 INTRODUCTION

1.1 PURPOSE OF THE EA

This document presents an Environmental Assessment (EA) of the Bibi Mahro Road Improvement Project (the Project) proposed for funding by the United States Agency for International Development (USAID) as part of its Afghanistan Rehabilitation of Economic Facilities and Services (REFS) Program. The purpose of the EA is to ensure that environmental issues have been foreseen in its development and implementation plans.

The administrative and strategic context provided by the REFS Program is explained in **Item 1.2** below. Details of the proposed Project are provided by **Section 2.0**, Project Description.

To ensure that environmental issues associated with projects such as the Bibi Mahro Road are adequately foreseen, all projects identified for funding by USAID are subject to the Environmental Procedures established by Title 22 of the U.S. Code of Federal Regulations, Part 216 (22 CFR 216). The USAID Mission in Kabul has recommended that Bibi Mahro Rehabilitation Project requires an EA.

1.2 ADMINISTRATIVE & STRATEGIC CONTEXT

The REFS Program of which the Bibi Mahro Road Improvement Project is a part was developed on the basis of an Afghanistan Civil Infrastructure Assessment (ACIA) for which field investigations were undertaken in the period from 13 June to 18 July 2002 and documented by a Final Report to USAID/Afghanistan on 20 August 2002. The purpose of the ACIA was to identify and prioritize Afghanistan's civil infrastructure and its reconstruction, repair and rehabilitation needs and the need for agricultural market centers. The ACIA recommended a prioritized program for:

- Labor-intensive inter-provincial road rehabilitation projects;
- Development of rural market centers ;
- Major roads and bridge projects;
- A National Secondary Roads Program; and
- A National Primary Roads Program.

The REFS Program was developed on the basis of the ACIA specifically "*to promote economic recovery and political stability in Afghanistan by repairing selected infrastructure needed to lower transportation cost, improve the provision of water and sanitation services, increase access to education, health and local government facilities, restore electrical transmission and distribution systems, and repair/reconstruct irrigation systems, dams/diversions and canals critical to the reactivation of the agricultural sector, the dominant means of livelihood in the country.*"[1]

To achieve these goals, the REFS Program consists of three components:

- Rehabilitation and Construction Projects (Component 1);
- Institutional strengthening of selected public services (Component 2); and

- Purchase, importation and distribution of construction materials and supplies not otherwise available in Afghanistan (Component 3).

In accordance with its internal procedures and in accordance with the regulations as outlined above, USAID made a Positive Determination for REFS Component 1, i.e., a determination that environmental documentation will be required on a project-by-project basis for projects involving civil works. The EA herewith provides that documentation for the Bibi Mahro Project that forms part of Component 1.

1.3 ORGANIZATION OF THE EA

The EA is organized as follows:

- **Section 1.0: Introduction.** The section in hand provides introductory information.
- **Section 2.0: Project Description**. Section 2.0 presents details of the proposed Project and a description of the existing environmental policies and procedures in Afghanistan.
- **Section 3.0: Environmental Screening**. Section 3.0 presents the relevant environmental criteria as identified based on USAID regulations, and additional environmental considerations and issues associated with rehabilitation projects and the specifics of the Bibi Mahro Road Project. The discussions of the criteria present statements of:
  - Existing Conditions;
  - Potential Impacts and Anticipated Design Avoidance/Mitigation Actions; and
  - Additional Recommendations.
- **Section 4.0: Environmental Guidelines.** The Environmental Guidelines presented in Section 4.0 present:
  - A Recommended Checklist - Completion of the Checklist is recommended as a part of final Project design; and
  - Recommended Monitoring.
- **Section 5.0: Conclusions and Recommendations.**

[1] REFS Contract, page C-2.

2.0 PROJECT DESCRIPTION

2.1 OVERVIEW

Bibi Mahro Road, located in central Kabul is currently a four lane roadway linking Kabul International Airport to Massoud Circle. The proposed project will include improvements to the pavement quality, a slight realignment bypassing a roadside tomb, improvements to the existing side drains and insertion of a concrete median.

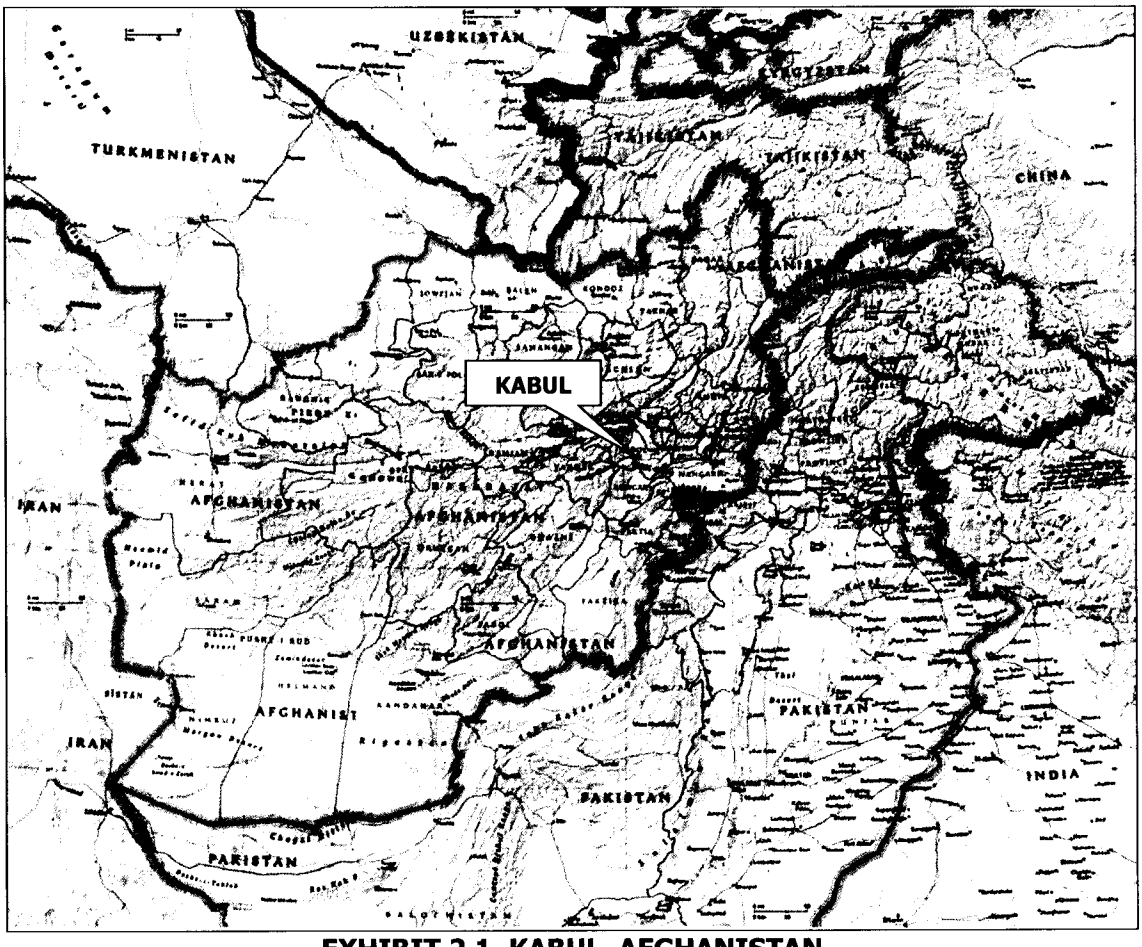

EXHIBIT 2.1. KABUL, AFGHANISTAN

The purpose of the Bibi Mahro roadway improvement project is to provide a permanent traffic solution to congestion and security concerns from the Massoud Circle (US Embassy) to the Airport. Currently, traffic is poorly controlled with drivers often stopping in the road to pick up passengers or to perform random 'U' turns. Such maneuvers result in indiscriminate bottlenecks and jams along the length of the road.

The current estimated construction cost for this project is this work $6.1m. Details of the existing conditions in the potentially affected area are provided item-by-item under the headings of the relevant environmental criteria in **Section 3.0**.

