USAID
FROM THE AMERICAN PEOPLE

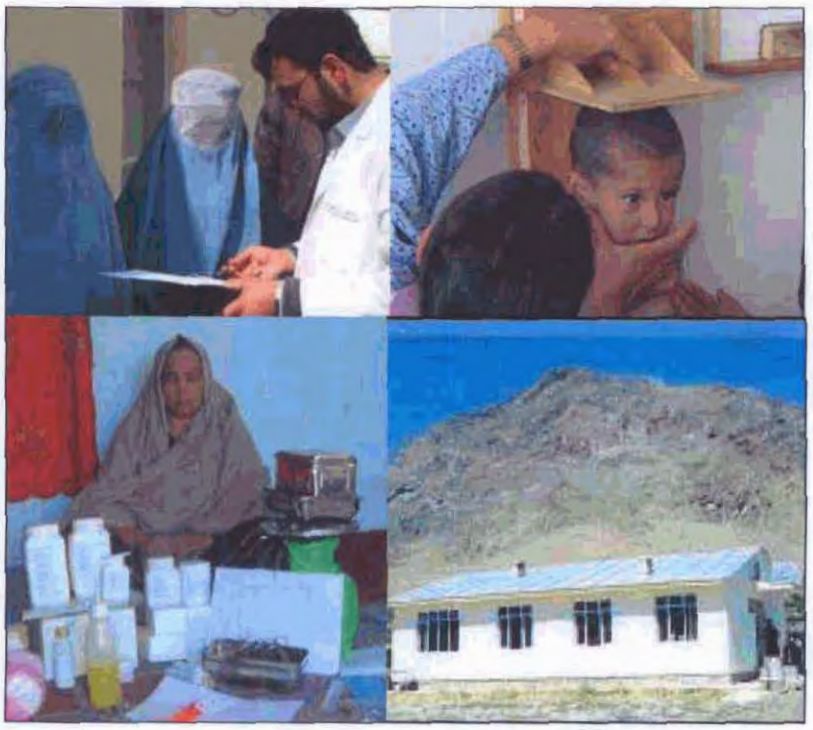
Environmental Assessment

For the

Provincial Clinics Construction Project

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

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



Prepared By:

The Louis Berger Group, Inc.

2300 N Street NW

Washington, DC 20037

- Seismic & Geological Characteristics (Item 3.2.3);
- Hydrology (Item 3.2.4);
- Air Quality & Climate (Item 3.2.5); and
- Mines and Unexploded Ordnance (Item 3.2.6).

Exhibit 3-1. Impacts Matrix
Badakshan and Paktya Provinces

		Clinics																			
		Badakshan								Paktya											
		Hafez Mughul	Sharhi Safa	Sakar Lab	Farghambull	Joe Baar	Sar-e-Maiden	Samar Qandi	District No. 3	Melan	Ebrahimkhel	Shwoak	Dre Kholeh	Prozeh	Tashnak	Dam Gundai	Kosin	Mirzakah Mangal	Mamuzi Jani Khail	Surki	Arma
Physical	Topography	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Soils	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Seismic / Geological	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Hydrology	●	●	●	●	●	x	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Air Quality / Climate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Mines / UXO	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Biological	Flora	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Fauna	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Aquatic	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Protected Areas	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Other Environmental	Land Use	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Historic / Cultural Resources	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Health / Safety	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	Infrastructure	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Noise	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

X – Potential Negative Impacts
● - No Impacts Identified
√ - Positive Impact

Exhibit 3-2. Impacts Matrix
Kunduz and Kandahar Provinces

		Clinics																				
		Kunduz																Kandahar				
		Qarya-e Madrasa	Arbab Ramazani	Boin	Nek Pai	Aqtash	Aqtash Jan qatagan	Kanom	Ashqolan	Mir Yr Shiakh	Jama Bazar	Ghor Tepa	Char Sari	Angor Bagh	Lar Khabi	Tapa-e-Boreda	Imam Sahib	Ghualaman	Baboor	Nahre Rabat	Panjawali	Talkhan
Physical	Topography	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Soils	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Seismic / Geology	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	●	●	●	●	●
	Hydro	●	●	●	x	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Air Quality / Climate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Mines / UXO	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Biological	Flora	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Fauna	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Aquatic	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Protected Areas	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Other Environmental	Land Use	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Historic / Cultural	x	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Health / Safety	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	Infrastructure	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Noise	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

