



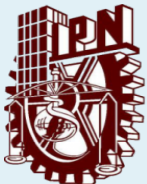
# Bordo Poniente Composting Facility in Mexico City: 2,500 ton/day of Feedstock Producing 500 ton/day of Compost.

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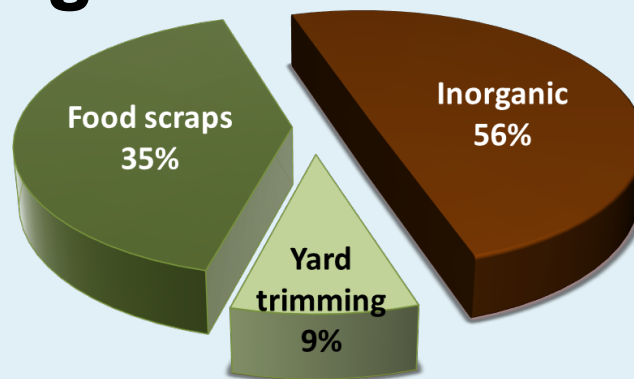
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# INTRODUCTION

- Mexico City generates about 12,500 ton/day of MSW, 44% of it corresponds to food scraps and yard trimmings.
- The Bordo Poniente Composting Plant (PCBP) was processing 50 ton/day of organics in 2009 and today is processing 2,500 ton/d in an area of 74.7 acres yielding 500 ton/day of compost.
- Bordo Poniente stage IV landfill was closed on December 2011.





# PCBP in 2003



**PCBP=COMPOSTING PLANT AT  
BORDO PONIENTE, MEXICO CITY**

# PCBP in 2012





# NEW EQUIPMENT PURCHASED FOR THE PCBP





# LOCATION

Office area = 2.5 ac.

MRF plant  
area = 17.12 ac.

Processing area = 74.7 ac.

Bordo Poniente  
Stage IV Landfill



# THE LAW OF WASTE SOLIDS WAS PUBLISHED IN 2003 AND ENFORCED IN 2011



Image © 2009 DigitalGlobe  
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**MEXICO CITY HAS A POPULATION OF 8.9 M BUT THE POPULATION OF THE METROPOLITAN AREA, INCLUDING THE CITY, REACHES ABOUT 21 M.**

**BPIV WAS CLOSED ON DECEMBER 2011 SINCE MARCH 2011, THE CITY INITIATED A SORTING AT THE SOURCE PROGRAM THAT INCLUDES HOUSEHOLDS, PUBLIC MARKETS, STORES, HOTELS, ETC.**