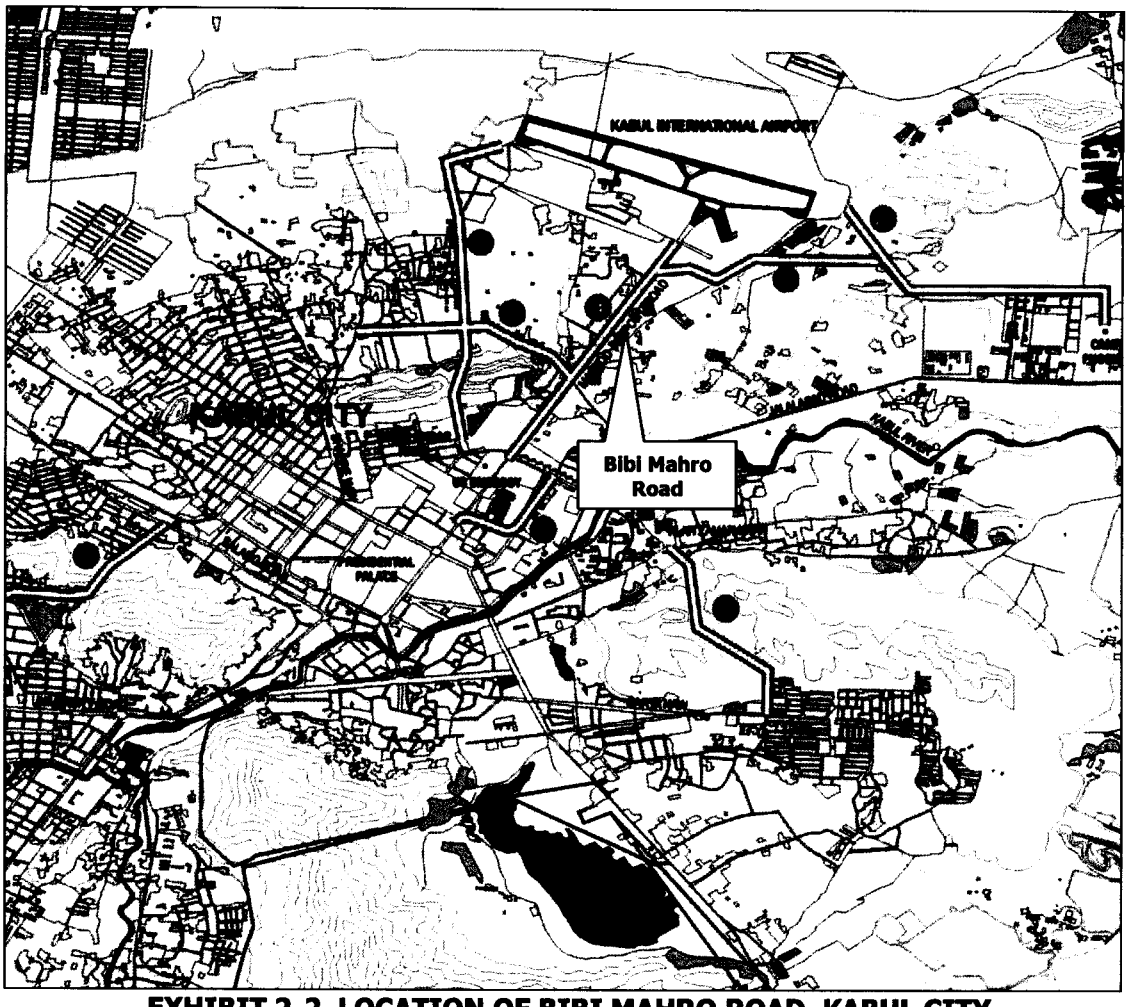

EXHIBIT 2-2. LOCATION OF BIBI MAHRO ROAD, KABUL CITY

2.2 DETAILS OF THE PROPOSED ACTION

The primary objective of the Project is to rehabilitate and upgrade the Bibi Mahro Road. The work to be performed includes only the necessary construction to rehabilitate the road. The proposed schedule of works is as follows:

Phase I – Major Work Items

- Rehabititation/ Reconstruction of the existing Bibi Mahro Roadway to AASHTO engineering standards.
- Replacement and Upgrading of the existing drainage structures.
- Construction of a Centre Median traffic separation device.
- Construction of new street lighting facilities to be completed in coincidence with Phase I and Phase 2 works.
- All Phase I design and documentation.

Cost US$3.9 Million

Phase II – Major Work Items

- Construction of new service roads and medians adjacent to the existing alignment.
- Construction of a new wide sidewalk adjacent to the new service road.
- Construction of a new catchment area drainage scheme.
- All Phase II design and documentation.

Cost US$2.2 Million

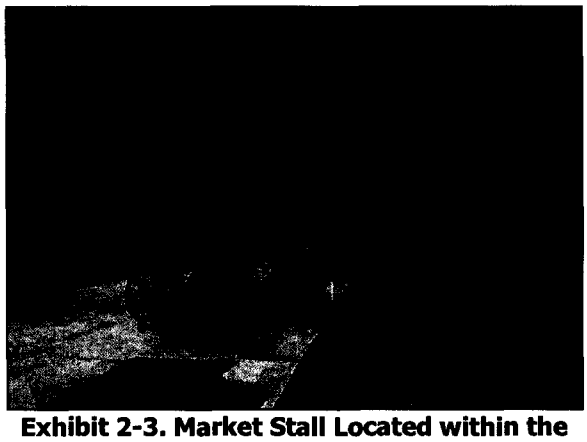

Exhibit 2-3. Market Stall Located within the Roadway (note taxi performing a U turn).

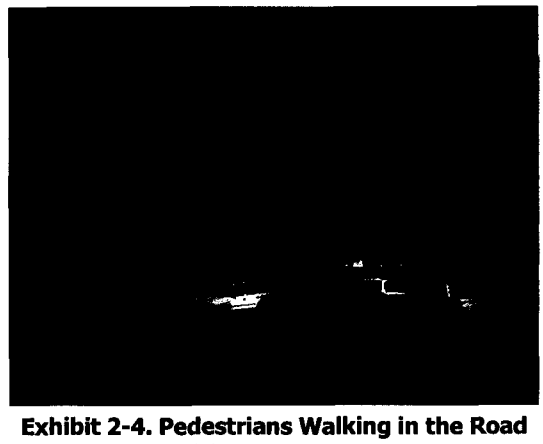

Exhibit 2-4. Pedestrians Walking in the Road without due Care.

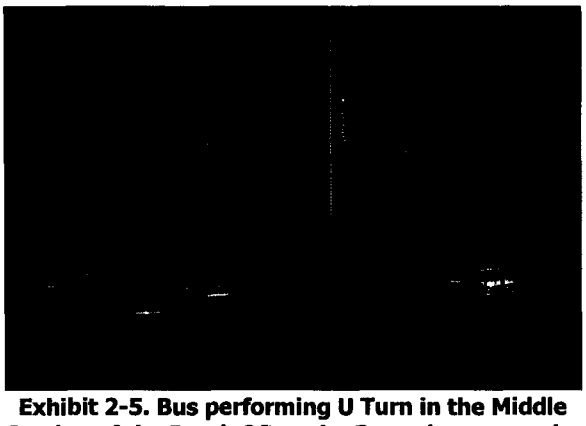

Exhibit 2-5. Bus performing U Turn in the Middle Section of the Road. Often the Buses have to make a three point turn due to their size.

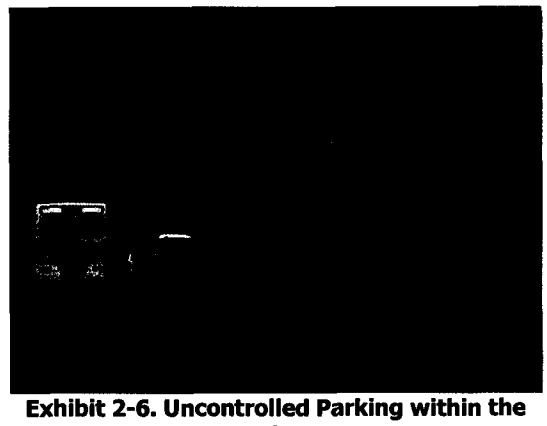

Exhibit 2-6. Uncontrolled Parking within the Roadway.

2.3 AFGHAN ENVIRONMENTAL POLICIES AND PROCEDURES

2.3.1 General

In June 2002, for the first time in the history of Afghanistan, an authority for environmental management was mandated in the newly formed government – The Ministry of Irrigation, Water Resources and Environment (MIWRE). Since 2002 several ministerial changes have occurred, MIWRE is now defunct and has been replaced by the Ministry of Energy and Water (MoEW). Of most relevance to this report is the creation of the new National Environmental Protection Agency (NEPA), whom, with the aid of UNEP have produced draft environmental legislation shortly to be enacted.

