

# **BELIZE SOLID WASTE MANAGEMENT PROJECT ENVIRONMENTAL IMPACT ASSESSMENT REVISED**

## **1.0 INTRODUCTION**

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### **1.1 BACKGROUND**

The Government of Belize is in the process of developing a national Solid Waste Management Plan, which will guide the management of solid wastes and hazardous materials for twenty years into the future. Under an agreement between the Government of Belize (GOB) and the Inter-American Development Bank (IADB) financed by the Japanese Fund, work on the development of the Plan began in 1998.

The work program has been divided into the following phases:

- I. Assessment of Solid Waste Management issues;
- II. Development of a National Solid Waste Management Plan; and
- III. Preparation of a Public Awareness Program.

Phases I , II and III have now been completed. Final disposal sites and transfer station points have been identified and recommended. The Phase II Report identified eight possible waste disposal plans, of which six were developed in further detail and compared. Each one made use of a combination of sanitary landfills and modified landfills (i.e., upgrading of existing disposal sites to sanitary landfill standards, but with a reduced frequency of cover).

An important feature in the proposed Plan is the identification of a final disposal site at a central location, which will take care of a major portion of the country's solid waste. This central facility is proposed as a sanitary landfill to be located with an access road leaving the Western Highway at approximately Mile 24, west of Belize City. A transfer station to accept collected waste from the Belize City area for disposal at the Mile 22 sanitary landfill has also been proposed, to be located at Mile 3 on the Western Highway.



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A transfer station is also proposed for the Western Sanitary Landfill to serve the Benque, San Ignacio areas with wastes being taken to the Mile 22 site for disposal. In addition transfer stations have been proposed for the Cayes (Ambergris and Caulker) where wastes would be placed in specialized containers then barged and trucked for disposal at the central landfill site.

In addition, the recommended plan includes five modified disposal facilities (at Corozal, Orange Walk, and new sites at Dangriga, Placencia and Punta Gorda). In preparation for the detailed design of the Central Sanitary Landfill Site, the GOB requires that an Environmental Impact Assessment (EIA) be conducted to assess the potential environmental and related impacts of the proposed facility.

In preparation for the detailed design of the regional landfill, the GOB requires that an Environmental Impact Assessment (EIA) be conducted to assess the potential environmental and related impacts of the proposed facility. This Report presents the results of an EIA for the Mile 22 Site, including siting criteria and rapid assessments of alternative sites investigated leading to the selection of the site. It also includes the results of an updated review and assessment of the plan and previously approved EIA report prepared by Stantec Consulting International Ltd in 2001. While the report focuses on an EIA prepared for the proposed regional waste management site located at the Mile 22 Site, it also provides information relevant to the municipal waste management sites (Recycling / Transfer Stations) located in San Pedro, Caye Caulker and Belize City.

## **1.2 OBJECTIVES**

The objectives of the Environmental Impact Assessment are:

- to review the siting efforts undertaken for the central site leading to the recommendation of the Mile 22 site as the prime Central Landfill candidate sites;



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- to identify and assess the significance of potential impacts (positive and adverse) to living and non-living components of the environment resulting from the proposed activities, and socio-economic impacts stemming from environmental threats; and
- to recommend measures for eliminating or reducing the risk and magnitude of adverse environmental effects (mitigation), and for detecting adverse effects in time to correct them (monitoring).

## **1.3 EIA REQUIREMENTS**

The Belize Environmental Protection Act Revised Edition 2003 requires an Environmental Impact Assessment (EIA) to be undertaken for any “project, program or activity that may significantly affect the environment”. The EIA is normally prepared by the proponent and submitted for review by the National Environmental Appraisal Committee (NEAC), whose function it is to ensure that the proposed undertaking takes into account all of the requirements, policies and regulations for protection of the environment, natural resources and socio-economic conditions, and is consistent with other land use in the area. Following review by NEAC, if the project is allowed to proceed, a Compliance Plan for the development and operation of the proposed works or activities is agreed between the proponent and DOE.

The GOB has determined that the proposed sanitary landfill at Mile 22 of the Western Highway is subject to the requirement for an EIA, and in fact the EIA Regulations list a waste disposal installation as requiring an EIA. Among other things, the Department of Environment’s procedures for the preparation of an EIA include the following elements:

- policy and legal basis within which the project may be implemented;
- description of the proposed project;
- description of the environment;
- identification of significant environmental impacts;
- analysis of alternatives;



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- mitigation plan; and
- monitoring plan.

The Terms of Reference for the Environmental Impact Assessment are shown in Appendix A. These elements are addressed in various sections of this Report. Appendix B contains a list of contributors to the preparation of this EIA, as well as a list of reference. A siting matrix was developed, which compares criteria used to compare proposed Landfill sites is contained in Appendix C. Appendix D contains the meeting minutes of a Stakeholder's Meeting (held on June 1, 2001) conducted during the preparation of this EIA. Appendix E presents site photos. Appendix F is the Hydrogeological Report on the site, with Appendix G being the recommended monitoring program. Appendix H is an excerpt from the pre-design proposal for the construction and operation of transfer stations. Appendix I contains an Archaeological Report submitted by the Institute of Archaeology. Appendix J contains ETEISA Lab Reports of Leachate Analyses for San Pedro, Caye Caulker and Belize City disposal site. Appendix K and L include information on waste characterization conducted for San Pedro, Caye Caulker and Belize City by ETEISA and F. Panton respectively. Appendix M contains new geo-technical analyses conducted by Shanon and Wilson.