X – Potential Negative Impacts
● - No Impacts Identified
√ - Positive Impact

Exhibit 3-3. Impacts Matrix
Ghazni and Helmand Provinces

		Clinics																							
		Ghazni											Helmand												
		Ajirstan	Tamaki	Askar Kot	Kawar Qul	Jaka Pashti	Almaitoo	Tormai	Rasana	Dahani	Sangasi	Turmai	Malgir	Musa Qala	Bagran	Teznai	Naminzai	Tangi Bazar	Ainak	Khushkaba	Mir Mandao	Said Abad	Loy Manda	Barraka	Kanisheen
Physical	Topography	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Soils	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Seismic / Geology	x	x	x	x	x	x	x	x	x	x	x	●	●	●	●	●	●	●	●	●	●	●	●	●
	Hydro	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	x	x	x	●	●	●
	Air Quality / Climate	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
	Mines / UXO	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Biological	Flora	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Fauna	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Aquatic	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Protected Areas	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Other	Land Use	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Historic / Cultural	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Health / Safety	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
	Infrastructure	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Noise	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

X – Potential Negative Impacts
● - No Impacts Identified
√ - Positive Impact

Item 3.3 (Natural/Biological Resources) - the natural/biological aspects of the potentially affected environment. These are discussed under the sub-headings of:

- Flora (Plant Species) (Item 3.3.1) ;
- Fauna (Wildlife) (Item 3.3.2);
- Aquatic Environment (Item 3.3.3); and
- Protected Areas (Item 3.3.4)

Item 3.4 (Other Environmental Concerns) describes these aspects of the /environment under the following sub-headings:

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 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 PCCP, but within the scope of REFS.

3.2 PHYSICAL RESOURCES

3.2.1 Topography

Existing Conditions. Afghanistan's topography is dominated by Hindu Kush Mountains which run northeast to southwest through the central portion of the country dividing the northern provinces from the remainder of the country. The southwest is occupied by desert plateau. The lowest point in the country is at Amu Darya at 258 meters above mean sea level (msl). The highest point is at Nowshak 7,485 meters above msl. The southern and western parts of the country are covered by deserts at elevations ranging from 500 to 1,000 meters above msl.[1] The following table indicates the generic impacts and proposed mitigation measures for all clinics.

Potential Impacts	Mitigation Measures	Additional Recommendations
No significant impacts to topographical conditions anticipated.	Provisions incorporated in the design, contracting process and provisions for contract supervision are such that the potential for adverse impacts to topography is obviated.	None required

Site Specific Issues. No site specific issues have been identified.

3.2.2 Soils

Existing Conditions. Within the country as a whole, the soils are characterized as high mountains serozems, desert steppe or meadow steppe. Loess is found in the north. The river valley soils are

1 National Atlas of the Democratic Republic of Afghanistan, Organization for Surveying and Cartography and GEOKART Poland, 1995.

generally alluvial or meadow alluvial. Serozems and brown desert soils cover large portions of the country in the north and southwest.[2] Overgrazing, deforestation, desertification, degradation of watersheds and erosion have been identified as significant environmental issues contributing to soil degradation and reduced soil productivity throughout Afghanistan. The following table indicates generic impacts and proposed mitigation measures for all clinics.

Potential Impacts	Mitigation Measures	Additional Recommendations
Loss of Soil for Agricultural Production	Small areas of agricultural land will be lost due to construction of the clinics. No other significant loss of agricultural land is anticipated to result from Project activities.	None required
Erosion & Scour	Project works are not expected to induce any erosion or scour impacts in the Project Area.	

Site Specific Issues. No site specific issues have been identified.

3.2.3 Seismic & Geological Characteristics

General Conditions.[3] Afghanistan's geological circumstances are complex and generally described in terms of plate tectonics. The mountain chains comprised of the Hindu Kush, Pamir, Karakoram and Himalayan Ranges are believed to have been the result of a collision of the Indian Plate and Asia Plate which began approximately 50 million years ago and continues to the present day. Much of the country is known to be seismically active. The following table indicates generic impacts and proposed mitigation measures for all clinics.