2.3.2 Legislative Framework

The proposed Environmental Management Act (EMA) drafted by NEPA focuses on several areas including:

- Integrated Environmental Management
  - Environmental Impact Assessment
  - Integration of Environmental Issues into Development Planning
- Integrated Pollution Control
  - Pollution Prevention Control (including licensing)
  - Waste Management (duty of care, waste management licenses etc)
- Water Resource Conservation and Management
- Biodiversity and Natural Resource Conservation and Management
  - National Biodiversity Strategy
  - Protected Areas Management
  - Sustainable Use and Conservation of Species
  - Species Trade
  - Access to Genetic Resources
- Compliance and Enforcement

As mentioned, the Act is currently in Draft form and is likely to be enacted shortly. Accordingly, this report conforms to the regulations stipulated by Title 22 of the U.S. Code of Federal Regulations, Part 216 (22 CFR 216). Future reports prepared under the REFS programme will however adhere to both 22 CFR 216 regulations and the new EMA.

In addition to the EMA several other environmental related laws currently exist as illustrated by the table below.

Afghan Environmental Law	Date
Water Law	1981
The Forestry Law	2000
Law for Land Ownership	2000
Nature Protection Law	1986/2000
Hunting and Wildlife Protection Law	2000
Range Management Law	2000
Agriculture Cooperative Development Law	2000
Charter for the Development of Fertilizer and Agro-chemicals	2000

2.3.3Afghan Environmental Assessment Procedures

Prior to 2005 no formal EIA process has been practiced in Afghanistan. As a result many projects, such as deep-well drilling or large-scale irrigation projects were conducted without considering the environmental consequences of such activities. Additionally, there wasn't, and in some circumstances, still isn't any consistent application of EIA amongst donor agencies and international organizations currently working in the country.

Specific guidelines have now been produced as part of the Draft Environmental Management Act to deal with Environmental Impact Assessment. In theory there are several key stages in the assessment procedure as follows:

1. Any project, plan or policy of significant size or scope (no screening list defined as yet) shall submit to NEPA a brief containing enough information to enable NEPA to determine the potential adverse effects and positive impacts of the project, plan or policy.

2. After reviewing the brief and acting on behalf of the EIA Board of Experts (yet to be established) NEPA will either:
    a. Recommend the project proceeds without further environmental assessment; or
    b. Submit an environmental assessment / comprehensive mitigation plan

3. The outline of the EIA is roughly similar to that contained herewith, however, alternatives should also be considered, e.g. alternative design, technologies, routes etc.

4. Once the EIA has been approved by the Executive Secretary General (acting on the advice of the EIA Board of Experts) a permit is granted allowing continuation of the proposed project, plan or policy. If the permit is refused for whatever reason an appeal can be submitted within 60 days of the refusal.

The draft regulations also state that Public Participation should also be part of the EIA process. Public participation in this sense includes distributing copies of the EIA to affected persons and undertaking public hearings.

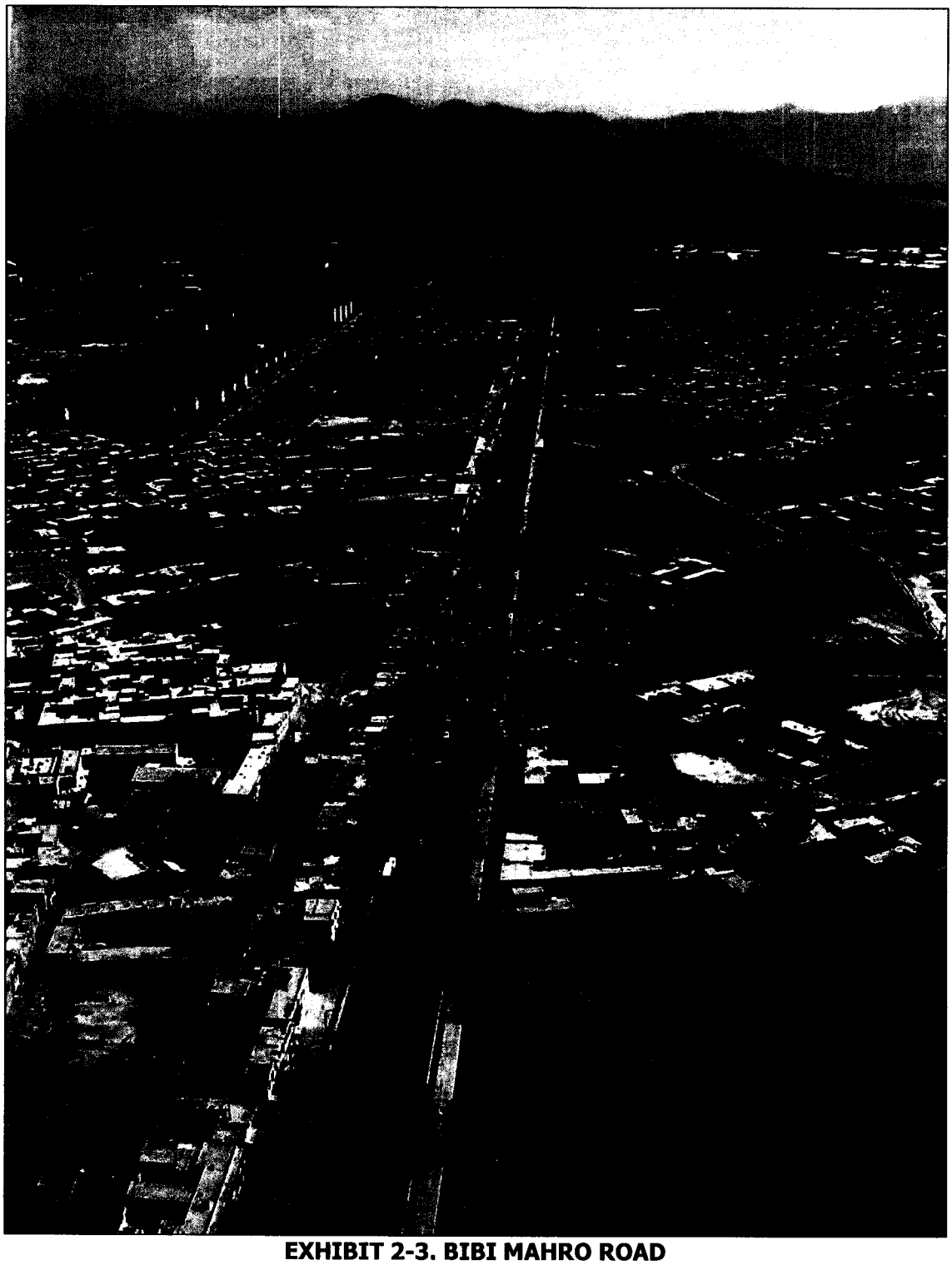

EXHIBIT 2-3. BIBI MAHRO ROAD

3.0 ENVIRONMENTAL SCREENING

As noted in Section 1.2, USAID has determined that REFS Component 1 activities require an environmental screening to identify the appropriate level of documentation for infrastructure activities. This section of the EA provides the necessary screening for the Bibi Mahro Road Improvement Project.

3.1 SCREENING METHODOLOGY

Introduction. To establish the context for the environmental screening, the following:

- Reviews the definition of environmental criteria as established by the applicable USAID regulations and other considerations;
- Defines the Project Area for the purpose of the screening;
- Explains the screening process used to identify:
  - Potential impacts based on the proposed actions and the sensitivity of the environment in which they will occur;
  - Provisions to avoid or otherwise mitigate actions incorporated in the Project; and
  - Additional recommendations.

The screening process is presented by **Exhibit 3-1**.

Potential Impact Identification Methodology. Potential impacts have been identified on the basis of experience on similar projects and in similar circumstances; and, insofar as possible, a "scoping process" incorporating consultations with local stakeholders with intimate knowledge of the Project Area.

