

**PROJECT SUMMARY
FOR SAND, SILICA &
LOAM FORM-
1098/MP/000/21**

CANAL NO. 2, WEST BANK DEMERARA

APRIL 30, 2022

**PREPARED FOR: CASTLE
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Engineer B. Eng.**

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Executive Summary

The current rapid growth of Guyana's economy has resulted in a steady rise in the demand for aggregate materials nationally. This demand for aggregates such as Silica Sand, Loam and Stone are at an all-time high and is projected to increase significantly in the coming decades. The insatiable need for these materials is partly due to the steady rise in construction nationally. The construction industry utilizes almost all of the Silica Sand produced in the mining districts.

Oil and Gas revenues are being used to fund massive infrastructure projects such as roads, public buildings and bridges. These projects will only add to the ever growing demand and new producers of this resource will have to enter the market to keep up with the demand.

Castle Point INC. seeks to help in meeting the national demand for sand resources by establishing a viable and environmentally compliant Silica Sand and Loam mining operation at the Canal #2 backlands, West Bank Demerara.

In accordance with statutory regulations, being presented is a mine plan for the proposed Silica Sand and loam mining project at Canal # 2 Backlands, West Bank Demerara. The project is being proposed by Castle Point INC. (Lot 17 North Section Canal #2 Polder, West Bank Demerara). The company through S. Azeeze has applied to the Guyana Geology and Mines Commission for mining permit GS23: M-1098/MP/000/21 on 184 acres of state lands.

If successful, the proprietor plans to develop the area into a profitable Silica Sand and Loam mining venture. Borehole data and previous work done has indicated a mineable resource estimate of approximately 14,219,034 tons of sand resources and 31,468 tons of Loam resources. With a capital investment of 292,000 USD and an annual operating cost of 260,183 USD, the mine would produce approximately 200,000 tons of Silica Sand and 10,000 tons of loam per year for construction and industrial purposes over the life of mine while providing full time employment for 10 persons initially.

Overburden thickness ranges from 1 m to 2m, this will allow for effective stripping and push backs utilizing a bulldozer. Mining will take the form of an open pit with loading and hauling completed using front end loaders and 50-ton double axel dump trucks respectively.

Detailed financial analysis and environmental factors are addressed in the document.

The mine

plans to operate within the regulatory framework of the GGMC and the EPA at all times, especially in the areas of environmental management and occupational health and safety.

1.0 Salient Features of the Project

Project Name	Silica Sand and Loam Mining
Company Name	Castle Point INC.
Permit#:	GS23: M-1098/MP/000/21
Total Area	184Acres
Total Tonnage of Silica	14,219,034
Sand Total Tonnage of	31,468
Loam	
Location of Mine	Canal# 2, West Bank Demerara River.
Geographic Coordinates	Present in maps provided
Topo Sheet	20SW
Mineral	Silica Sand and Loam
Proposed yearly Production of Sand	200,000 tons per year
Proposed yearly Production of Loam	10,000 tons per year
Method of Mining	Open Cast,
Working Hours	Mechanized 84 Hours
Water Demand	per week
	Minimal
<u>Man Power Requirement</u>	<u>10 Persons</u>

2.0 Introduction

The rising demands for Sand and Loam in Guyana provided the impetus for the proposed mining project. Land ownership has been established by Castle Point INC. and all relevant documentation are presented. With this finalized, an application for a mining permit was made to the Guyana Geology and Mines Commission.

Through shrewd market analysis, the proprietor is confident that such a mine can be operated safely and profitably. Environment controls will be given utmost attention during the life of the mine. The project also has the added benefit of providing employment of persons in the area.

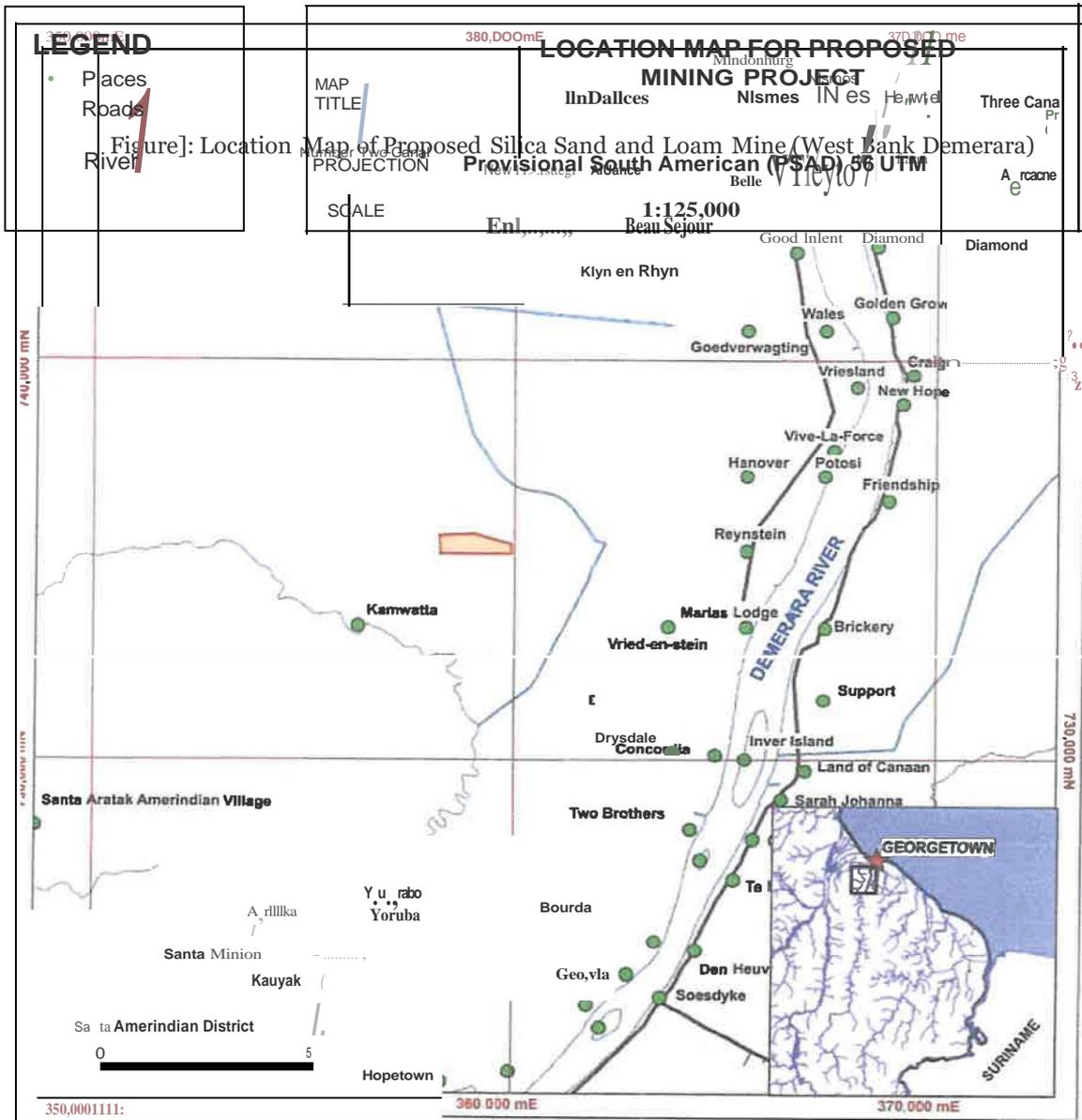
This addition to the mining sector will help to keep up with the ever growing demand for quarriable materials such as sand.