Potential Impacts	Mitigation Measures	Additional Recommendations
Clinics in Ghazni, Badakshan, Paktya and Kunduz provinces are with potentially devastating earthquake regions	Clinic buildings have been designed in accordance with 1997 UBC Seismic Level 4 design and construction criteria and generally speaking to withstand earthquakes of up to 7.5 on the Richter Scale.	None warranted.

Site Specific Issues. No site specific issues have been identified.

3.2.4 Hydrology

General Conditions. The sources of most of Afghanistan's rivers are in the mountains. Water levels in the rivers vary greatly with the highest levels in spring and early summer. In the remaining seasons the rivers may change into small streams or entirely disappear. Three watershed systems can be differentiated in Afghanistan:

2 National Atlas of the Democratic Republic of Afghanistan, Organization for Surveying and Cartography and GEOKART Poland, 1995, page VII.

3 Geological resources such as coal and gem stones are discussed as part of **Item 3.3.3**, Use of Natural and Depletable Resources.

- The Eastern Basin (Indus). The Eastern Basin includes the Kabul and Logar Rivers and their tributaries which drain the eastern part of the country. The rivers within the eastern basin flow generally to the east and eventually join the Indus River and the Arabian Sea.

- The Southern Basin (Sistan-Hilmand). The rivers of the Southern Basin flow generally to the southwest to the Lake of Sistan on the Afghanistan-Iran border and include the Helmand, the country's longest river, the Farahrod and the Khashrod.

- The Northern Basin (Amu Darya). The rivers in the northern part of the country flow northward to the Amu Darya River on the country's northern boundary (and eventually to the Aral Sea) or disappear in the desert sands.

The following table indicates generic impacts and proposed mitigation measures for all clinics.

Potential Impacts	Mitigation Measures	Additional Recommendations
Impacts to Surface and subsurface Hydrology	Discharge or deposit of any matter arising from the execution of the Work into any waters except with the permission of the regulatory authorities concerned will be strictly prohibited. Existing stream courses and drains must be kept safe and free from any debris and any materials.	None.

Site Specific Issues. Khushkaba, Mir Mandao, Said Abad, Nek Pai and Sar-e-Maiden Clinics are located close to surface water courses. Contract provisions stipulated above will ensure that no significant impacts will arise.

3.2.5 Air Quality and Climate

Existing Conditions. The climate of Afghanistan is continental in nature, with cold winters and hot summers. Most of the country is arid or semi arid, with low amounts of precipitation and high variability between years. The following table indicates generic impacts and proposed mitigation measures for all clinics.

Potential Impacts	Mitigation Measures	Additional Recommendations
Rehabilitation Stage	Minor impacts to local air quality during rehabilitation can be anticipated due to fugitive dust generation in and around rehabilitation activities and related activities. The generation of dust due to rehabilitation activities will be mitigated through avoidance strategies and monitoring as follows: 1/ Sub-Contractors will be required to spray excavation and rehabilitation sites to keep them moist for dust control. 2/ Trucks carrying earth, sand or stone will be covered with tarps to avoid spilling. 3/ Open burning will be prohibited in populated areas and requirements for spraying and related dust control measures	None Warranted

	and the proper use of solvents and volatile materials will be in incorporated in the contract provisions.	
Operation Stage	No operation impacts affecting climate or air quality are anticipated during the operational phase of the Project.	

Site Specific Issues. No site specific issues have been identified.

3.2.6 Mines and Unexploded Ordnance

General Conditions. Special provisions have been made by USAID for the clearance of mines and UXO by the United Nations Mine Action Center (UNMAC).[4] A certificate has been received from UNMAC that there are no mines or UXO in the Project Area. No potential impacts have been identified relating to UXO that require mitigation.

Site Specific Issues. No site specific issues have been identified.

3.3 NATURAL/BIOLOGICAL RESOURCES

3.3.1 Flora

General Conditions. Located at the confluence of two biogeographic realms – the Palaeoarctic and Indo-Malayan – Afghanistan has the unique distinction of being the original home of a very large number of plant and animal species, a majority of which are endemic. Afghanistan was renowned for its rich wildlife and with its diversity of habitats and still retains a wide variety of fauna. However, most of the country is subject to some degree of land degradation, notably that resulting from some 20 years of war, deforestation and desertification. The following table indicates generic impacts and proposed mitigation measures for all clinics.