Environmental Criteria. The environmental criteria applied in the screening process have been determined on the basis of applicable USAID regulations and other considerations as follows:

- **Applicable USAID Regulations.** Paragraph 216.1 (c) (10) of the Agency Environmental Procedures states that the "*term environment, as used in these procedures with respect to effects occurring outside the United States, means the natural and physical environment*". Accordingly, the screening addresses:

  Physical Resources. Physical resources are generally defined to include topographic, soil, geological and related attributes. Sub-headings in this section are:
  - Topography;
  - Soils;
  - Seismic & Geological Conditions;
  - Hydrology; and
  - Climate and Air Quality

  Natural/Biological Resources - the natural/biological aspects of the potentially affected environment. These are discussed under the sub-headings of:
  - Fauna (Wildlife);
  - Flora (Plant Species);
  - Aquatic Habitat; and

- Protected Areas.

In addition to these requirements, Paragraph 216.6 of the Procedures states that "... *Environmental Assessment(s) should include discussions of ..... possible conflicts between the proposed action and land use plans policies and controls for the areas concerned; energy requirements and conservation potential of various alternatives and mitigation measures; natural or depletable resource requirements and conservation potential of various requirements and mitigation measures; urban quality; historic and cultural resources; design of the built environment; reuse and conservation potential of various alternatives and mitigation measures; and means to mitigate adverse environmental impacts*". Accordingly, these issues are addressed under the following heading and subheadings:

Other Environmental Concerns Noted by 22 CFR 216) describes these aspects of the environment under the following sub-headings:
- Land Use/Controls;
- Energy & Conservation;
- Use of Natural/Depletable Resources;
- Urban Quality/Design of the Built Environment; and
- Historic and Cultural Resources

- **Additional Considerations Generally Associated with Rehabilitation Projects.** Additional environmental issues are generally associated with rehabilitation projects and are addressed as:

Additional Environmental Concerns Noted for Consideration. These are discussed under the sub-headings of:
- Socio-Economic Considerations;
- Public Health;
- Safety;
- Other Infrastructure Networks; and
- Noise

Definition of the Project Area. The potentially impacted area of a given project (generally referred to as the Project Area) is defined by the nature of the proposed action and the sensitivity and circumstances of the environment in which it will occur.

Potential direct impacts of a project such as the Bibi Mahro Road will be largely confined to the Project's construction limits and immediately adjacent environs. The conceptual limits of the Project Area must be expanded, however, to include the potential impacts of network improvements and other indirect and cumulative impacts in accordance with the circumstances of the particular environmental characteristic under discussion.

Generally, however, given the limited nature of the action included in the Project limit the potential for direct impact to the immediate environs of the road. Indirect impacts may also occur as a result of Project activities.

Types of Impacts Considered. Environmental consequences resulting from the impacts of rehabilitation projects include:
- Direct Impacts
- Indirect Impacts
- Cumulative Impacts

Impacts in all three categories may be either short term or long term. Both short-term and long-term impacts may be either beneficial or adverse. Short-term positive impacts will include, for example, the generation of employment opportunities during the rehabilitation period. Long-term benefits will include improved traffic flow / access and increased road safety.

Determination of the Scope & Significance of Issues. To determine the scope and significance of issues to be analyzed, including direct and indirect effects of the Project on the environment, the following examines each environmental criterion identified above and presents:

- Existing Conditions. The current statement of existing conditions is drawn primarily from site observations in July 2005.
- Potential Impacts and Avoidance/Mitigation Measures. Potential impacts and measures incorporated in the Project to avoid or otherwise mitigate the potential impacts are identified. These include measures incorporated in contracting procedures and the Project design. Cognizance of the Project's design and contracting provisions is deemed to be an important means of *"narrowing the discussion of these issues to a brief presentation of why they will not have a significant impact on the environment"* in accordance with the 22 CFR 216 Procedures.
- Additional Recommendations. The examination also identifies the issues for which mitigation beyond that already incorporated in the Project design and standard contracting procedures are considered warranted, including recommendations beyond the scope of the Bibi Mahro Road, but within the scope of REFS.

3.2 SCREENING

The following section provides the necessary screening for the Bibi Mahro Road in tabular format. The purpose of the table is to indicate the existing environmental conditions of the Project area and provide a summary description of any potential socio-environmental impacts that may arise as a result of Project activities.

EXHIBIT 3-1 EXISTING CONDITIONS, POTENTIAL IMPACTS AND MITIGATION

ENVIRONMENTAL CRITERIA	EXISTING CONDITIONS	POTENTIAL IMPACTS	AVOIDANCE / MITIGATION ACTION	ADDITIONAL RECOMMENDATIONS
1.0 PHYSICAL RESOURCES				
1.1 Topography & Land Forms	The site of the Bibi Mahro Road is central Kabul, which itself is located in the north eastern area of Afghanistan approximately 1800 meters above msl. Kabul is surrounded by mountains generally of a metamorphic nature. In general the topography of the road is flat. The only topography of note is the Bibi Mahro hill which can be seen at approximately KM1+0. No other unusual topographic conditions were identified during field investigations.	Quarry Operations	Only licensed quarrying operations are to be used.	None warranted. Provisions incorporated in the design, contracting process and provisions for contract supervision are such that the potential for adverse impacts to topography is obviated.
		Cut and Fill Requirements	No cut and fill activities are likely to occur on the Project Road	
		Borrow Pit Excavations	No borrow pit excavation works are required.	
		Erosion	Provisions for the control of erosion are discussed as a part of the discussions for soils and hydrology below.	
1.2 Soils	Soils in and around Kabul generally comprise loam, sandy loam or loessy loam. Within the study area itself approximately 20% of land cover is exposed soil. Most open areas comprise agricultural land. No significant geological issues have been identified which may cause problems during construction. The study area is dominated by commercial and agricultural practices. There is no evidence to suggest that there have been activities in this area that would cause persistent and hazardous contamination of the land. Accordingly, it is unlikely that there will be any specific constraints, or more particularly unforeseen clean up costs, in site redevelopment. However, there are no historical records to confirm this.	Contamination Due to Spills	▪ Fuel and chemical storage will be sited on an impervious base within a bund and secured by fencing. The storage area shall be located away from any watercourse or wetlands. The base and bund walls shall be impermeable and of sufficient capacity to contain 110 percent of the volume of tanks. ▪ Filling and refueling shall be strictly controlled and subject to formal procedures. ▪ The contents of any tank or drum shall be clearly marked. Measures shall be taken to ensure that no contaminated discharges enter any drain or watercourses.	None warranted.
		Erosion	No significant erosion impacts are anticipated. No mitigation actions required.	
		Borrow Pits	See **1.1** above.	

1.3 Seismic & Geological Characteristics	There is a history of damaging earthquakes that are most frequent in the northeast of Afghanistan. Kabul is potentially prone to earthquakes varying from 6.5 to 7.3 on the Richter scale.	Seismic Vulnerability	No significant issues identified requiring mitigation	None warranted.
1.4 Hydrology	Surface Hydrology - The nearest surface water feature within the vicinity of the Project Road is the Kabul River, approximately 250 meters south east of the most southerly portion of the Project Road. Rising west of the city of Kabul, it flows east into Pakistan and, after a course of 435 mi (700 km), joins the Indus River northwest of Islamabad. For much of its course, the river is tapped for irrigation most notably within the vicinity of Kabul City itself. As a consequence the river often runs dry during the summer months.. The river is also used informally for the washing of clothes when water levels permit. However contamination of the river is widespread along its entire length mainly as a result of direct sewage and industrial effluent disposal into the river. Within Kabul itself the river is used as an informal dumping ground. Levels of waste on the river-bed are so high the river has been labeled an 'open sewer'. Hydrogeology – Precipitation in Kabul is some 318 mm per year on average, most of which falls in March and April. Groundwater recharge is derived from run-off from mountainsides, direct infiltration from precipitation, irrigation losses and river infiltration. The water table is relatively close to the surface. Groundwater maxima occur in May/June and minima in August/September. The annual fluctuation in the water table is	Surface Hydrology	Potential adverse impacts to surface hydrology and the Kabul River in the construction phase of the Project will be avoided through the enforcement of contract provisions and oversight by the USAID/GC. Road drainage provisions and other rehabilitation activities are not expected to alter the current status of natural water bodies or irrigation structures in the vicinity of the roadway. In addition to adherence to good engineering and construction practices and the enforcement of contract provisions related to drainage during both the construction and operational stages of the Project, Sub-Contractors will be obligated to coordinate with local land use planning authorities. Contract provisions will ensure that construction camps and other potential sources of secondary impacts are properly sited and provided with drainage and wastewater facilities.	None warranted.
		Wetlands	Due to the nature of project works and the location of the Kole Hashmat Khan (more than 5km south east) from the Project Road no significant impacts are anticipated. No mitigation actions are warranted.	
		Subsurface Hydrology	No impacts to groundwater resources are anticipated as a result of the proposed actions in the corridor in either the construction or operational phases of	