3.0 Location and access

The property is located at the Canal# 2 backlands, West Bank Demerara approximately 23.49 km southwest of the Capital Georgetown, 20 km from the Demerara Harbor Bridge and 13.83 km from the Demerara River. The total area is 184 acres; from Georgetown it can be accessed via the East Bank of Demerara Road network to the Demerara Harbor Bridge. Travel along the West Bank Demerara Corridor and then the Canal # 2 roadway will allow access to the main conservancy road then access to the proposed project location. The total travel time is approximately 40mins.

The project location can be found on Terra Surveys Topographic Map 20SW. The property lies just north of the Santa Aratak Amerindian titled lands. Two main access roads will be constructed (entry and exit) to provide access to the active mine face. The required road safety signage and protocols as stipulated by EPA and GGMC codes of practices will be posted. All boundaries have already been established.

3.1 Location and Access Map of Proposed Mine



4.0 Regional Geology

Guyana forms part of the Guiana Shield located on the North Eastern corridor of South America. It lies between the Orinoco and Amazon Rivers and encompasses all or portions of neighboring countries Suriname, French Guiana, Venezuela, Brazil and Columbia, aggregating to an area of 1.6 million km².

It is underlain by rocks of the Precambrian Guiana Shield. The Shield is usually correlated with the Leo-Man Shield of West Africa. Prior to the opening of the Atlantic during the Mesozoic the two shields formed a contiguous craton. The Archaean Imataca Complex and the Central Guyana Granulite Belt can be correlated with the Archean Liberian Province and the Dimbroko Zone in Ivory Coast respectively.

Exploration for mineral deposits in the Amazon Craton (Craton) is hindered by the thick canopy of tropical vegetation. However, several million years of tropical weathering has transformed the upper 100 m of the Craton into saprolite which can be mined at a relatively low cost. The saprolite blanket is highly variable in thickness across the region.

4.1 Regional Geological map of the Guyana Shield

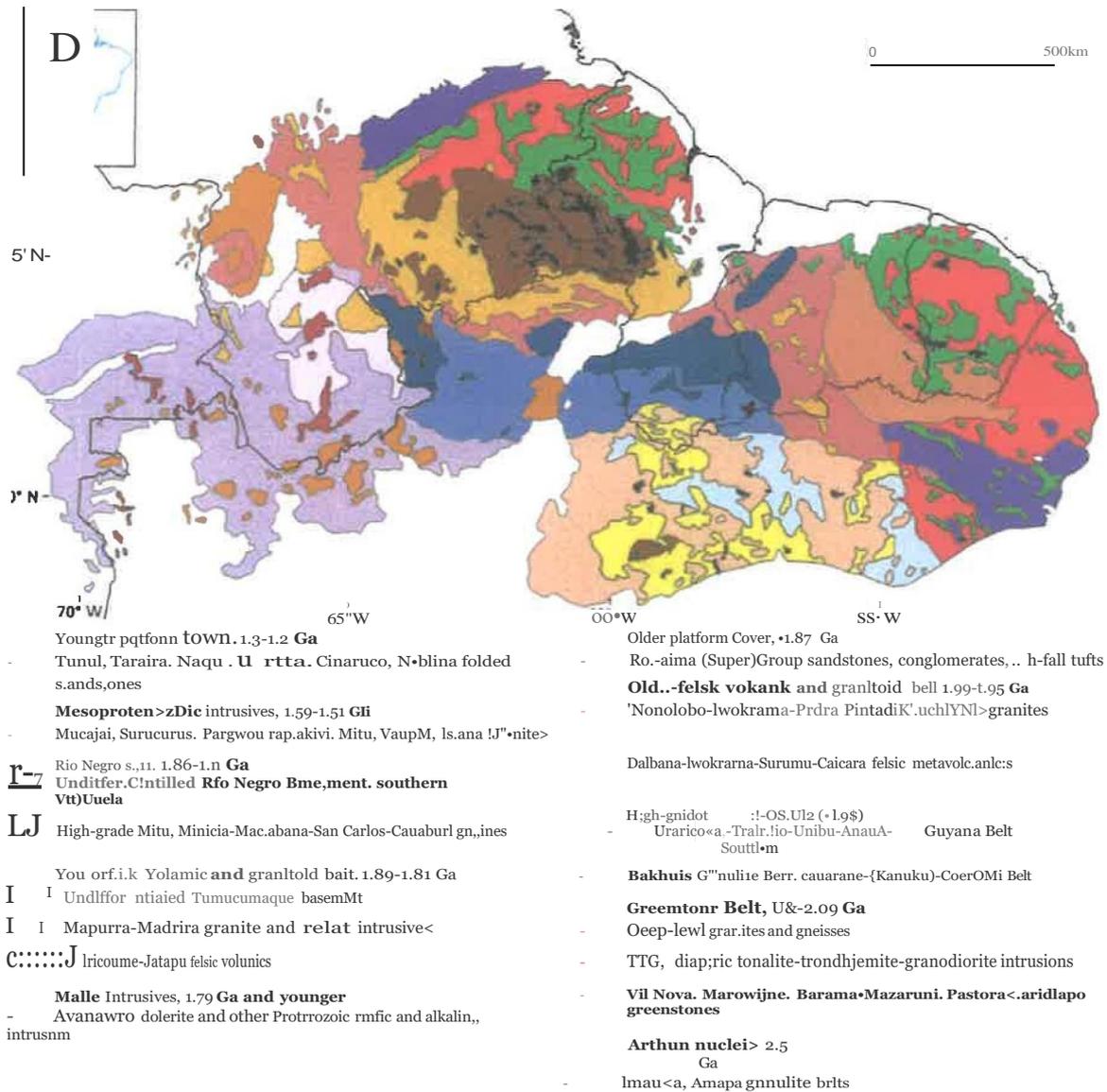


Figure 2: Simplified Geological map of the Guyana Shield

1.0 LOCAL GEOLOGY

Gibbs and Barron (1987) described three distinct Southeast trending "Greenstone belts" Barama,

Mazaruni and Cuyuni. The greenstone belts of the Barama-Mazaruni Supergroup are strongly deformed, with at least two episodes of tectonism evident in many areas. The metamorphic grade of the greenstone succession is typically greenschist facies, but may reach amphibolite facies close to belt margins and granitoids.

Gibbs and Barron (1987) recognized a general stratigraphy within the belt, with lower basaltic units (both tholeiitic and calcalkaline) overlain by an andesite-rhyolite units and finally a sedimentary unit. The sedimentary rocks include shale and fine-grained greywackes. Ultramafic rocks and carbonate rocks occur locally.

On the other hand, D. Bleackley posited that the Superficial white sand, carrying a distinctive xerophytic scrub vegetation, associated with the Berbice Formation extends to depths of over 30 m. and has gradational contacts with flanking material. Discontinuous pans of humic material occur below. Shallower profiles show pronounced development of a humic B horizon overlying red sandy loam. The results suggest that the white sand was derived from sediments of a ferruginous nature with greater clay content, which supported a higher forest formation.

