DECOMMISSIONING PLAN
TOBICO MARCH SGA
KAWKAWLIN, MICHIGAN

APPENDIX J

Soil Fertility Data, Technical Memo #6

JANUARY 2004

MACTEC

DATE: January 15, 2003
PROJECT: Tobico Marsh State Game Area
SUBJECT: Soil Characterization for Determination of Potential Agricultural Land Use
PREPARED BY: Joseph DeGrazia, MACTEC Engineering and Consulting of Michigan, Inc.

INTRODUCTION

This technical memorandum describes the field activities performed by MACTEC Engineering and Consulting of Michigan, Inc. (MACTEC) during the soil sampling event at the Tobico Marsh State Game Area (site) site located in the Bay City, Michigan. This soil sampling event occurred in January 2003.

Soil samples were submitted to Michigan State University (MSU) Soil and Plant Nutrient Laboratory (via the Bay County MSU Extension Center) located in East Lansing, Michigan, for analysis of general soil chemistry and soil type/composition.

SCOPE OF WORK

MACTEC collected two composite soil samples from four locations from the site.

SCHEDULE

The soil sampling event was conducted January 15, 2003.

PERSONNEL

The following MACTEC personnel were on site during portions or all of the field work activities:

Name (company)	Title or Position
Joseph DeGrazia (MACTEC)	Project Geologist

FIELD PROCEDURES

The site was divided into two sections, north and south. One composite soil sample was collected from two locations in the north sections, and one composite soil sample was collected from two locations in the south section.

Sampling Methodology

The MSU Extension Center informed MACTEC that a minimum of one soil sample with a minimum "plow depth" of 6-inches would be needed based on the size of the site (approximately 3 acres). The MSU Extension Center also informed MACTEC that, if possible, it would be more beneficial to take a composite sample from multiple locations to acquire a more representative sample MACTEC divided the site into two sections; a north section and a south section. Within those two sections, two locations were identified for soil collection.

Soil samples were collected using a stainless steel hand auger with a 3-inch bucket. Each sample was collected from a "plow depth" of 9-inches and placed in a stainless steel bowl. The two soil samples, from each section, were made into one composite sample. A total of two composite soil samples were submitted to the MSU Extension Center.

RESULTS

Based on the results from the January 2003 soil sampling event, it is recommended that extensive soil fertilization would be needed for possible crop (corn-grain) production. A corn-grain type crop was used as a baseline due to past and present crops in the area. Fertilizer recommendations included Nitrogen (N), Phosphate (P2O5), and Potash (K2O).

The soil is classified as a clay loam with a composition of approximately 34-percent sand, 30-percent silt, and 36-percent clay, with a pH of 8.3. Soil test results are summarized in Table TM6-1.

SOIL FERTILIZATION DATA

MICHIGAN STATE UNIVERSITY SOIL AND PLANT NUTRIENT LABORATORY

Service Provided For: TOBICO
46850 MAGELLAN DRIVE
NOVI, MI
48377
County: Bay

Date Recv: 1/15/3
Date Sent: 1/20/3
Lab No.: 327-05137
Consultant: Co MSU Extension

SOIL TEST INFORMATION

Sample No.: SOIL1
Soil Type : Mineral-fine texture
Prev. Crop: No Crop Intended

Plow Depth: 9 inches
Field:
Acres:

Manure: No
Type:

SOIL TEST RESULTS

Soil pH 8.3 Lime Index:

		Percent Bases	Fertility Index for Crop 1 -- Low --- Medium --- High --
Phosphorus	17 ppm (34)		**********
Potassium	75 ppm (150)	1%	**********
Calcium	3762 ppm (7524)	89%	**********
Magnesium	260 ppm (520)	10%	**********
Manganese	260.0 ppm		**********
Organic Matter	1.1 %		

Cation exchange capacity 21.2 me/100g
+ Values in parenthesis are lb/A

FERTILIZER RECOMMENDATIONS

Crop 1: Corn-Grain
Yield 1: 140.0 bu/acre

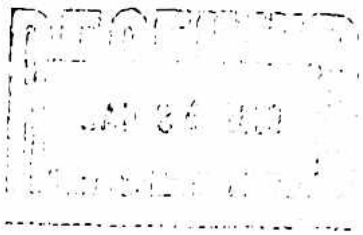
	(lb/A)
Nitrogen (N)	165.
Phosphate (P2O5)	50.
Potash (K2O)	125.
Manganese	.0
Lime crop to pH	6.5
Lime recommendation	0.0 tons/A

SPECIAL NOTES FOR CROP 1 (CORN-GRAIN)

A soil test for zinc may be advisable.
Use a high N starter fertilizer (30-40 lb N/A) when planting in heavy residue
These are tri-state fertilizer recommendations. Potash recommendations are based on four factors; yield goal, soil test K, crop removal and CEC.

Nitrate-N = 1.3 ppm
Ammonium-N = 1.2 ppm

% Sand = 34.4
% silt = 30.2
% clay = 35.4
Soil Type = clay loam



Ag Agent. John Burk
8-12pm

MICHIGAN STATE UNIVERSITY SOIL AND PLANT NUTRIENT LABORATORY

Service Provided For: TOBICO
46850 MAGELLAN DRIVE
NOVI, MI
48377

Date Recv: 1/15/3
Date Sent: 1/20/3
Lab No.: 327-05138
Consultant: Co MSU Extension

County: Bay

SOIL TEST INFORMATION

Sample No.: SOIL2
Soil Type : Mineral-fine texture
Prev. Crop: No Crop Intended

Plow Depth: 9 inches
Field:
Acres:

Manure: No
Type:

SOIL TEST RESULTS

Soil pH 8.4	Lime Index:	Percent Bases	Fertility Index for Crop 1 -- Low --- Medium --- High --
Phosphorus (Olsen)	26 ppm (53)		**********
Potassium	70 ppm (140)	1%	**********
Calcium	3619 ppm (7238)	89%	**********
Magnesium	250 ppm (500)	10%	**********
Manganese	280.0 ppm		**********
Organic Matter	.4 %		

Cation exchange capacity 20.4 me/100g
+ Values in parenthesis are lb/A

FERTILIZER RECOMMENDATIONS

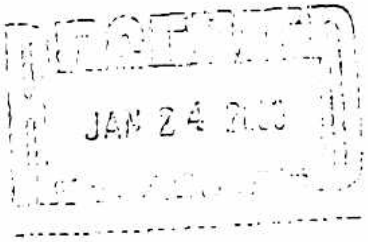
Crop 1: Corn-Grain
Yield 1: 140.0 bu/acre

	(lb/A)
Nitrogen (N)	165.
Phosphate (P2O5)	0.
Potash (K2O)	130.
Manganese	.0
Lime crop to pH	6.5
Lime recommendation	0.0 tons/A

SPECIAL NOTES FOR CROP 1 (CORN-GRAIN)

A soil test for zinc may be advisable.
The P recommendation for this calcareous soil was determined using the Olsen P test.
Use a high N starter fertilizer (30-40 lb N/A) when planting in heavy residue
A small amount of phosphate (20-30 lb P2O5/A) may be banded as a starter fertilizer when planting in heavy residues.
These are tri-state fertilizer recommendations. Potash recommendations are based on four factors; yield goal, soil test K, crop removal and CEC.

Nitrate-N = 1.2 ppm
Ammonium-N = 1.1 ppm



% sand = 32.8
% silt = 29.8
% clay = 37.4
soil type = clay loam