	3-5 m in the upper Kabul basin and 2-2.5m in the lower Kabul basin. Groundwater seepage is a potential construction issue if not adequately controlled. *Wetlands – The nearest wetlands of ecological importance to the Project Area is the Kole Hashmat Khan Waterfowl Sanctuary approximately 5 km south east of the Project Area. The shallow reed covered lake was long used as a royal hunting area and was designated as a waterfowl reserve in the 1930's by King Zahir Shah. The site was important for approximately 30,000 migratory birds belonging to 157 different species (including ducks, quails and coots). However, since the late 1970's the site has suffered significant degradation including encroachment of houses on the southeastern shores of the lake and uncontrolled reed cutting. In addition to these issues diversion of the lakes waters for alternative uses often leaves the lake completely dry during the summer months.*		*the Project. No wells/hand pumps within the proposed construction zones are located in the area of potential impact. There will be no net loss of water access points. The Sub-Contractor is required to prevent interference with the supply to, of abstraction from, or pollution of, water resources including underground percolating water..."*	
		Flood characteristics	*No impacts resulting from flood conditions are anticipated. No mitigation actions required.*	
1.5 Air Quality and Climate	*Winter in Kabul is cold. Mostly clear weather predominates. Normal temperatures are 2-5ºC in the daytime with light frosts down to -5ºC or below at nighttime. Precipitation generally falls as drizzle, less often as snow. Snow cover usually persists for only 10-15 days per annum. Spring lasts from March through April, the weather can be unstable and wet. Days are warm and nights are cool. Precipitation falls as brief but heavy rain. Summer in Kabul is hot. The weather is mostly clear and dry with prevailing temperatures in the*	*Rehabilitation Impacts, e.g. Impacts during construction can be anticipated due to fugitive dust generation in and around construction activities and related activities such as asphalt*	*The Sub-Contractor will be required to spray road surfaces and construction sites.* ▪ *Trucks carrying earth, sand or stone will be covered with tarps.* ▪ *Contract provisions allow suspension of work in unfavorable condition.* ▪ *Machinery and equipment will be fitted with pollution control devices and checked at regular intervals.* ▪ *Open burning will be prohibited in populated areas.*	*Other than verification of provisions noted within the contract documents, none warranted.*

	hottest months (June through August) ranging from 25-30ºC in the daytime and 18-22ºC at night. Precipitation in the summer is vary rare (1-2 rainy days June through September). Fall lasts from October through till November. The season begins dry, then turns relatively wet. Winds are predominantly southerly and southeasterly during the year with a mean speed of 1-4 meters per second (m/s). The area is characterized by local mountain-valley winds; blowing up the valleys and mountainsides in the daytime and back at night. The existing traffic volumes along the Project road are moderate; however dust and vehicle emissions in Kabul are the main factors negatively affecting air quality. Most of the cars, trucks and busses within Kabul run on low grade fuel emitting high levels of Polyaromatic Hydrocarbons (PAH).	plants. Operational Impacts	The improvement activities will allow the traffic generated by the improved economic conditions to flow more smoothly and efficiently and will thus be beneficial in terms of air quality. The improved layout is unlikely to significantly increase traffic levels within Kabul. No mitigation related to potential air quality impacts during the operational phase of the Project is considered warranted.	
2.0 NATURAL/BIOLOGICAL RESOURCES				
2.1 Flora	There are no natural habitats within the study area and no areas with natural preservation or conservation values. Similarly, as far as can be gathered from reconnaissance surveys and available data, there are no species of flora and fauna present that would be subject to protection or preservation under national or international law. There are no areas of open space with significant flora within the study corridor. Patches of agricultural land can be observed within the northern section	Destruction of Habitat	The project is not anticipated to have significant negative impacts to flora within the vicinity of the road.	None warranted.

	of the corridor (growing okra, onion, tomato and eggplant) and some landscaped areas were noted around several public buildings in the southern portion of the corridor including the Supreme Court (KM0+200). The only other notable flora exists on the Project Road itself which is tree lined for much of its extent. The status and condition of many of the 800 odd trees is debatable. From KM0+0 to approximately KM0+500 the road is lined on both side by mature trees of varying species including Mulberry, Russian Willow, Poplar & Pines. Many of these mature trees are suffering from neglect and several appear to have been vandalized by youths who seem to enjoy stripping bark from the tree trunks and tearing down branches to play with. Accordingly, although the trees are some of the only remaining mature trees in Kabul City and provide canopy cover for pedestrians and road side businesses, from an aesthetic viewpoint they appear somewhat disjointed and scruffy. From KM0+500 until 2+440 the trees are immature with heights of around 6-8 feet and trunk diameters of only 15-20 cms. These trees appear to have been planted recently and provide no shade or add any aesthetic value to this section of the road. The odd mature mulberry tree can be spotted within this section, but is usually set back from the road side deep into the right of way. In the last sector of the road (KM2+400 – KM3+099) mature Pines dominate both sides of the road. Additionally this sector includes some attempts at landscaping within the right of way. This section of			

	the road is perhaps the most aesthetically pleasing and provides a 'green gateway' to the entrance of Kabul International Airport which is located at the end point of the Project Road.			
2.3 Fauna	Due to the city center location of the Project Road little in the way of fauna is present within the projects vicinity.	Destruction of Habitat	The project is not anticipated to have significant negative impacts to fauna within the vicinity of the Project.	None warranted.
2.3 Aquatic Habitat	No aquatic environments are present within 250 meters of the Project Road.	Destruction of Habitat	The project is not anticipated to have significant negative impacts on the Kabul River.	None warranted.
2.4 Protected Areas	The nearest protected are is Kole Hashmat Khan Waterfowl Sanctuary approximately 5km from the Project Road.	Rehabilitation Impacts	There are no protected areas within 5 kilometers of the Project site.	None warranted.
3.0 OTHER ENVIRONMENTAL CONCERNS NOTED BY 22 CFR 216				
3.1 Land Use/Controls	Commercial – The majority of building along Bibi Mahro Road are commercial in nature (approximately 400 small businesses). The commercial properties range from tailors to flower sellers. Many of these commercial ventures are unregistered illegal businesses. Many of the properties themselves are unique single storey structures constructed from old transport containers with gay facades. Residential – Little residential property can be found along the Project Road. Notwithstanding the above, anecdotal information suggests that many people live and work within the commercial and light industrial properties / containers that exist within the study corridor. Light Industrial – There are several light industrial activities within the study corridor, predominantly vehicle repair shops. Oil and other potential hazardous	Potential PAPs Impacts	No impacts to project-affected persons (PAPs) as that term is generally defined by the international assistance community (i.e., persons whose livelihood is directly or indirectly affected by a project) have been identified	None warranted.
		Rehabilitation Impacts	Coordination with local land use planning authorities is required. Construction camps/equipment/materials storage and other potential sources of secondary impacts must be properly sited and provided with drainage and wastewater facilities.	
		Operational Impacts	Impacts are expected to be minimal. No mitigation actions warranted.	

	liquids are used during the day to day activities on site. There is currently no method of waste disposal in Kabul for hazardous waste or materials, accordingly any hazardous waste generated on site may end up in an open land fill which could lead to serious localized degradation of soils and groundwater within the area of disposal. No land fills or waste disposal sites (legal or otherwise) have been identified within the vicinity of the Study Corridor. *Recreation – Little in the way of recreational facilities exists within the study corridor. There are however, some areas of vacant land that can and are used as makeshift recreation areas (football, kite flying etc). Such sites are not ideal for recreation. They are not designed as such and are not isolated from traffic.*			
3.2 Energy & Conservation	*Afghanistan's power grid has been severely damaged by years of war, and less than 10 percent of its population currently has access to electricity, with Kabul suffering power shortages. Three hydro-electric power dams provide baseload power to Kabul: the 100 MW Naghlu dam, the 66-MW Mahi Par dam, and the 22-MW Sarobi dam. Due to a lack of water flow on the Kabul River, only the Naghlu Dam, which has a sizable reservoir capacity, is operational all-year round to meet the needs of Kabul. The dams are located about 50 miles from Kabul. Prior to the early 1990s, Kabul also had two gas-fired power plants located on the outskirts of the city. ABB recently refurbished one of the plants, which has a 45-MW capacity.*	*Exploitation of Energy Resources*	*Impacts are expected to be minimal. No mitigation actions warranted.*	*None warranted.*