Silica deposits can be found throughout the hilly sand and clay natural region of Guyana consisting of a NW-SE trending bauxite belt. It is within this area that most of the country's silica production is derived. Over 5000 square miles of Guyana are covered with deposits of loose white and brown sands of variable thickness. The white sand covers almost a quarter of this area. The upper sands are underlain to downward succession by:

- I. Intermediate Clays
- II. Lower Sands
- III. Alternating sands and clays

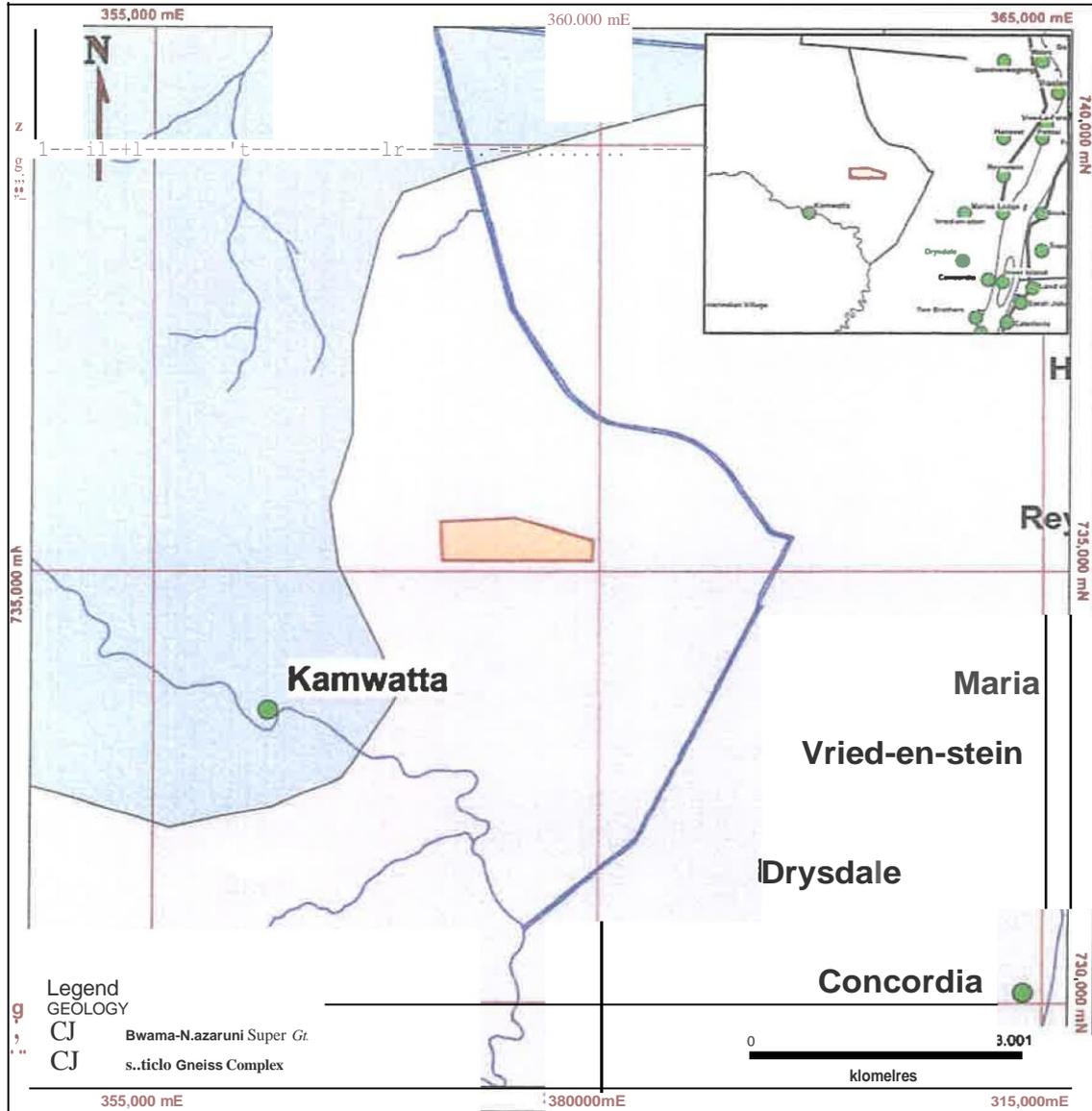
2.0 PROJECT AREA GEOLOGY

The white sand series is exposed as a tiled sheet of unconsolidated sands and clays occurring between the Coastal Plains and the Precambrian basement, which increases in elevation towards its contact with the latter. Its seaward margin crops out along a sharp and regular boundary behind the Coastal Plain as hills of loose brown and white sands extending roughly from the Essequibo River mouth to Timehri, continuing south-eastwards to Torani on the Berbice River, across the Corentyne River and into Suriname. The highest level recorded along the north-west margin is 430 feet above sea level at Honey Camp (Essequibo), while the lowest level occurs towards the coast between the Berbice and Corentyne Rivers. The Pleistocene White Sand Formation in Guyana contains large, readily accessible and easily worked deposits of good quality Silica Sands.

The project area, situated on the west bank of the Demerara River is dominated by extensive deposits of unconsolidated sands of the Berbice Formation or White Sand Series. This overlays roughly 80% of the 213 acres available, most of which was found to be easily accessible white sands. The thickness varies between 15- 40 feet with a thin layer of overburden and light vegetation such as shrubs and small trees.

The area is underlain by rocks of the Bartica Assemblage. The Bartica Assemblage consists of a varied suite of gneisses and amphibolite's on the northern margin of the Guiana shield, occupying more than 5,000 square miles.

4.2 Geological Map of Project Area



LEGEND

- Places
- Roads
- Rivers/Creeks

MAP SHOWING GEOLOGY FOR PROJECT AREA

MAP TITLE

PROJECTION **Provisional South American (PSAD) 56 UTM**

SCALE **1:60,000**

Figure 4: Geological map of the Proposed

Block 1SIPage

5.0 Climate and Vegetation

This region lies just below the coastal plains of the north and covers about 25% of Guyana's land area. It starts south of the Pomeroon River and goes in arc across the Cuyuni, Mazaruni and Potaro Rivers. The project lies in the midst of this region *just* off the Linden Soesdyke Highway, 34.87 km from the town of Linden.

It is characterized by rolling hills and valleys, white sand deposits, clay deposits, brown and red sands, hot days and cool nights with relief rainfall. The area is covered with scrub lands and hardwood forests with hills rising up to almost 400 feet.

The entire north-eastern area of the country is bound by the thick rainforest in the south and the open wetland grasslands and mangroves to the north. The area is home to a very unique food source- the Doka Tree. This remarkable plant bears a fig-like fruit that is favored by many bird species.

Vegetation in the proposed area can be described as Dakama tropical rainforest. It was observed that seedlings of secondary growth are widely distributed over the study area. Smaller trees, tropical plants and scrubs can also be found throughout the area.

The average monthly mean temperature, which does not fluctuate much throughout the year, is

26.7°C. Relative humidity can be as much as 81% but will generally vary. The daily average maximum humidity from data collected is 90% while the minimum is 40.1%. Rainfall in the area varies depending on the season. There is two distinct wet seasons May to July and August to November. The prevailing weather conditions allow for the mine to operate safely throughout the year.

6.0 Market Analysis

The impending investment in this project was largely facilitated by a detailed market analysis conducted by the parties involved. Data was collected from key stakeholders in the sand/loam industry through interviews and analyzing forecast data from the various government agencies to ascertain the feasibility of the venture.

It was discovered that there is a strong demand for sand/loam throughout the country and suppliers are spread thin trying to keep up with demand. This steep rise in demand can be attributed to the government's push to complete infrastructural projects in the near future and a thriving private construction sector.

This demand is only expected to grow as the industry awaits an impending construction bloom as a result of the new oil and gas industry. The project is expected to net a profit at the present cost of Silica Sand which is 8 USD per ton. A profit can still be turned even with a 20% dip in prices. However, forecasting has shown that the prices are expected to stabilize at current market prices then rise as suppliers fight to keep up with demand.

7.0 Resource Estimation

Exploitation will be done in phases. The first phase will see the exploitation of approximately 640 acres of sand and loam resources.

Borehole and trenching data provided the basis for the computed resource estimation. Impermeable rock was intersected at 30m and the water table at 20m. Mining will not extend below the water table thus this will prove a natural limit for the pit depth. Mining will therefore only extend to a maximum of 18m as an added buffer zone.