No potentially significant impacts to flora have been identified. Impacts to plant life and agricultural crops during project works will be mitigated through the appropriate construction supervision activities to ensure that ancillary features are properly sited.

Site Specific Issues. No site specific issues have been identified.

3.3.2 Fauna

General Conditions. Afghanistan is home to 119 species of mammals, 460 species of birds, four species of reptiles, and hundreds of species of insects and fish[5]. Thirty five species of animals have been listed as either vulnerable or endangered on the ICUN Red List, however, the number of threatened species may be higher as essentially no wildlife research has been undertaken in Afghanistan for many years. The following table indicates generic impacts and proposed mitigation measures for all clinics.

4 REFS Contract, page C-8.
3 www.icimod.org.np/focus/biodiversity/afgbio.htm

Potential Impacts	Mitigation Measures	Additional Recommendations
Habitat Loss	No significant terrestrial habitat loss is anticipated due to direct or indirect impacts.	None warranted.
Wildlife Migrations	No evidence has come to light indicating that the proposed Project interrupts wildlife migration corridors. The Project will not interrupt any migratory patterns of wildlife species.	

Site Specific Issues. No site specific issues have been identified.

3.3.3 Aquatic Environment

The fresh-water fish of Afghanistan have been little studied, but many are believed to be endemic. The total fish production in Afghanistan was estimated to be 1300 tons in 1995, but no concrete statistical data exist for the country for over 10 years. Therefore the true figure may be considerably different from the estimate. No significant impacts to the aquatic environment have been identified resulting from project activities.

Site Specific Issues. No site specific issues have been identified.

3.3.4 Protected Areas

General Conditions. Six protected areas have been identified in the country:

- Ab-I-Estada Waterfowl Sanctuary.
- Ajar Valley Wildlife Reserve.
- Bande Amir National Park.
- Dashte Nawar Waterfowl Sanctuary.
- Pamir Buzurg Wildlife Sanctuary.
- Kole Hashmat Khan Waterfowl Sanctuary

None of the clinics are located within the six protected areas, and as such will not impact upon these environments.

Site Specific Issues. No site specific issues have been identified.

3.4 OTHER ENVIRONMENTAL CONCERNS

As noted in the introductory remarks, issues addressed in this section are discussed under the following headings:

- Historic and Cultural Resources (3.4.1)
- Noise (3.4.2)
- Public Health and Safety (3.4.3)
- Other Infrastructure Issues (3.4.4)

3.4.1 Historic and Cultural Resources

General Conditions. Historic and cultural resources include monuments, structures, works of art, the sites of outstanding universal value from historical, aesthetic, scientific ethnological and/or anthropological points of view, including unrecorded graveyards and burial sites. Afghanistan is rich in historic and cultural resources. The responsibility for preservation, maintenance and assessment of historical and cultural monuments in Afghanistan rests with the Archaeological Committee under the Ministry of Information and Culture (MOIC).

No significant cultural resources have been identified within the vicinity of most of the clinics. However, In the event of unanticipated discoveries of cultural or historic artefacts (movable or immovable) in the course of the work, the Sub-Contractor 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 artefacts is agreed upon

Site Specific Issues. A graveyard is located next to the Qarya-e Madrasa clinic on its eastern boundary. Contract provisions will ensure that construction works do not interfere with the graveyard and that no dumping of waste materials on the graveyard will occur.

3.4.2 Noise

General Conditions. Ambient noise levels within the vicinity of all the clinics are low to moderate. None of the clinics are located near to major highways or any other source of elevated noise levels. However, during construction activities short term elevated noise levels are predicted. The following table indicates generic impacts and proposed mitigation measures for all clinics.

Potential Impacts	Mitigation Measures	Additional Recommendations
Construction Impacts	It is recommended that Project bid documents specify that noise and vibration impacts during the construction phase will be mitigated through the use of: ***Source Controls***, i.e., requirements that all exhaust systems will be maintained in good working order; properly designed engine enclosures and intake silencers will be employed; and regular equipment maintenance will be undertaken. ***Site Controls***, i.e., requirements that stationary equipment will be placed as far from sensitive land uses as practical; selected to minimize objectionable noise impacts; and provided with shielding mechanisms where possible. ***Time and Activity Constraints***, i.e., operations will be scheduled to coincide with periods when people would	None warranted.

	least likely be affected; work hours and workdays will be limited to less noise-sensitive times. Hours-of-work will be approved by the Site Engineer with due regard for possible noise disturbance. Construction activities will be strictly prohibited between 10 PM and 6 AM in the residential areas.	