	It is anticipated to be used to meet peaking demand for the foreseeable future. In addition to commercial energy, Afghanistan utilizes such traditional, "non-commercial" energy sources as wood. According to a study by the ADB, more than 85% of Afghanistan's energy needs are met by such traditional fuels.			
3.3 Use of Natural / Depletable Resources	Rehabilitation of the Project Road will require the use of certain natural resources such as rock, sand and other quarried construction materials as required for the proposed rehabilitation activities. Such materials are in plentiful supply within Afghanistan.	Exploitation of Natural Resources	Impacts are expected to be minimal. No mitigation actions warranted.	None warranted.
		Demand for Construction Materials	Impacts are expected to be minimal. No mitigation actions warranted.	
3.4 Urban Quality / Design of the Built Environment	The Project Road is located within the central urban area of Kabul City. Details of land uses and potential impacts in immediate proximity to the road are discussed in **3.1** above.	Impacts to Roadside Structures and Activities	Impacts are expected to be minimal. No mitigation actions warranted.	None warranted.
3.5 Historic & Cultural Resources	Kabul itself has a number of valuable historic and cultural resources, however, the most significant cultural resource within the study corridor is a shrine located in the road itself at KM1+250. The shrine has a number of tombstones, but it is unclear whether the bodies remain in the tombs themselves or have been removed. The main issue is the location of the shrine which is only 4 meters from the centerline of the Project Road. If the road were to be widened this point will become a bottle neck for traffic and may even result in a potential road safety issues with cars swerving to avoid the shrine. Additionally, the shrine attracts a number of mourners, who	Demolition or Damage Due to Rehabilitation	To avoid potential adverse impacts to the tombstone the Sub-Contractor shall protect the site during Project works with the placement of suitable fencing and barriers. In the event of unanticipated discoveries of cultural or historic artifacts, the Sub-Contractor is obligated to shall take all necessary measures to protect the findings and shall notify the Contractor and provincial-level representatives of the Archaeological Committee and the Ministry of Information and Culture. If continuation of the work would endanger the finding, project work shall be suspended until a solution for preservation of the artifacts is agreed upon.	None warranted.

	congregate around all sides of the shrine, often standing in the road itself. This presents an additional pedestrian safety issue.			
4.0 ADDITIONAL ENVIRONMENTAL CONCERNS RAISED BY SIMILAR PROJECTS				
4.1 Socio-Economic Considerations	*Kabul (pop. 2,206,300) is the capital of Afghanistan and the capital of Kabul Province. The city is the countries largest industrial, business, finance and cultural center with the countries only international airport. The industrial factories within the city include machine building and metal working, light industry, woodworking, and food production. However, the majority of the population continues to suffer from insufficient food, clothing, housing, and medical care, problems exacerbated by military operations and political uncertainties. Inflation remains a serious problem.* *Within the vicinity of the project road activities are predominantly commercial and are unlikely to be affected significantly by project works.*	*Impacts are Deemed Beneficial*	*No mitigation actions warranted.*	*None warranted.*
4.2 Public Health and Safety	*Existing traffic levels on the Project Road are moderate. However, no details are available indicating the level of road traffic accidents on the Project Road. Pedestrian crossings are provided along the roadway, however they are not used as traffic rarely stops to let pedestrians cross at these points. As mentioned above safety is rather lackluster on the Project Road, pedestrians can often be seen casually walking into the road without due care and attention, children can also be observed playing by the*	*Access to Heath Facilities*	*Access to health facilities will not be affected by Project activities. No mitigation actions required.*	*None warranted.*
		Contamination Due to Spills	*See **1.4** above.*	
		Air and Noise Impacts	*See **1.5 & 4.5**.*	
		Conflicts with NMT	*Impacts to safety in circumstances such as Afghanistan's could occur due to the incorporation or absence of provisions for non-motorized traffic (NMT).*	*Traffic Safety Programs are recommended for consideration as part of REFS Component 2.*
		Detours & Diversions	*Diversions and detours are an inevitable impact of road rehabilitation projects*	

	roadside or sometimes in the road itself. Additionally, roadside traders set their stalls in the road itself and cars (notably taxis) double park on both sides of the roadway which can lead to bottlenecking at certain busy sections of the road and reduces road operational efficiency. Vehicle road safety is also very poor in Kabul, as it is in Afghanistan in general. Many people drive without licenses or any kind of formal training in road traffic safety. Standing at any section of the Bibi Mahro Road for five minutes to observe traffic movements will bear testament to this statement.	 Excessive Speeds	and could give rise to safety issues. This section of the road is well policed and vehicles traveling at high speeds on this road are rarely observed. No mitigation actions warranted.	
4.4 Other Infrastructure Networks	Water supply, waste water and electricity supply systems are present in the vicinity of the Project Area. Some systems are poorly maintained and in need of rehabilitation. Indeed, a recent report published by Norwegian Church Aid indicates that water quality from hand pumps is higher than water quality from piped supply systems in Kabul. No irrigation systems are present within the vicinity of the Project Road.	Water Supply WW Collection Networks Electrical Systems	Road rehabilitation activities could impact other infrastructure systems such as water supply and wastewater collection networks, electrical lines, etc. Sub-Contractors are required to coordinate with all relevant officials to avoid significant adverse impact to other infrastructure systems.	None warranted.
4.5 Noise	There is no continuous monitoring program in place for the Project Corridor and available records across the City are patchy and provide no firm basis for analysis. There only appears to be one major point source of noise pollution, Kabul International Airport. Apart from this source, the most potentially significant noise levels are from traffic. Kabul International Airport is located at	Rehabilitation Phase Operational Phase	Contracts will contain provisions to mitigate potential noise and vibration impacts during construction No mitigation actions warranted.	None warranted.

the end of the Project Road. Air traffic is relatively low for an international airport, however noise levels from the ageing Ariana fleet and large soviet designed transporters can be particularly obtrusive over the City itself. Notwithstanding the above, the north – east direction of the main runways precludes any significant noise issues within the study corridor itself. ISAF and independently chartered helicopters also use the airport, but such traffic is infrequent and rarely traverses the study corridor.

Traffic levels on the Project Road are moderate. There are only two noise sensitive receptors within the corridor, they include:

Receptor	***Location***	***Distance from Road***
School	*KM1+300*	*40m from road side ditch*
Girls School	*KM1+800*	*15m from road side ditch*

Given the current levels of traffic on the project road it is not considered likely that either of the schools are significantly affected by existing road traffic noise levels. However, this does not preclude the possibility of traffic volumes rising considerably if the study corridor is developed as a commercial corridor.

There are some elevated noise levels in

	proximity to the various light industrial workshops and warehouses within each sector, but this results from intermittent, short term use of specific equipment during working hours and are not particularly problematic.			

4.0 ENVIRONMENTAL GUIDELINES

For projects such as the Bibi Mahro Road Improvement Project the REFS TOR states that *"the Contractor shall prepare **environmental guidelines** that will be used to minimize and mitigate potential environmental impacts. Included in the guidelines will be an **environmental mitigation checklist** to be completed as a part of final design for each project. Where the analysis indicates that negative environmental effects could occur, the project will be designed to avoid or mitigate those effects. The guidelines will also describe procedures for **monitoring rehabilitation activities** to assure that identified mitigation measures have been implemented as planned"* (Emphasis added). Accordingly, the following presents the examination's findings in regard to the environmental mitigation final design checklist (**Item 4.1**) and monitoring (**Item 4.2**). Additional recommendations for environmental actions beyond the scope of the Project, but within the scope of REFS, are presented in **Item 4.3**.

4.1 Environmental Mitigation Final Design Checklist

The preferred form of mitigation is avoidance of impacts through the adoption of enforceable measures and precautions rather than amelioration after the fact. This preferred form of mitigation has been incorporated in the recommended contract provisions attached hereto as **Appendix A.**

An environmental and final design checklist is provided by **Exhibit 4-1.**

4.2 Monitoring

Monitoring of projects such as the Bibi Mahro Road generally includes observational monitoring to enforce contract provisions to avoid adverse impacts and may include instrumented monitoring of environmental parameters such as air quality, when warranted.