Sand resources will be taken from 160 acres while Loam resources will be taken from 24 acres. A bulk density of $1.22 \times 10^3 \text{ kg/m}^3$ and a conversion factor of 4046.86 was used in the calculations for Silica Sand. A bulk density of 1800 kg/m^3 will be used for the loam calculations.

$$\text{Area in m}^2 = 160 \text{ acres} * 4046.86$$

$$= 647,497 \text{ m}^2$$

$$\text{Volume in m}^3 = 647,497 * 18$$

$$= 11,654,946 \text{ m}^3$$

$$\text{Mass in kg} = 11,654,946 * 1220$$

$$\text{Tonnage} = 14,219,034 \text{ tons}$$

Loam resource calculation:

$$\text{Area in acres} = 24$$

$$\begin{aligned} \text{Area in m}^2 &= 24 * 4046.86 \\ &= 97,124.5 \text{ m}^2 \end{aligned}$$

$$\text{Volume} = 97,124.5 * 18$$

$$= 1,748,241 \text{ m}^3$$

$$\text{Mass in kg} = 1,748,241 * 1800$$

$$\text{Tonnage} = 31,468 \text{ tons}$$

8.0 Planned Production Schedule

The mine plans to produce an average of 200,000 tons of Silica Sand per annum (16,666 tons per month or 555 tons per day) for the first five years. The mine will simultaneously produce 10,000 tons of loam per year. Production will be 7 days per week, 12 hours per day. It should be noted however that periodically some amount of downtime is expected for maintenance and repairs.

Mining will only take place during daylight hours. The company expects to increase production significantly after this initial period.

2022	2023	2024	2025	2026	
200,000	200,000	200,000	200,000	200,000	Total Silica Sand
					1,000,000
2022	2023	2024	2025	2026	Total Loam
10,000	10,000	10,000	10,000	10,000	50,000

Table 1: Production Schedule for first five years of operation

9.0 Mine and Production Parameters

9.1 Mine and Facility Layout

The simplicity of the mine facilities caters for the effective extraction of resources while maintaining a small ecological foot print. This makes it easier for reclamation initiatives after mining has been completed.

The limits of the pit will be located in the eastern half of the property with advancement westwards. Adequate access road will be built to allow safe 2way movement of trucks and equipment in and out of the mining area.

A small security post will be constructed to cater for security personnel and a booth for the collection of fees for everyday "walk in" customers. In addition, portable sanitary blocks will be rented for use by staff, potable water will be transported as needed and an approved fuel containment area for fuel storage will be constructed. These will all be located outside of the mining block.

9.2 Stripping and Mining Methods

The mine will progress westwards as resources are depleted. Debushing will be completed and overburden will be removed using a bull dozer with adequate push backs for increased safety. The overburden thickness varies from 1m to 2m reducing the operating cost of the mine.

Overburden removed will be stockpiled in spoil piles for future use during the closure phase.

Mining will be accomplished using a simple open cast system utilizing hydraulic excavators for digging, front end loaders for loading and double axel 25-ton dump trucks for hauling. This operation is expected to flow continuously with stockpiling and loading occurring simultaneously.

Mining will not exceed the water table and 8m benches will be utilized with 10m width for easy maneuverability of digging equipment.

9.3 Waste Dump Design

Waste material will be stored in a suitable area in the southern section of the Jotted area. This will adequately cater for storage until backfilling and revegetation is activated during reclamation. Efforts will also be taken to prevent slippages and excess surface run off due to rainfall since sedimentation can harm aquatic life.

The design parameters are highlighted below:

- Overall slope 18.4° (3H:1V)
- Maximum Dump Height 50m
- Setback from major creeks 100m
- Setback from pit crest 40m

9.4 Equipment Selection

The main equipment need is to satisfy the stripping and mining operations. An equipment list is presented as follows:

CAT 320 Hydraulic Excavator	2
CAT Do9 Bulldozer	1
CAT 986K Wheel Loader	2
Dump Trucks (50 tons)	4

Table 2: Equipment List and Description

Technical specs - 320 Caterpillar Excavator

- Weight – 22.5 t
- Transport length- 9.53 m
- Transport width- 3.17 m
- Transport height- 2.96 m
- Bucket capacity- 1.19 m³
- Track width- 790 mm
- Max. Reach horizontal- 9.86 m
- Dredging depth- 6.72 m
- Tear-out force- 150 KN

Description

Technical specs - D9 Caterpillar Bulldozer

- Weight- 49.99 t
- Transport length- 6.6 m
- Transport width- 4.35 m
- Transport height- 3.88 m
- Track width- 610 mm
- Travel speed- 11 km/h
- Reverse travel speed- 13.6 km/h
- Front blade width- 4.35 m

Technical Specs- Caterpillar 986K Wheel Loader

- Weight- 44.35 t
- Bucket width- 3.81 m
- Bucket capacity min- 5 m³
- Bucket capacity max- 10.3 m³
- Transport length- 11.14 m
- Transport height- 4.1 m
- Travel speed- 39 km/h
- Max. discharge height- 3.08 m
- Turning radius outside- 8.71 m
- Lifting force- 336 KN

9.5 Staffing

Designation	NO of Staff Required
Security	1
Truck Drivers	4
Excavator Operator	2
Front End Loader Operator	2
Bulldozer Operator	1
Total	10

Table 3: Staff List

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10.0 Financial Analysis

Astute financial considerations are indispensable when evaluating the feasibility of any potential business investment. The major cost factors are one-time startup cost and operational expenses throughout the life of the mine.

Presented below is a summary of all major financial considerations.

Capital Items	Cost (USD)
Infrastructure	2,000
Machinery	230,000
Vehicles	20,000
Road Construction	10,000
Closure	30,000
Total	292,000

Table 4: Capital Items and Cost

Operating Expenditure	Cost per anum (USD)
Fuel and Consumables	78,600
Salaries	136,583
Maintenance (machinery, o roads)	45,00
Total	: 260,183

Table 5: Yearly Operating Expenditure

Production per anum	Cost per ton (USD)	Gross Profit
200,000	8	1,339,817
	1,600,00	

Table 6: Gross Profit

After deducting royalty payable to the Guyana Geology and Mines Commission at \$18 GYD (18,000 USD per year) per ton the net profit per anum can be calculated after miscellaneous expenses are paid and investment cost is recouped.

Prices used are based on current market projections. Prices are expected to stabilize in the short term with the potential for positive fluctuations as demand is expected to increase

substantially.

11.0 Environmental Management

11.1 Surface Water

The project will have minimal to no effect on surface water resources within the area. Water resources will only be used during the dry season months to occasionally provide dust relief through the use of truck mounted spray bars. Spoil piles will be stacked at or below the angle of repose to prevent slippage and protective berms will be built to stop potential run off from contaminating nearby creeks.

11.2 Groundwater

The project will have no effect on groundwater resources mining activities will cease long before the water table is met.

11.3 Air Quality

The biggest source of possible air quality issues is the dust particles from mining and hauling activities. This will be a nuisance especially during the drier months. As mentioned before, the use of spray bars mounted on trucks will provide relief and prevent excess dust from contaminating the air and becoming a nuisance.

11.4 Noise Nuisance

This is not expected to exceeded EPA recommended levels (100db) for prolonged exposure.

11.5 Flora and Fauna

The operators will conduct periodical monitoring and checks to ensure that as far as possible wildlife remain insulated from any negative effects. The aim is to have as small a footprint as practical. Afterwards, the area will be restored as close as possible to its original state where flora and fauna can thrive. Nearby sand mining and the presence of communities along the riverside have resulted in the migration of some species further in land.

During the operation of the mine, most of the larger animals will have already abandoned the area. Only small fauna accustomed to distributed environments are likely to remain in or enter mining areas and other work sites. It is likely that small numbers of small animals such as amphibians and snakes will be in contact with human activity due

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These impacts will be mitigated by implementation of the following:

- I. Minimization of the Project footprint; and;
- II. Performance of preclearance surveys.

