REHABILITATION OF MINED/QUARRIED OUT LANDS IN JAMAICA

A LOOK AT THE CHALLENGES AND SUCCESSES

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OUTLINE

- Legislative framework
- Challenges/Concerns
- Initiatives taken to address these challenges/concerns
- Positive outcomes

LEGISLATIVE FRAMEWORK

- **Mine**: place where minerals are extracted for processing (there are currently11 mining leases)

- **Quarry**: place where quarry materials such as rock, stone, sand, limestone are extracted for construction purposes (there are currently approx.180 licensed quarries).

- Mines and quarries are monitored under different regulations (Mining Act, Mining Regulations and the Quarries Control Act)

- The National Environment and Planning Agency (NEPA) has national oversight for environmental matters

MAIN MINERALS/MATERIALS PRODUCED

Under Mining Leases

- Bauxite
- High purity limestone

Under Quarry Licences

- Limestone
- River aggregate
- Sand (on land and from rivers)

MAIN CHALLENGES/CONCERNS

MINES	QUARRIES
Some companies being tardy in the rehabilitation of mined out bauxite pits	Poor quarrying techniques often leading to the need for extensive remedial work to be done
Quality of some of the rehabilitation work done	Illegal quarries/Abandoned sites
Frequent changes in management of the companies affecting continuity	No institutional experience in revegetating quarries

INITIATIVES TAKEN (ON THE MINING SIDE)

- Amendments to the Mining Regulations in 2004
- Establishment of the National Restoration Committee in 2009
- Continuous review of the rehabilitation efforts of the bauxite/alumina companies.

AMENDMENTS TO THE MINING REGULATIONS IN 2004

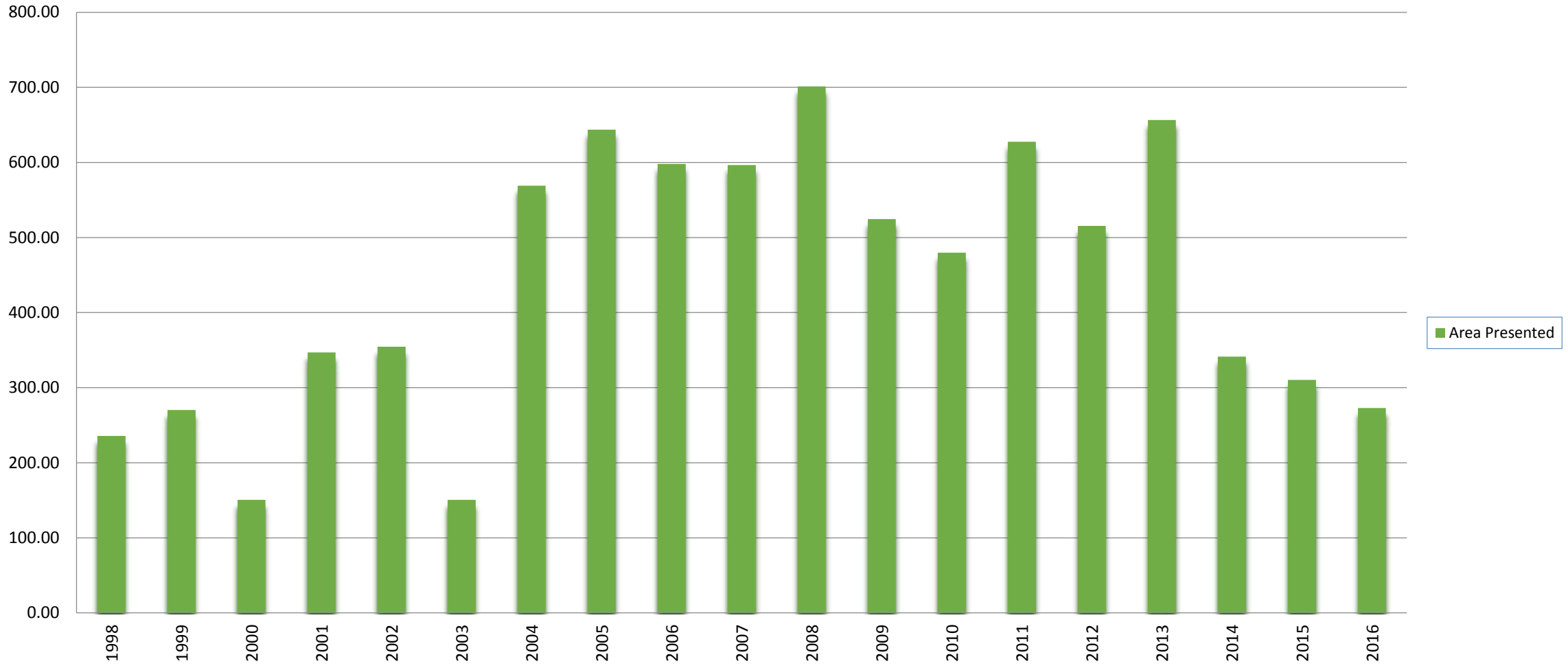
- Prior to August 31, 2004, there was no timeframe within which an ore body/pit had to be certified

- Ore bodies are to be certified within three years of being certified as mined out.