Monitoring of environmental impacts during the rehabilitation process will be the responsibility of the USAID General Contractor (USAID/GC) as a part of contract supervision procedures. A Supervising Engineer (SE) will be assigned to the Project. Compliance procedures will include routine site visits, including the ancillary facilities associated with that package (labor camps, asphalt plants, etc.).

Major issues to be addressed in the monitoring and compliance reports will include:

- **Air Quality Impacts.** The SE will be responsible for compliance with contract provisions that specify:
  - Controlled locations of sources of air pollution.
  - Proper use of water sprays and other techniques to lessen dust impacts.
  - Prohibitions against open burning in populated areas.
  - Proper use of solvents and volatile materials.
  - Controls of hazardous materials.
  - Transport of dust-generating items using tarps and other devices to minimize impacts.
  - Spraying of road surfaces, excavation and construction sites to keep them moist for dust control as determined advisable by the SE.

EXHIBIT 4-1
ENVIRONMENTAL MITIGATION FINAL DESIGN CHECKLIST
For Air Quality, Water, Noise and Social Impacts

AIR QUALITY

Potential Impact Source	**Mitigation Objective**	**Mitigation Checklist** Do designs and bid documents include the following provisions?	**Implementation Mechanism & Responsibility**
Material Transport	Minimization of dust during transport of construction material	Rock, sand and other dust producing material will be sprayed prior to transport. Trucks must be covered with tarps. Only approved transport routes will be used.	Required by Project Contracts. Enforced by the Supervising Engineer (SE).
Material Storage	Minimization of dust during storage of construction material.	Stockpiles of materials shall be sited in sheltered areas away from sensitive areas and covered with tarps if required.	Required by Project Contracts. Enforced by SE.
Emissions from Construction Equipment & Solvents	Avoidance of excessive emissions due to poorly maintained equipment.	Contract stipulations require all construction equipment to meet acceptable standards and to be properly maintained and located at least 50 meters from the nearest sensitive receptor. Solvents and volatile materials must be used and stored properly to the satisfaction of the SE.	Required by Project Contracts. Enforced by SE.
On-Site Burning	Avoidance of smoke and gases which may constitute a nuisance.	On-site burning to be banned.	Required by Project Contracts. Enforced by SE.
Dust Generating Operations	Avoidance of dust generating operations during periods of high wind	In periods of high winds, dust generating options shall not be permitted within 50 meters of sensitive sites given the direction of the prevailing wind.	Required by Project Contracts. Enforced by SE.

WATER QUALITY

Potential Impact Source	**Mitigation Objective**	**Mitigation Checklist** Do designs and bid documents include the following provisions?	**Implementation Mechanism & Responsibility**
Uncontrolled Runoff During Project Works	Avoidance of inadequately planned runoff due to development of staging areas, labor camps, etc.	Runoff from during project works will be strictly controlled as a part of construction supervision activities. Monitoring will be undertaken as a routine part of construction supervision.	Required by Project Contracts. Enforced by SE.

NOISE

Potential Impact Source	**Mitigation Objective**	**Mitigation Checklist** Do designs and bid documents include the following provisions?	**Implementation Mechanism & Responsibility**
Construction Machinery	Minimize high noise levels, vibrations at time of occurrence	Use equipment conforming to international standards and directives on noise and vibration. Maintain exhaust systems in good working	Required by Project Contracts. Enforced by SE.

		order, properly design engine enclosures, use intake exhaust silencers and regularly maintain noise generating equipment.	
Pile Driving	Minimize high noise levels, vibrations and time of occurrence.	To be mitigated through use of : - Time limits for pile-driving activities. - Bored piles in sensitive areas. - Shrouds where warranted.	Required by Project Contracts. Enforced by SE.
Paving And Other Rehabilitation Activities.	Minimize high noise levels and times of occurrence.	Limited construction hours in sensitive areas. Use of properly maintained equipment. Use of noise barriers where warranted. Public notification of construction activities and timing of activities generating significant noise and vibration levels.	Required by Project Contracts. Enforced by SE.

SOCIAL

Potential Impact Source	**Mitigation Objective**	**Mitigation Checklist** Do designs and bid documents include the following provisions?	**Implementation Mechanism & Responsibility**
Temporary Impacts Due to Rehabilitation Works	Minimize temporary impacts to residents and surrounding environment.	Coordinate all construction activities with neighboring land uses and respect rights of local landowners.	Construction requirements enforced by SE.
Health and Safety Impacts to Workers	Attend to the health and safety of Workers	Provide local, basic emergency health facilities for workers.	Construction requirements enforced by SE.

- **Water Quality Impacts.** Potential water quality impacts during the rehabilitation phase will also be mitigated through the controlled location of asphalt plants and similar sources of runoff, proper siting tabulated by **Exhibit 4.1** with compliance assured through the oversight of the SE.
- **Social Impacts.** Potential social issues will be mitigated as a routine part of construction supervision. Compliance with the contract stipulation in regard to the use of local labor to the maximum extent feasibility will also be monitored by the SE.
- **Public Health.** Compliance with contract provisions to control potential contamination of local water supplies during rehabilitation; to control air pollution and noise levels; to provide basic emergency heath facilities for workers and other factors having a potential impact will be assured through the oversight of the SE.
- **Impacts to Other Infrastructure Networks.** Responsibility to ensure compliance with contract provisions to coordinate with all relevant agencies and organizations to avoid disruption of other infrastructure services (water supply, irrigation systems, electricity, etc.) rests SE.
- **Noise and Vibration Impacts.** Contract provisions for the control of noise and vibration impacts during the rehabilitation phase through the use of site controls and time and activity constraints as tabulated by **Exhibit 4.1** with compliance monitored by the SE.

4.3 Recommended Actions Beyond the Scope of the Project

Recommendations for actions beyond the scope of the Project, but generally within the

scope of the REFS Program, are as follows:

- **Integrate REFS Institutional Strengthening Initiatives.** Institutional strengthening actions will be necessary as a part of the Project to ensure that the road is adequately maintained in the future, to ensure that future biding and tendering procedures are in place and to ensure that environmental issues incorporated in these activities. REFS Component 2 offers an opportunity to provide the necessary institutional initiatives.
- **Assist MPW in the Establishment of a Traffic Safety Program.** In addition to the safety requirements to be observed during the construction period, safety during the operational phase of the Project is a major concern. The Bibi Mahro Road is one of a number of urban roads within Kabul subject to rehabilitation / upgrading. Increased vehicular activity combined with roadside development and ineffective access and crossing provisions are inherent safety problems. Routine monitoring of accident data to ensure that the points of major conflicts are identified as they emerge is recommended. It is also recommended that MPW take the lead in the establishment of a safety enhancement program throughout Kabul to include:

  - Use of Lights and Reflectors. Increased use of lights and reflectors should be strongly encouraged for both motorized and non-motorized traffic, particularly bicycles and other slow-moving vehicles. Such a program might include the free or subsidized distribution of reflectors. Such a program could be supported by corporate sponsors or non-governmental organizations (NGOs).
  - Public Awareness Programs. Potential increased traffic and traffic speeds on this and other urban roads may be a major change in the environment for many residents. Programs to heighten awareness are recommended for incorporation in the Project before construction.

  Initiatives in this area are recommended for consideration as part of REFS Component 2.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Project works are not anticipated to induce any significant impacts on the environmental or social characteristics of the Project Area. However, minor impacts will result from some rehabilitation activities as noted in **Section 3.0**. Notwithstanding the above, all of the identified impacts can be appropriately managed or mitigated by the measures outlined in **Sections 3.0 & 4.0** and provided as Recommended Contract Provisions as **Appendix A**.

The EA also recommends actions beyond the scope of the Project, but within the scope of the REFS Program, specifically:

- Identification of specific institutional strengthening activities to ensure that the rehabilitated road is adequately maintained; and
- Establishment of a Traffic Safety Program.

CONDITIONS OF PARTICULAR APPLICATION ENVIRONMENTAL PROVISIONS

The following has been extracted from the Conditions of Particular Application (COPA) prepared for use in the Bibi Mahro Road Improvement Project.