11.6 Waste Disposal

The Project will minimize and mitigate these potential impacts by developing and implementing the respective waste management plans for each type of solid waste anticipated to be generated by the operation phase of the Project. Reuse and recycling will be preferred over disposal as far as practicable.

The operators will set up waste receptacles around the mine for workers and visitor to dispose of their personal waste. Other sources of waste include industrial such as waste oil and fuels and domestic waste. Heavy industrial waste such as oils and fuel will not be disposed of on site, instead they will be collected and disposed of periodically by a professional waste disposal company. That company will also be responsible for collecting portable sanitation units and disposing. Guided by EPA guidelines, a special dump site will be created for common domestic waste disposal. The project is not expected to produce any hazardous waste.

11.7 impacts on Soils

During operations, additional areas will be cleared, graded, mined, and covered. This will result in expansion of the area of impacted soils. Spills of fuels, lubricants, and other hazardous substances can lead to contamination of soils. In the absence of mitigation, the collective impacts to soils during operations are rated as major.

The mitigation measures for soils will include continued implementation of the following:

- I. Implementation of best management practices for erosion control;
- II. Topsoil and organic matter stockpiling;
- III. Re-spreading, de-compaction, and re-vegetation; and,
- IV. Implementation of the Spill control and Clean-up Plan

11.8 Loss of Habitat

During operation, the loss of habitats and flora will not affect any threatened or restricted-range endemic species of flora and fauna. Much of the fauna will have likely already left the affected habitats due to disturbance during the construction phase.

These impacts will be minimized by implementation of the following:

- I. Minimization of the Project footprint; and,
- II. Initiating restoration as soon as practicable in temporary work areas. Implementation of these measures will result in minor residual impacts.

11.9 Introduction of Invasive Species

The movement of people, equipment, and materials to the mine has the potential to cause the introduction of alien invasive species of both plants and animals. The disturbance and clearing of natural habitats can also promote the growth or colonization of alien invasive species.

These impacts will be mitigated by implementation of the following mitigation measures:

- I. Monitoring of biodiversity; and;
- II. Control of invasive species.

12.0 Emergency Response

12.1 Definition of an emergency

An emergency is an unexpected occurrence within or adjacent to the site premises which could give rise to any or several of the following consequences. It may be impossible to anticipate every eventuality or combination of circumstances. A list of foreseeable emergency situations at the are as follows:

1. Serious personal Injury
- ii. Confined Space Injury or IncidentLoss of Life
- iv. Fire
- v. Flooding- Storms, blocked drains, product spills, etc.
- vi. Pollution- Escape of products, fuel, oil, gas, etc. into adjacent premises, surface or foul water drains, river, etc.
- vii. Explosions- Explosive magazine, compressors, bottled gas, etc.
- viii. Serious Property Damage- Vehicle Impact, wind or lightning strike, etc.
- ix. Structural Failure- Instability or collapse
- x. Severe Business Interruption- Protestors, etc.

An emergency may be the result of a malfunction of normal operational procedures, plant or human error, but may also be caused by outside influences such as:

- i. Severe thunderstorms
- ii. Flooding
- iii. Aircraft Crash

12.2 Roles of the Incident Controller

The incident controller will:

- I. Assess the scale of the emergency.
- ii. Ensure that emergency services have been alerted if required.
- m. Ensure that a company representative meets the ambulance/ fire brigade at the site entrance with sentries along the route to direct them to the accident scene.
- IV. Secure the safety of personnel by evacuating non-essential workers from the affected area and facilitate containment of the incident.
- v. Ensure that any casualties receive medical attention as quickly as possible.
- VI. Establish checking for missing persons, as applicable.
- VII. Assume control of the works, dealing with all matters associated with the emergency.
- viii. Take appropriate action to control plant, to reduce potential for injury to persons to persons and releases to air, ground and water.
- IX. In the case of an environmental incident with potential for ground water contamination, seal off affected drains and shut off outlet valves from site.
- x. If necessary, call in contaminated waste removal specialists.
- xi. Notify appropriate company management. (Contractors, etc.), The Environmental Protection Agency, The Fire Service, the Guyana Police Force, The Linden District Hospital, The Georgetown Public Hospital and The Guyana Geology and Mines Commission.
- xu. Instigate effective liaison with the family of affected persons.
- xm. Advise personnel operating outside the affected area of any developments, and if appropriate inform any farms or other sensitive sites downstream.
- XIV. Liaise with emergency services to contain¹curtail the incident and provide advice and information required.
- xv. Arrange for the relief of personnel where the emergency is prolonged.
- xvi. Preserve evidence that would facilitate any subsequent inquiry into the cause and circumstances of the emergency.
- XVII. Keep the company's authorized spokesperson aware of the situation, subsequent developments and any approaches for information.
- xvni. Arrange for re-entry of the area after emergency has ceased.

- xix. Complete relevant check lists.
- xx. Complete relevant company report forms.

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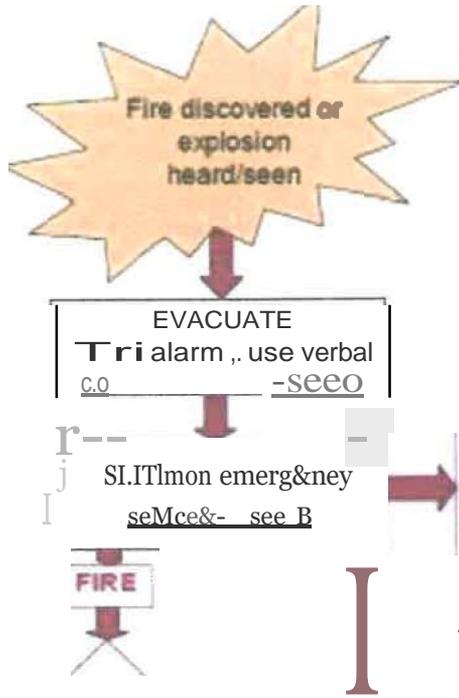
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• There may be
Judgement required.
 e.g. whether to spend
 time trying to make
 'phone calls when
 time is critical
 means of stopping the
 fire before it takes hold.
 Always raise the alarm
 first, calling on help
 from others to make
 calls where
possible.



Bomb threat
 should be treated
**as if an explosion
 had actually
 occurred**

EXPLOSION
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Yes - There is
 no risk to
 individuals
 from the fire or
 nearby
 or
 equipment
 involved

Are there casualties?
 Only move them if they are
 in danger and you can
 do so safely.
Call ambulance

Tackle the
 fire using
 correct
 equipment
app, opnata
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Do not attempt to
 tackle the fire.
 Assess the
need and try to
 make king
 equipment available
 safe - do so if
safe.
 then tolerate the

Are there casualties?
 Only move them if they are
 in danger and you can
 do so safely.
Call ambulance

Are there casualties?
 Only move them if they are
 in danger and you can
 do so safely.
Call ambulance

Is there
 a rider
 control
YES

Is there
 a rider
 control
YES

Figure 7:
Procedures
for dealing
with fires
and
explosions

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Staff members will be given training to be able to function efficiently during an emergency. Training will be reinforced by unplanned drills simulating hypothetical emergency scenarios. SOPs to be followed for various emergencies will be developed and issued to all staff.

A staff member will be chosen as the emergency response coordinator with a clear outline of his/her role during these situations. These will include but not limited to contacting the authorities (all numbers will be provided), sounding the alarm, mobilizing resource (a list will be kept and supplies maintained at all times), activating emergency transportation protocols (a boat and 4*4 pickup will be provided and on standby) and delegating task to other staff to assist.

A clear hierarchy will be established where everyone knows their roles and the responses to emergencies will remain the same regardless of the personnel available on that particular day.