## **1.4 SCOPE**

This EIA presents the investigations undertaken in reviewing a large number of potential sites and the rationale for selecting the Mile 22 Site. The EIA addresses potential impacts (positive and negative) on air quality, terrain, surface and ground water quality, and terrestrial ecosystems. The EIA also addresses socio-economic impacts directly related to environmental impacts, such as odor, smoke, litter, pests, noise, aesthetics, and land-use issues. The geographical scope of the Assessment includes the site of disposal and related activities of the Mile 22 Sanitary Landfill, and an area of approximately 4 Km radius around the disposal site, but also taking into consideration the total air shed, water movements and visual area of influence of the site. **Figure 1.1** shows the proposed

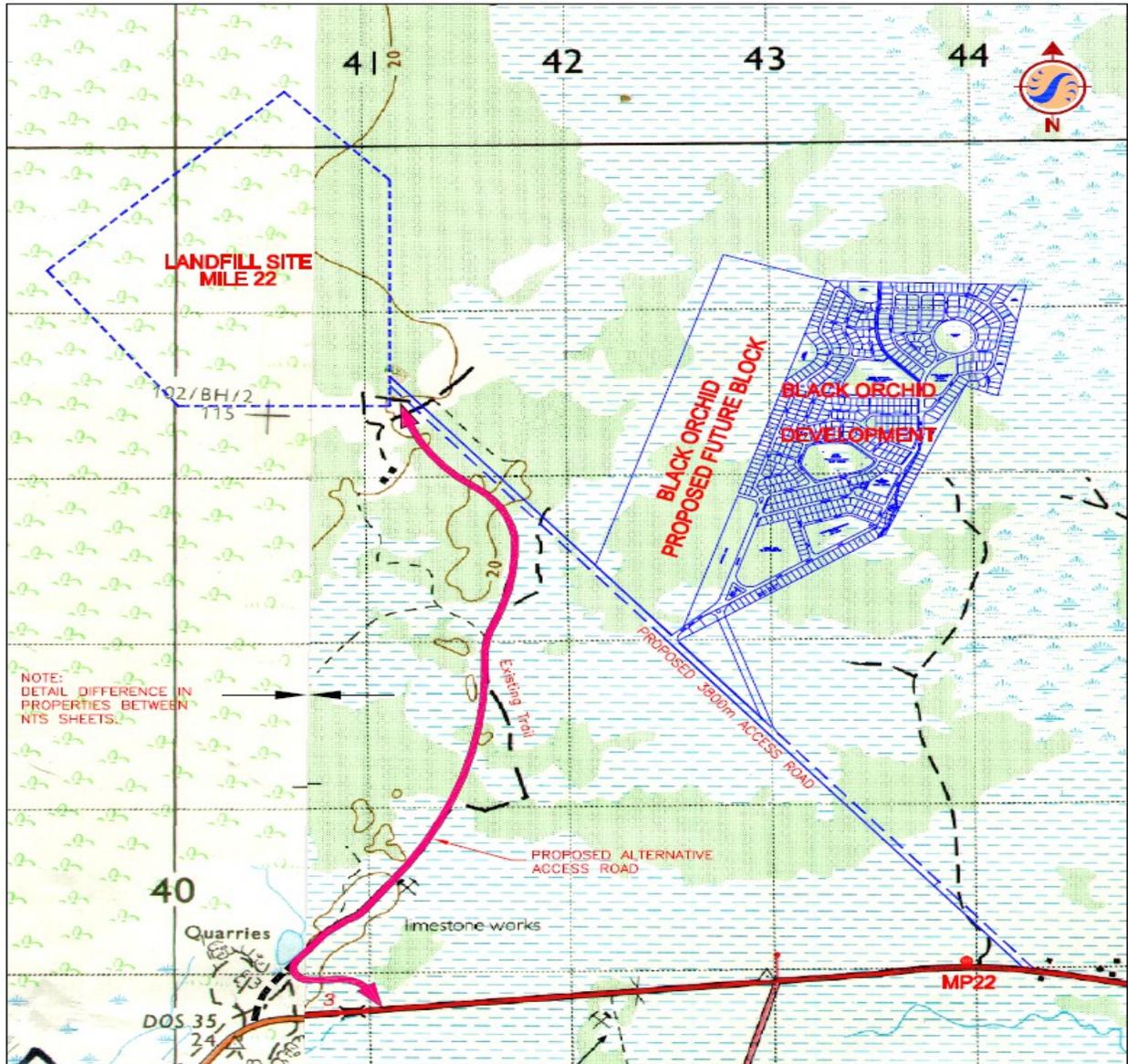


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location of the Mile 22 Western Highway regional sanitary landfill facility and the study area.

In terms of the project components to be assessed, the EIA addresses potential impacts related to the new sanitary landfill facility and the site access road at the Mile 22 Western Highway site and related operations including the proposed Solid Waste Transfer Sites at Mile 3 of the Western Highway Western Sanitary Landfill and the Cayes. It considers construction, operational and post-operational phases of the project. The proposed new sanitary landfill facility is described in **Section 3.0**.

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Client/Project  
GOVERNMENT OF BELIZE  
BELIZE SOLID WASTE MANAGEMENT PROJECT

Figure No.  
**1.1**

Title  
**Landfill Site and Access Roads  
Mile 22 - Sanitary Landfill**