Site Specific Issues. No site specific issues have been identified.

3.4.3 Public Health and Safety

General Conditions. Public health facilities and services in Afghanistan suffered due to civil unrest and severe economic problems. Population per health facility In many districts can be as high as 1-50,000. The project will have significant benefits to public health within the six PCCP provinces, as such no mitigation actions are warranted.

3.4.4 Other Infrastructure Systems

General Conditions. It is anticipated that piped water supply and wastewater collection systems exist only in the urban areas. Irrigation systems and other infrastructure may exist in the rural areas in the form of electrical power lines and pipelines. The formal infrastructure sector in Afghanistan is largely owned and operated through centralized ministries with some operational and production functions delegated to government enterprises. The reach of formal services, however, is very limited. In the urban water supply and sanitation sectors there is reported to be substantial private participation in service deliveries mainly through communities, NGOs and UN agencies. In rural areas NGOs and communities have been and are likely to remain the core providers of infrastructure services. Details of the known situation are as follows.

Water Supply Systems. Piped water supply systems exist only in urban areas and are in need of urgent repair. Coverage is poor. Less than 20 percent of Kabul's population has access to piped water and many provincial and secondary towns have no networked services.[6]

Wastewater Collection Systems. Virtually no rural areas and few residential or public buildings in Afghan cities have networked wastewater collection sewerage facilities and those that do discharge their wastewater directly into rivers without treatment. The World Bank reports that in 1997, sanitation coverage was estimated to be 23 percent of the urban population (versus eight percent of the rural population).[7]

Electrical Systems. No above ground electrical connections are evident within settlement areas.

Construction of the clinics is unlikely to have any significant impacts to infrastructure within the Provinces. All of the clinics will be provided with a generator which will provide the clinic with spot electricity. For most clinics ,water will be supplied through a new drilled well that will have

6 World Bank, Technical Annex for a Proposed Grant... to Afghanistan for an Emergency Infrastructure Reconstruction Project, May 2002, paragraph 7, page 2.

7 World Bank, Technical Annex for a Proposed Grant... to Afghanistan for an Emergency Infrastructure Reconstruction Project, May 2002, paragraph 7, page 2.

4.0 ENVIRONMENTAL GUIDELINES

For projects such as the PCCP 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**.

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

AIR QUALITY

Potential Impact Source	Mitigation Objective	Mitigation Measure	Implementation Mechanism & Responsibility
Material Transport	Minimization of dust during transport of fill and 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).
Emissions from Construction Equipment.	Avoidance of excessive emissions due to poorly maintained equipment.	Contract stipulations require all construction equipment to meet acceptable standards and to be properly maintained.	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 in populated areas	Required by Project Contracts. Enforced by SE.

WATER QUALITY

Potential	Mitigation Objective	Mitigation Measure	Implementation

Impact Source			Mechanism & Responsibility
Pollution of surface and subsurface hydrology	Prevent any interference with the supply to, or abstraction from, water resources and the pollution of water resources as a result of the execution of the Works.	Contracts stipulate that 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 regulatory authorities concerned. Existing stream courses and drains must be kept safe and free from any debris and any materials.	Required by Project Contracts. Enforced by SE.

SOILS

Potential Impact Source	Mitigation Objective	Mitigation Measure	Implementation Mechanism & Responsibility
Loss of Agricultural Land	Minimize use of farmland for road improvement purposes.	Loss of agricultural land has been avoided as much as possible. Use of corridors already dedicated to agricultural use minimizes the need for additional agricultural land.	Avoidance of agricultural land has been incorporated in the decision-making process.

NOISE

Potential Impact Source	Mitigation Objective	Mitigation Measure	Implementation Mechanism & Responsibility
Other Construction Activities.	Minimize high noise levels and times of occurrence.	Limit construction hours in sensitive areas. Use of properly maintained equipment.	Required by Project Contracts. Enforced by SE.

4.2 Recommended Actions Beyond the Scope of the Project

No actions are beyond the scope of the project are recommended.