13.0 Occupational Health and Safety

Workers will be equipped with all the necessary safety gears. These include reflective vest, steel toe safety shoes, helmets, gloves, dusk mask and rain boots if required. The company intends to create a safety first policy by promoting and implementing programs to train staff on proper use of machinery and safety equipment. This will also include a defensive driving program for all staff before being allowed to drive motor vehicles.

All of the required signage (safety reminders, safety while operating heavy machinery, mine safety, safety operating vehicles, road safety) will be placed around the mine to ensure compliance and a safe work environment. A staff member will be designated as the officer responsible for implementing safety measures and receiving complaints. These issues will be addressed promptly by management

14.0 Closure and Reclamation

14.1 Objectives of reclamation and closure

The objectives of this Rehabilitation and Closure are to:

- i. Provide a framework for site rehabilitation throughout the life of the project;
- ii. Outline the implementation procedure for the habitat management area and identify ongoing management requirements;
- iii. Define management requirements for riparian areas, including management of specific work sites within riparian areas;
- iv. Describe the strategies for management of remnant vegetation, habitat values and property management issues; and
- v. Outline the landscaping strategy for the project area.
- vi. Outline closure activities

14.2 Sequence of closure and topsoil management

Before the reserves have been depleted, the mine will transfer to "closure mode" where implementation of closure and reclamation concepts will take precedence. Simultaneous backfilling will commence while the resource is in its final stage of depletion.

Additionally, carefully stored top soil will be used to overlay filled areas. Planting and nurturing of trees will eventually encourage wildlife such as birds and small mammals to find habitats in the area. The rationale for this well planned and carefully choreographed reclamation effort is to return the natural environment as close as possible to its original state. This is usually a very slow process but can be achieved overtime.

There will be sufficient topsoil to rehabilitate the disturbed areas within the mine footprint. Topsoil will be disturbed for infrastructure and mining activities in accordance with stripping depths discussed. Topsoil stripping will be managed to ensure maximum recovery of the soil.

Topsoil will be managed in accordance with the following measures:

1. Areas where topsoil has been replaced will then be seeded with a native species and cover crop mix to achieve the White Sand Forest vegetation community.

11. Stripped topsoil will then be placed in stockpiles no greater in depth than 3 meters and will be deep ripped and seeded if they are to remain in place for longer than six months and all topsoil stockpiles will be clearly identified so that they are not inadvertently covered with overburden or damaged by other activities.

111. Where possible, stripped topsoil will be placed immediately onto shaped emplacement areas to ensure best use of soil seed stores and maintenance of soil structure. Fertilizer and other ameliorants will be added to re-spread topsoil as necessary to ensure effective rehabilitation outcomes.

1v. The topsoil balance will be reviewed on an ongoing basis to ensure that actual topsoil recovery is sufficient to meet rehabilitation requirements.

In essence the proposed mining project is not expected to adversely affect the environment or surrounding communities therefore the project can be carried out safely. The community will benefit from employment and routine maintenance of infrastructure. Market and financial analysis have shown that this project can be operated profitably.

Appendices

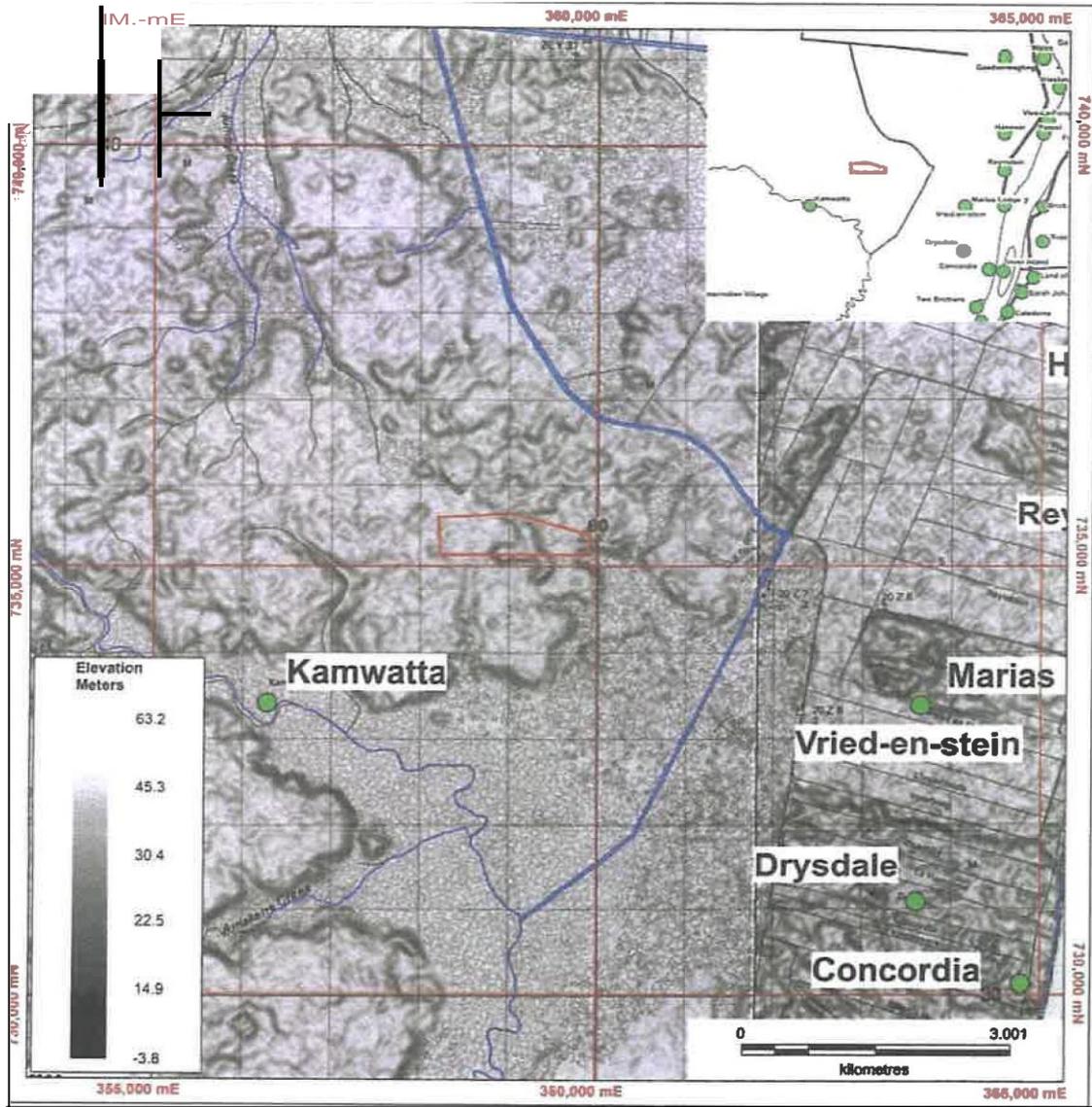
Appendix

1

EMERGENCY CONTACT TELEPHONE NUMBERS

Internal Emergency Number	cellular Phone
La Grange Police Station	592) 264-2357
La Grange Fire Station	592) 264-9112
Georgetown Public Hospital Ambulance Unit	592) 227-8210-2, (592) 226-9449
Environmental Protection Agency (EPA)	592) 225-5467-69
Guyana Geology & Mines Commission	592) 222-2862, (592) 225-2865, (592) 227-1232

Appendix 2



LEGEND	
•	Places
—	Roads
—	Rivers/Creeks

MAP SHOWING TOPOGRAPHY DATA FOR PROJECT AREA	
MAP TITLE	
PROJECTION	Provisional South American (PSAD) 56 UTM
SCALE	1:60,000