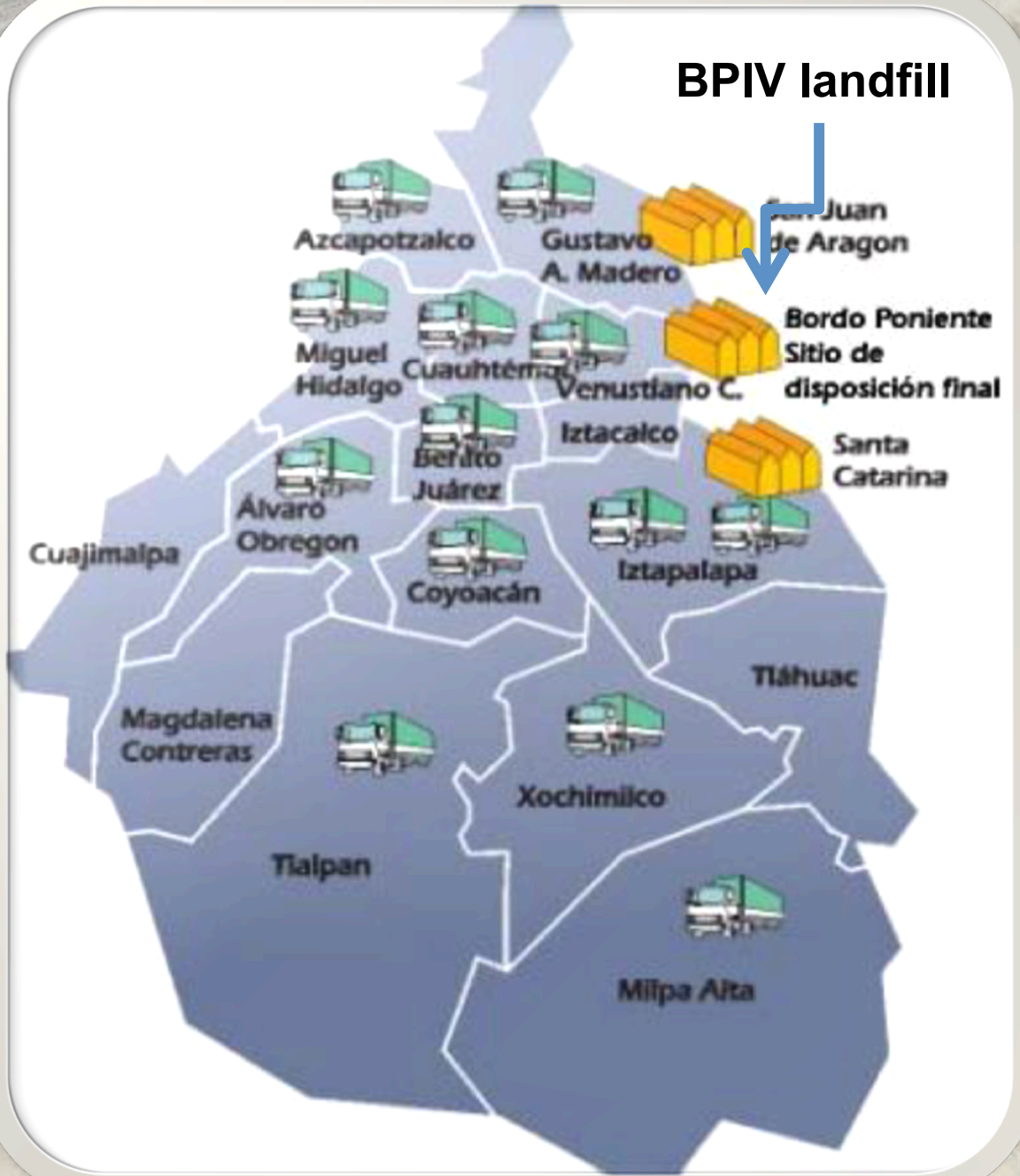




**M,W,F,S → NON BIODEGRADABLE; T,Th, S → FOOD SCRAPS AND YARD TRIMMINGS**



# BPIV landfill

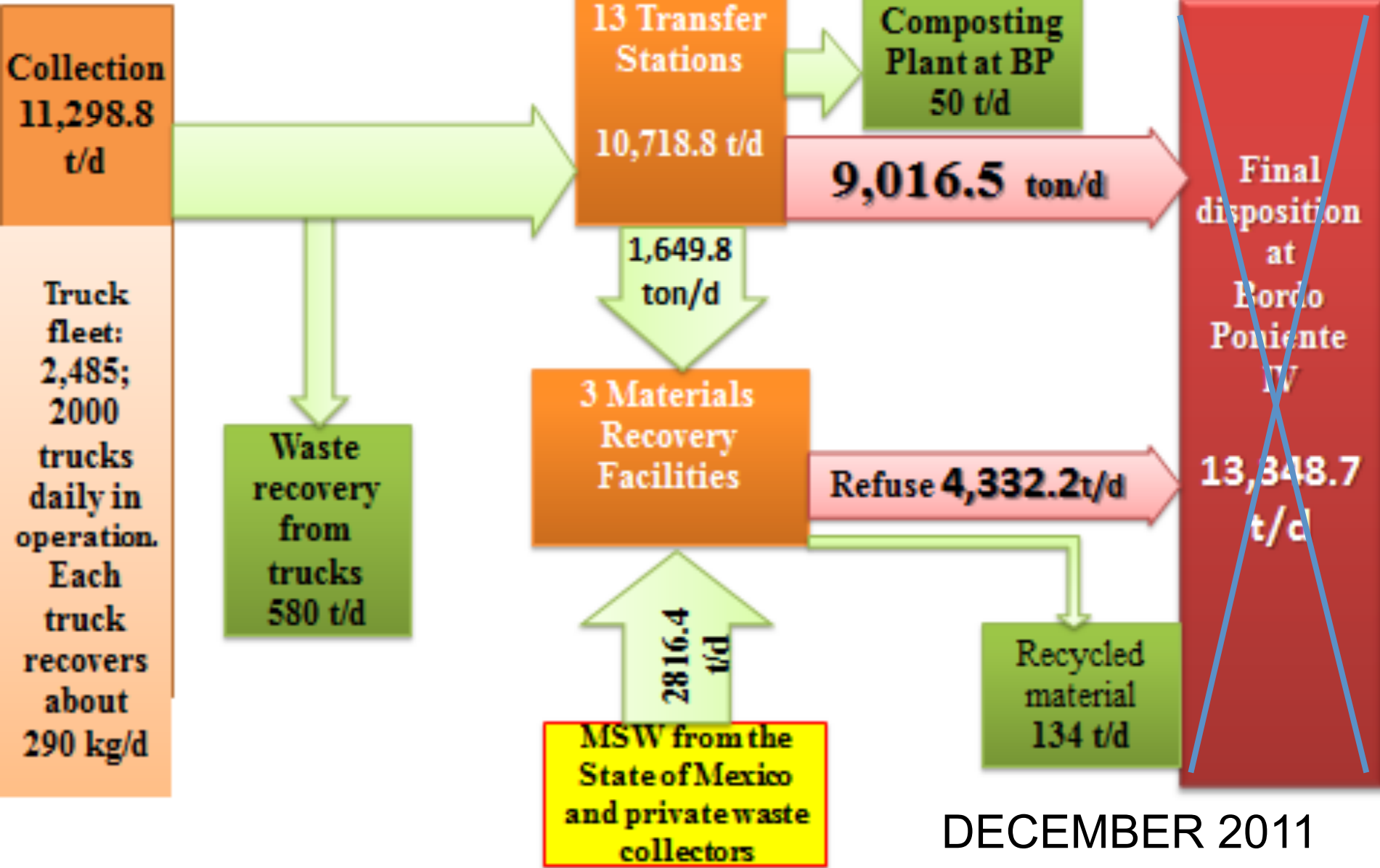


Altitude: 2,240 m

Area: 1,485 km<sup>2</sup>



# Waste flow in Mexico City in 2009

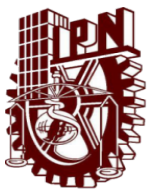


DECEMBER 2011

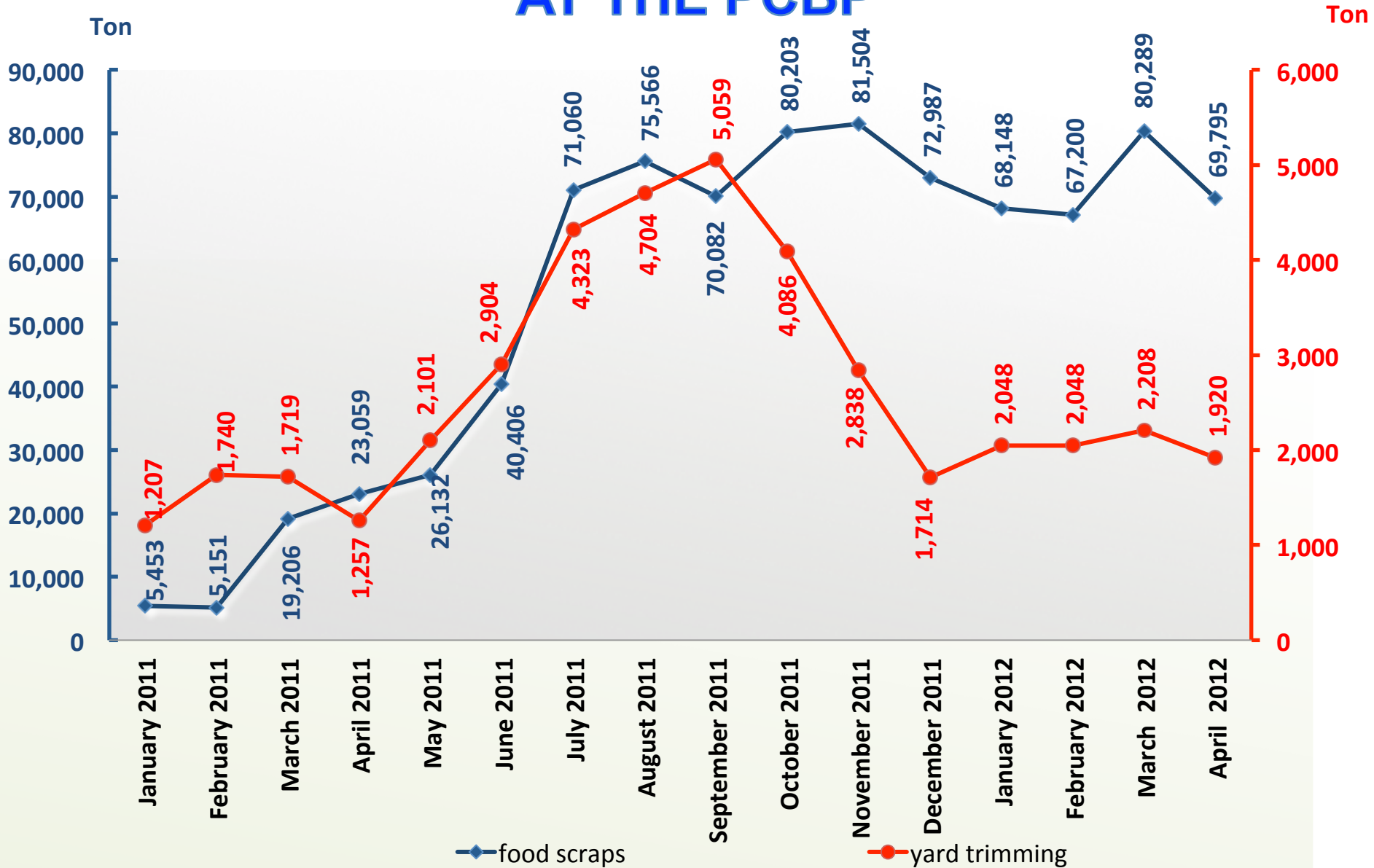


**CHAMBER TO JUAREZ, DECEMBER 29, 2011**





# MONTHLY FOOD SCRAPS AND YARD TRIMMING STREAMS ARRIVING AT THE PCBP





# FOOD SCRAPS AND YARD TRIMMING ARRIVING DAILY AT THE PCBP



Year/Month	Average ton/day