4.0 ENVIRONMENTAL

4.1 General Provisions and Precautions

The Sub-Contractor shall take all necessary measures and precautions and otherwise ensure that the execution of the Works and all associated operations on the Work Sites or off-site are carried out in conformity with statutory and regulatory environmental requirements of Afghanistan including those established by local governments. The Sub-Contractor shall take all measures and precautions to avoid any nuisance or disturbance arising from the execution of the Work. This shall, wherever possible, be achieved by suppression of the nuisance at source rather than abatement of the nuisance once generated. In the event of any spoil or debris or silt from the Work Sites being deposited on any adjacent land, the Sub-Contractor shall immediately remove all such spoil debris or silt and restore the affected area to its original state to the satisfaction of the responsible authorities.

4.2 Water Quality

The following conditions shall apply to avoid adverse impacts to water quality:

- The Sub-Contractor shall prevent any interference with the supply to, or abstraction from, water resources and the pollution of water resources (including underground percolating water) as a result of the execution of the Works.
- Areas where water is regularly or repetitively used for dust suppression purposes (if any) shall be laid to fall to specially-constructed settlement tanks to permit sedimentation of particulate matter. After settlement, the water may be re-used for dust suppression and rinsing. All water and other liquid waste products arising on the Site shall be collected and disposed of at a location on or off the Site and in a manner that shall not cause either nuisance or pollution.
- The Sub-Contractor shall not discharge or deposit any matter arising from the execution of the Work into any waters except with the permission of the Contractor and regulatory authorities concerned.
- The Sub-Contractor shall at all times ensure that all existing stream courses and drains within and adjacent to the Site are kept safe and free from any debris and any materials arising from the Works.
- The Sub-Contractor shall protect all watercourses, waterways, ditches, canals, drains, lakes and the like from pollution, silting, flooding or erosion as a result of the execution of the Works.

4.3 Air Quality

The following conditions shall apply to avoid adverse impacts to air quality:

- Open burning will be prohibited.

- Solvents and volatile materials will be used and stored in manners satisfactory to the Contractor.
- In periods of high wind, dust-generating operations shall not be permitted within 200 meters of residential areas having regard to the prevailing direction of the wind.
- Asphalt and hot-mix plants sites shall not be established prior to the approval of the Contractor and shall be located at least 500 meters away from the nearest sensitive receptor (e.g., schools and hospitals). Operators will be required to install emission controls.
- Water sprays shall be used during the delivery and handling of materials when dust is likely to be created and to dampen stored materials during dry and windy weather.
- Stockpiles of materials shall be sited in sheltered areas or within hoarding, away from sensitive areas. Stockpiles of friable material shall be covered with clean tarpaulins, with application of sprayed water during dry and windy weather. Stockpiles of material or debris shall be dampened prior to their movement whenever warranted.
- Vehicle with an open load-carrying area used for transporting potentially dust- producing material shall have properly fitting side and tailboards. Materials having the potential to produce dust shall not be loaded to a level higher than the side and tail boards, and shall be covered with a clean tarpaulin in good condition. The tarpaulin shall be properly secured and extend over the edges of the side and tailboards.
- In periods of adverse weather adverse impacts to adjacent residents or site employees during construction will be mitigated by either discontinuing until favorable conditions are restored, or, if warranted, sites may be watered to prevent dust generation, particularly at crushing plants.
- Machinery and equipment will be fitted with pollution control devices, which will be checked at regular intervals to ensure that they are in working order. Best available pollution control technologies will be required.

4.4 Protection of Soils

Quarries. To ensure adequate mitigation of potential adverse impacts, only licensed quarrying operations are to be used for material sources. If licensed quarries are not available the Sub-Contractors may be made responsible for setting up their dedicated crusher plants at approved quarry sites

4.5 Avoidance of Social Impacts

To avoid adverse social impacts, the Sub-Contractor shall:

- Coordinate all construction activities with neighboring land uses and respect the rights of local landowners. If located outside the ROW, written agreements with local landowners for temporary use of the property will be required and sites must be restored to a level acceptable to the owner within a predetermined time period.
- Maintain and cleanup campsites.
- Attend to the health and safety of their workers by providing basic emergency heath facilities for workers.
- Obtain approval of all diversions and accommodations of traffic.

4.6 Noise

To avoid adverse impacts due to noise, the Sub-Contractor shall:

- Consider noise as an environmental constraint in his planning and execution of the Works.
- Use equipment conforming to international standards and directives on noise and vibration emissions.
- Take all necessary measures to ensure that the operation of all mechanical equipment and construction processes on and off the Site shall not cause any unnecessary or excessive noise, taking into account applicable environmental requirements.
- Maintain exhaust systems in good working order; properly design engine enclosures, use intake silencers where appropriate and regularly regular maintain noise-generating equipment.
- Use all necessary measures and shall maintain all plant and silencing equipment in good condition so as to minimize the noise emission during construction works.
- Schedule operations to coincide with periods when people would least likely be affected and limit work hours and work days to less noise-sensitive times. Hours-of-work will be approved by the Contractor having due regard for possible noise disturbance to the local residents or other activities. Construction activities will be strictly prohibited between 10 PM and 6 AM in the residential areas. When operating close to sensitive areas such as residential, nursery, or medical facilities, the Sub-Contractor's hours of working shall be limited to 8 AM to 6 PM.
- Incorporate noise considerations in public notification of construction operations and specify methods to handle complaints. Disposal sites and haul routes will be coordinated with local officials to avoid adverse traffic noise.

4.7 Fuel and Chemical Storage

The following conditions to avoid adverse impacts due to improper fuel and chemical storage:

- All fuel and chemical storage (if any) shall be sited on an impervious base within a bund and secured by fencing. The storage area shall be located away from any watercourse or wetlands. The base and bund walls shall be impermeable and of sufficient capacity to contain 110 percent of the volume of tanks.
- Filling and refueling shall be strictly controlled and subject to formal procedures.
- All valves and trigger guns shall be resistant to unauthorized interference and vandalism and be turned off and securely locked when not in use.
- The contents of any tank or drum shall be clearly marked. Measures shall be taken to ensure that no contaminated discharges enter any drain or watercourses.

4.8 Protection of Historic and Cultural Resources

To avoid potential adverse impacts to historic and cultural resources, the Sub-Contractor shall:

- Protect sites of known antiquities, historic and cultural resources by the placement of suitable fencing and barriers;
- Adhere to accepted international practice and all applicable historic and cultural preservation requirements of the Government of Afghanistan, including all appropriate local government entities.

4.9 Protection of Utilities

To avoid potential adverse impacts to utilities, the Sub-Contractor shall:

- Ascertain and take into account in his method of working the presence of utility services on and in the vicinity of the Site.
- Take into account in his program the periods required to locate, access, protect, support and divert such services, including any periods of notice required to effect such work in consultation with authorities operating such services.
- Assume all responsibility to locate or to confirm the details and location of all utility services on or in the vicinity of the Site.
- Exercise the greatest care at all times to avoid damage to or interference with services.
- Assume responsibility for any damage and/or interference caused by him or his agents, directly or indirectly, arising from actions taken or a failure to take action, and for full restoration of the damage.
- Wherever existing ground surfaces are to be disturbed for construction of the Works, carry out full and adequate preliminary investigations to locate all services in the area by means of hand-dug trial holes and trenches in combination with electronic and electro-mechanical devices, where appropriate. Each service thus exposed shall be identified. Every such service at risk shall be fully exposed and adequately protected and supported in situ or diverted to the satisfaction of the appropriate authority prior to the commencement of such construction.
- When working in the vicinity of overhead power cables, ascertain and satisfy himself about the safe clearances to be maintained from the power cables in consultation with the authority operating the power line. Where existing overhead power lines, communications cables or other major utilities require relocation, the Sub-Contractor will use the services of specialist enterprises with the necessary skills and technology to carry out the work.

LIST OF PREPARERS

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APPROVAL OF RECOMMENDED ENVIRONMENTAL ACTIONS:

CLEARANCE:

Deputy Mission Director Approval: _____ Carl Abdou Rahmaan — 5/17/07 Date

Mission Environmental Officer (A) Approval: _____ Rahim Yahya — May 10, 2007 Date

Team Leader Approval: _____ James Franckiewicz — 9 May 2007 Date

CONCURRENCE:

Bureau Environmental Officer: _____ John O. Wilson — _____ Date

Approved: ☐
Disapproved: ☐

DISTRIBUTION:

Mission Environmental Officer