Appendix 3

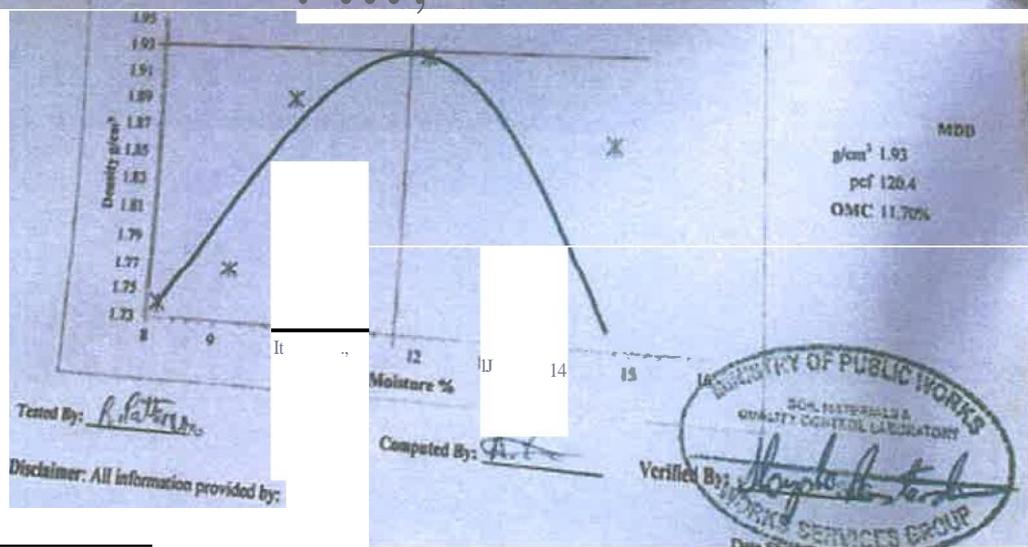
Lab data, Particle size analysis, compaction and density

MINISTRY OF PUBLIC WORKS
WORK SERVICES GROUP
 Fair Street, Kingston, Dominica, Guyana, Tel: +1876-221-2886, 221-2882

ASTM D1557 - Laboratory Compaction Using Modified Effort

Project Title: Infrastructure Development Works
 Client: JA Park
 Sample Description: Loose
 Location: Site: Villa W.B.D.
 Material Source:
 Lab: JAP-MS-1-2019-21-501
 Equipment used: D15
 Date Entered for testing: 1st March, 2021
 Method: Mechanical Compaction
 No. of Blows: 24
 Date Tested: 10th March, 2021

Moisture %	1	2	3	4	5	6
Wt. of mold	4186.2	4186.2	4186.2	4186.2	4186.2	4186.2
Wt. of mold + soil	5956.9	6036.1	6146	6247.4	6292.6	
Wt. of soil	1770.7	1849.9	1959.8	2061.2	2106.4	
Wet density (g/cm ³)	1.86	1.90	2.18	2.36	2.19	
Dry density (g/cm ³)	1.78	1.87	1.89	1.81	1.87	
Wet wt	1.81	1.82	1.90	1.81	1.87	
Dry wt	1.78	1.87	1.89	1.81	1.87	
Wet wt + soil	212.18	208.08	198.48	207.83	203.88	
Dry wt + soil	208.52	208.44	194.34	218.32	218.92	
Weight of water	11.66	19.64	14.14	89.51	84.96	
Moisture content (%)	5.18	9.18	7.00	11.95	14.68	





MINISTRY OF PUBLIC Works
WORKS SERVICES GROUP
1st Floor, Singapore, Singapore Tel: +65 633 2268, 633 4900

ASTM C33 - GRADATION ANALYSIS

Project Title: Infrastructural Development Works
Client: JA Paris
Contract: JAI'alu
Sample Description: Silica Sand
Sample ID: SIODqtllo

Source of Sample:
Sampled by: Contractor
Lab No.: JAP-SA-WS1-4DW-21-001
Date Sampled: 1/1/2021
Date Tested: 10/3/2021

Test No.: 1

% Passing 200 Sieve 0.13

Sieve Size	Standard	Actual	Standard	Actual	Standard	Actual	Standard
2"	50.000	0	0	0.00	100.00	100	100
1"	25.000	0	0	0.00	100.00	100	100
3/8"	9.500	152.33	152.33	29.05	70.95	100	100
4	4.750	576.7	224.37	43.79	28.17	55	100
10	2.000	484.1	107.4	20.48	7.68	40	100
40	0.425	512.9	21.1	5.49	2.19	20	50
200	0.075	521.7	10.8	2.06	0.13	6	15
- 200 DRY		534.4	0.7	0.13	0.00		
Total		524.40	524.40	100.00			

Sample Wt. in g 472.6
% Passing 200 Sieve 0.38

Test No.: 2

Sieve Size	Standard	Actual	Standard	Actual	Standard	Actual	Standard
2"	50.000	0	0	0.00	100.00	100	100
1"	25.000	0	0	0.00	100.00	100	100
3/8"	9.500	112.9	112.9	23.80	76.20	100	100
4	4.750	304.4	191.5	40.37	35.93	55	100
10	2.000	411.3	106.9	22.51	13.30	40	100
40	0.425	447.4	36.1	7.61	5.69	20	50
200	0.075	472.6	25.2	5.31	0.38	6	15
- 200 DRY		474.4	1.8	0.38	0.00		
Total		474.40	474.40	100.00			

Tested By: L. Mayer Computed By: AH





MINISTRY OF PUBLIC Works
WORKS SERVICES GROUP

Port Moresby, Papua New Guinea. Phone No: +675 325 3888, 325 4382

ASTM C136 - Gradation Analysis

Project Title: Infrastructure Development Works
Client: JA Firm
Sampled by: Contractor
Sample Description: Loose

Source:
Lab #: JAP.WSA-1-IDW-21-001
Date Sampled: 1/3/2021
Date Tested: 11/3/2021

Wt of sample before washing	513.20	513.10
Wt of sample after washing and drying	349.70	334.90
Wt lost in washing	163.50	178.20
<200 DRY	16.30	15.70
Total wt passing 200 sieve	180.09	191.00
% Passing 200 sieve	35.08	37.37

Sieve Size	Standard	Tested	Standard	Tested	Standard	Tested	Standard	Tested
3/8"	9.500	0	0	0.00	100.00	100	100	100
4	4.750	0	0	0.00	100.00	100	100	100
8	2.360	1.9	1.9	0.37	99.63	100	100	100
16	1.180	9.2	7.3	1.43	98.21	97	100	100
30	0.600	34.4	35.2	4.91	93.30	65	81	81
50	0.300	125.3	91.1	17.74	75.56	38	70	70
100	0.150	245	119.5	23.28	52.38	24	54	54
200	0.075	333.4	88.4	17.22	33.06	16	42	42
<200 DRY		349.9	16.5	3.21	31.85			
<200 WET			163.50	31.85	0.00			
Total		349.90	513.40	100.00				

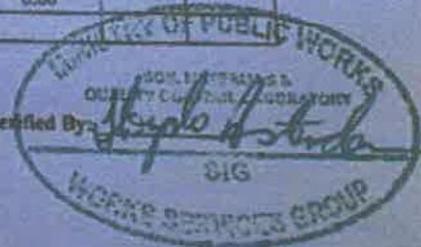
Test No.: 2

Sieve Size	Standard	Tested	Standard	Tested	Standard	Tested	Standard	Tested
3/8"	9.500	-0.3	-0.3	-0.06	100.06	100	100	100
4	4.750	-0.3	0	0.00	100.06	100	100	100
8	2.360	0.9	1.2	0.23	99.82	100	100	100
16	1.180	5.2	4.3	0.84	98.99	97	100	100
30	0.600	23.8	18.6	3.62	95.37	65	81	81
50	0.300	112.6	88.8	17.29	78.07	38	70	70
100	0.150	230.2	117.6	22.90	55.17	24	54	54
200	0.075	321.6	91.4	17.80	37.37	16	42	42
<200 DRY		335.3	13.7	2.67	34.70			
<200 WET			178.20	34.70	0.00			
Total		335.30	513.50	100.00				