2011/January	215
February	246
March	675
April	811
May	911
June	1,444
July	2,432
August	2,589
September	2,505
October	2,719
November	<b>2,811</b>
December	2,410
2012/January	2,264
February	2,388
March	2,661
April	2,390



# OBJECTIVE

- **EVALUATE THE QUALITY OF COMPOST PRODUCED AT THE PCBP**
- **PROFEPA ASKED THE GDF FOR IT.**





# METHODS



Parameter	Units	Method
Sampling		TMECC 02.01-B. Field sampling of compost
pH		TMECC 04.11. 2002. Electrometric pH determinations for compost.
Electric Conductivity	dS/m (mmhos/cm)	TMECC 04.10. 2002. Electrical conductivity for compost.
Total solids	% dry weight	TMECC 03.09-A. 2001. Total solids and
Moisture	%	moisture at 70±5°C.
Apparent density	kg /m <sup>3</sup>	Mass/volume
Organic matter	% dry weight	TMECC 05.07. 2001. Organic matter.
Organic Carbon	% dry weight	TMECC Method 04.01. 2001. Organic carbon.
Total nitrogen	% dry weight	TMECC 04.02. 2002. Nitrogen
Ammonium	mg/kg dry weight	TMECC Method 04.02. 2002. Nitrogen.
Nitrate	mg/kg dry weight	TMECC Method 04.02. 2002. Nitrogen.
Elemental analysis CHON	mg/kg dry weight	Combustion CO <sub>2</sub> detection