- Failure to meet this requirement attracts a penalty of US$25,000 per hectare and US$2,500 per hectare for each year that it remains uncertified.

✓This resulted in a significant increase in the area of lands presented for certification on an annual basis, and increased compliance from the companies.

AREA (HA) OF LANDS PRESENTED FOR CERTIFICATION SINCE 1998



ESTABLISHMENT OF THE NATIONAL RESTORATION COMMITTEE IN 2009

- This Committee is chaired by the Commissioner of Mines and has representatives from several agencies of government, the bauxite/alumina sector, and tertiary institutions.

- Guidelines for the rehabilitation of mined out bauxite lands have been developed and adopted.

- Guidelines for the rehabilitation of limestone quarries are being developed.

✓We have been able to learn how to utilize mined out lands in diverse ways through the several entities that have conducted research.

REVIEW THE REHABILITATION EFFORTS OF THE BAUXITE/ALUMINA COMPANIES

- These reviews are done on a company by company basis, and starts off with a meeting including senior management of the companies at the start of the calendar year.

- The work of the previous year is reviewed and plans for the current year are put forward. Field visits are then conducted at least twice throughout the year.

✓This has also led to significant improvement in the quality of the rehabilitation work done as we are able to provide immediate feedback and guidance while work is taking place.

INITIATIVES TAKEN (ON THE QUARRYING SIDE)

- Requirement for the posting of a restoration bond
- Amendments to the Quarries Control Act
- Demonstration project to revegetate a quarry

REQUIREMENT FOR THE POSTING OF A RESTORATION BOND

- Restoration bonds are posted by all applicants before a licence is granted (bond is calculated based on the area of the land and equipment mobilization costs). Progressive restoration is key.

- Where rehabilitation does not take place as prescribed, the Minister may authorize that the necessary rehabilitation work be effected using the bond and any additional amount be charged to the licensee.

✓This initiative puts pressure on the quarry operators to be compliant, so they can recoup the bond when the quarry closes.

AMENDMENTS TO THE QUARRIES CONTROL ACT

- The Quarries Control Act was amended in 2015.

- The amendments include a significant increase in fines/penalties for illicit quarrying.

- There is also a requirement that large quarries be managed by a quarry manager. This is to encourage and promote mine engineering, safety and health and environmental best practices.

✓ This is expected to increase compliance.

DEMONSTRATION PROJECT REVEGETATING A QUARRY

- Funding was obtained through a UNDP Sustainable Land Management project in 2012.

- Benches were established, holes were dug along the benches, and various types of seedlings were planted. It was found that calliandra grew best with significant growth seen after a year.

✓This has provided a model that can be replicated in other limestone quarries, especially the abandoned ones when sources of funding are identified.

REVEGETATION OF LIMESTONE QUARRY

SLIDESHOW

TYPICAL BAUXITE PIT

TOPSOIL FROM STRIPPING STORED FOR USE DURING RESTORATION

RESHAPING IN PROGRESS

TOPSOIL SPREAD OVER OREBODY

ORE BODIES REHABILITATED TO GRASS/CROPS

ORE BODIES REHABILITATED TO CROPS

Note the use of erosion control measures

ORE BODIES REHABILITATED TO WATER HARVESTING/GREENHOUSE PROJECT

ORE BODY REHABILITATED TO FOREST

ORE BODY REHABILITATED TO FOREST (2)

ORE BODY REHABILITATED TO CITRUS FARM

HOUSES BUILT ON BENCHES AFTER QUARRYING

SUMMARY OF POSITIVE OUTCOMES

Enforcing penalties for not rehabilitating lands within a specified timeframe	Increased compliance from the companies (as shown by a significant increase in the area of lands presented annually for certification).
Establishment of the National Restoration Committee	Utilization of mined out lands in diverse ways through the several entities that have conducted research (for example water harvesting to support greenhouses and castor bean).
Continuous review of the rehabilitation efforts of the bauxite/alumina companies.	Led to significant improvement in the quality of the rehabilitation work done as we are able to provide immediate feedback and guidance while work is taking place.

SUMMARY OF POSITIVE OUTCOMES (cont'd)

Requirement for the posting of a restoration bond for quarries	This initiative puts pressure on the quarry operators to be compliant, so they can recoup the bond when the quarry closes.
Amendments to the Quarries Control Act	This is expected to increase compliance.
Demonstration project to revegetate a quarry	This has provided a model that can be replicated in other limestone quarries, especially the abandoned ones when sources of funding are identified.

QUESTIONS/ COMMENTS?