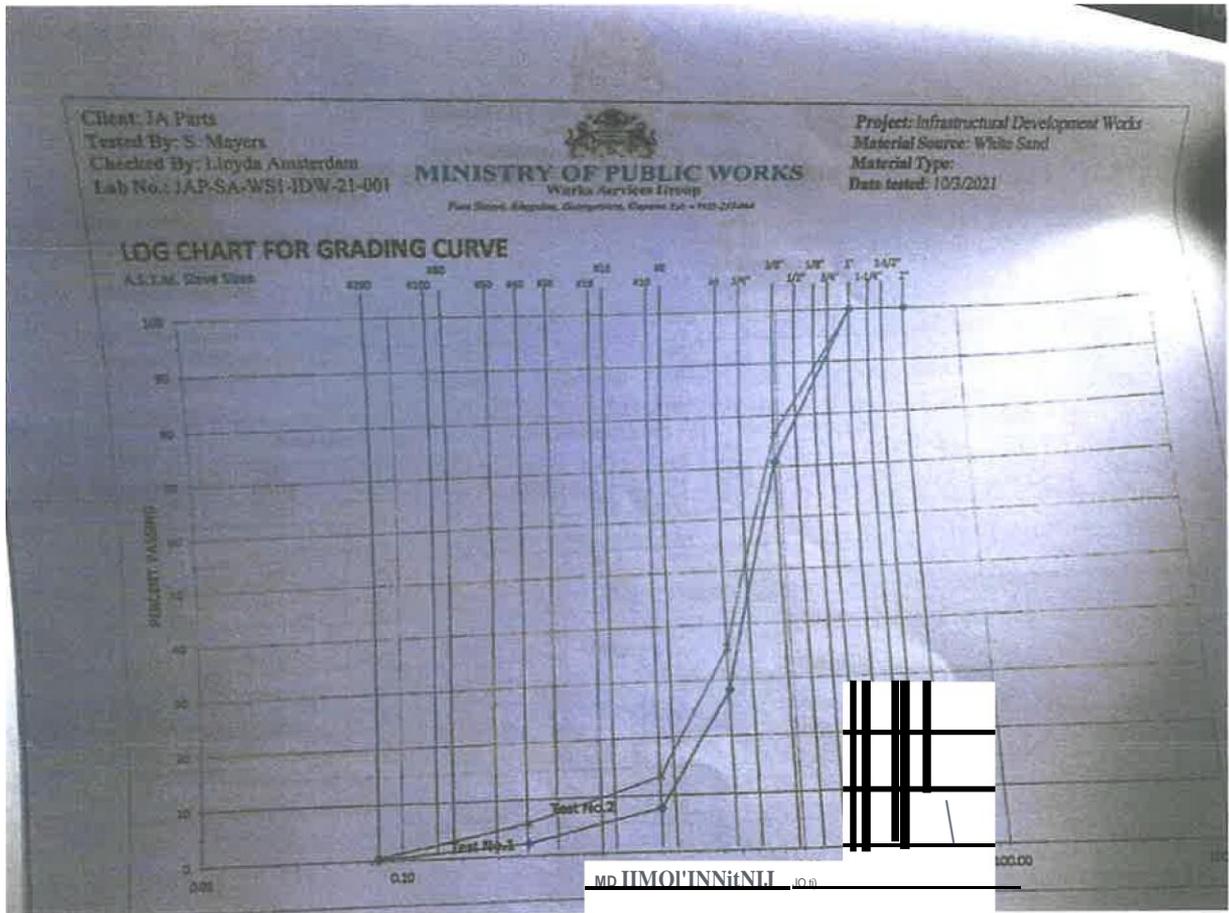
Tested By: R. Patterson

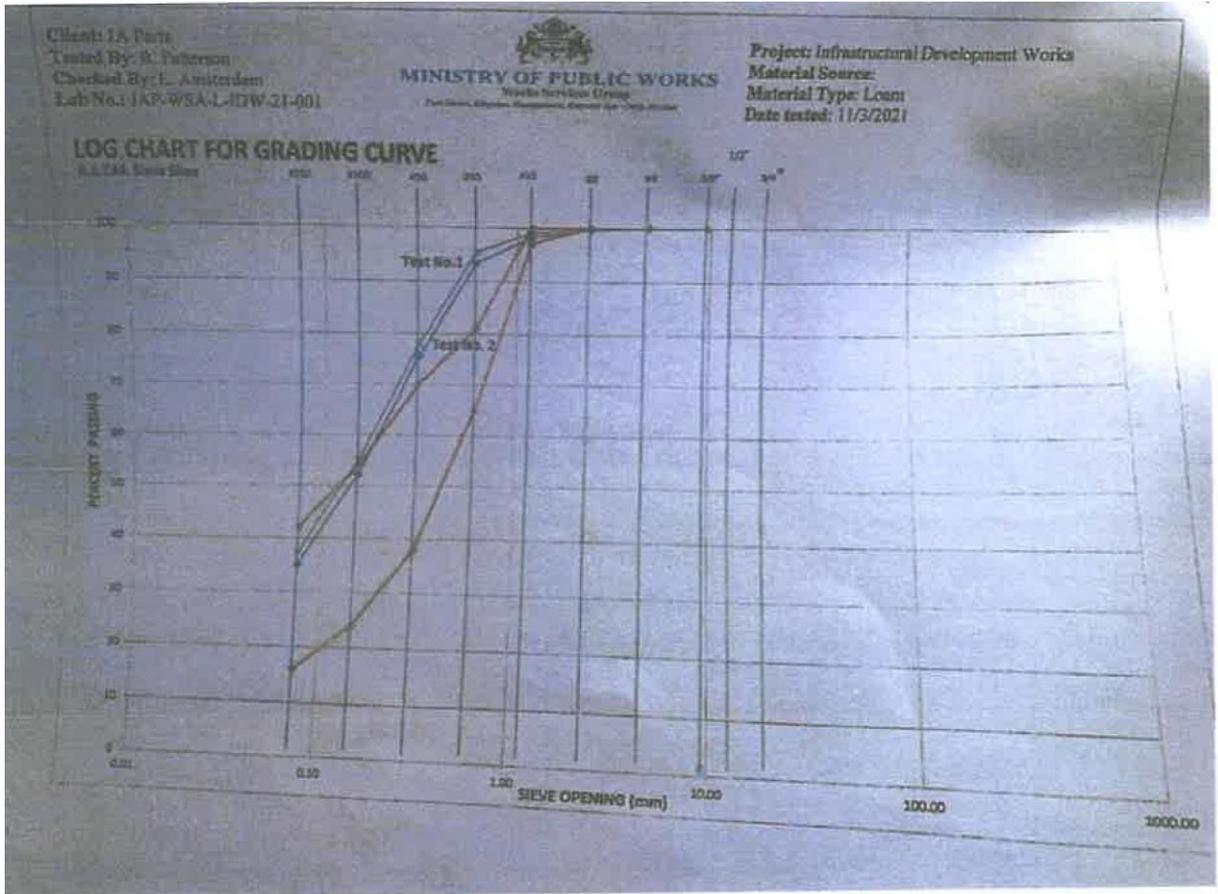
Computed By: AL

Verified By: Joseph H. Stank



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Appendix 4

Coordinates for the proposed block

	Points	Coordinates
A		<u>-58.28244, 6.64891</u>
B		<u>-58.26721, 6.64896</u>
C		<u>-58.26714, 6.65112</u>
D		<u>-58.27507, 6.65351</u>
E		<u>-58.28264, 6.65306</u>