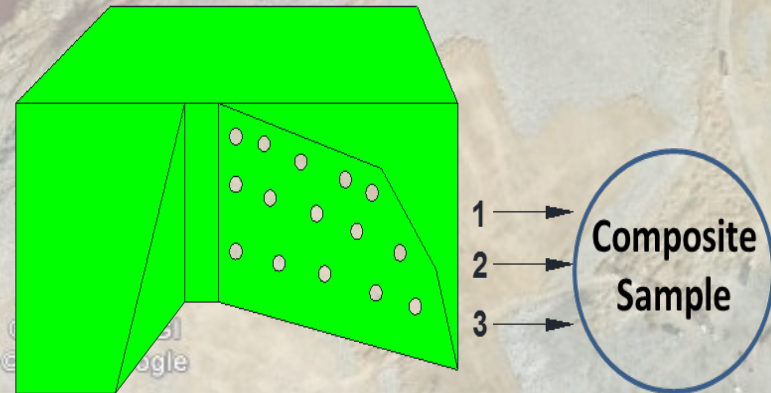
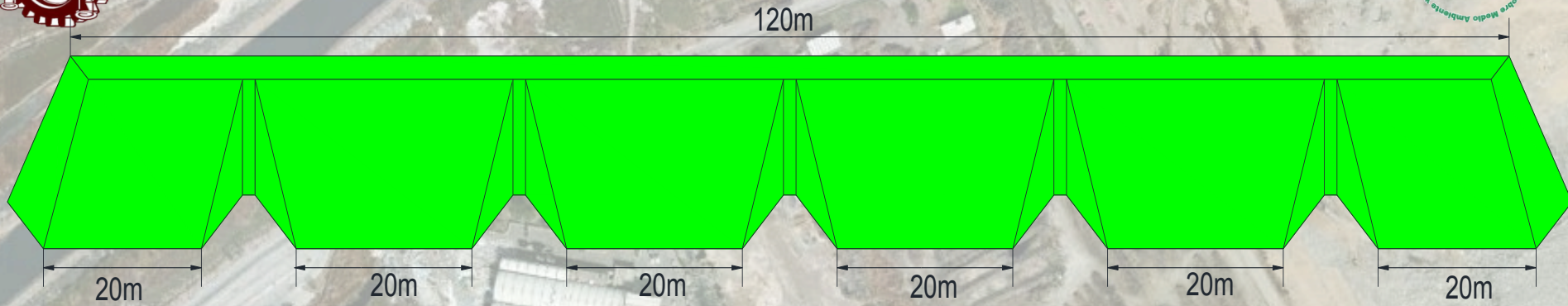
# METHODS



Parameter	Units	Method
Mg, Ca, K, Na, Fe, Mg	mg/kg dry weight	ICP US EPA 6010A
As, Be, Cd, Co, Cr, Cu, Hg, Mn, Mo, Ni, P, Pb, Sb, Se, Sr, Ti, V y Zn		
Stability	Stability Index	Solvita®
Maturity	<ol style="list-style-type: none"><li>1. Maturity Index</li><li>2. pH <math>\geq</math> 6.5</li><li>3. % Seed germination</li></ol>	<ol style="list-style-type: none"><li>1. Solvita®</li><li>2. Nch 2880 Chile</li><li>3. Phytotoxicity</li></ol>
Fecal Coliforms	MPN/g	NOM-112-SSA1-1994
Salmonella and Shigella	CFU/g	NOM-113-SSA1-1994



# SAMPLING





# RESULTS



Parameter	Units	Compost PCBP	NADF-020 México	CCQC U.S.	Nch2880 Chile
pH	Units	<b>5.6 ± 0.05</b>	<b>6.5-8.0</b>	<b>6.5-8.0</b>	<b>6.0-8.5</b>
Organic Matter	%	<b>44.9 ± 1.6</b>	<b>&gt;25</b>	<b>&gt;35</b>	<b>≥25</b>
Organic Carbon	%	<b>25 ± 0.3</b>	-	-	-
Total nitrogen	%	<b>1.57 ± 0.02</b>	-	<b>&gt;0.9</b>	-
C/N Ratio		<b>15.92</b>	<b>&gt;25</b>	<b>&gt;25</b>	<b>10-40</b>



# RESULTS



Parameter	Units	Compost PCBP	NADF-02 0 México	CCQC U.S.	Nch2880 Chile
Stability	Stability index Solvita®	7	5-7	7-8	7-8
Maturity	Anaerobic conditions and pH ≥ 6.5	7.59 ± 0.19	-	-	>6.5
	Seed germination %	83.3	80-90	80-90	90
Fecal coliforms	MPN/ g TS	N.D.	<1000	<1000	<1000
Salmonella and Shigella	MPN/ 4 g TS	N.D.	<3	<3	<3

N.D. = Not detected



N.D. = Not detected

# RESULTS



Parameter	Units	Compost PCBP	NADF-020 México	CCQC U.S.	Nch2880 Chile
As	(mg/kg dry weight)	1.68	0.1-2.0	<16	≤15
Be		N.D.	-	-	-
Cd		N.D.	0.7-3.0	<8	≤2
Co		2.90	-	-	-
Cr		7.08	70-250	<100	-
Cu		23.13-55.89	70-500	<400	≤100
Hg		N.D.	0.4-3.0	<4	≤1
Mn		82.71-144.04	-	-	-
Mo		6.63	-	-	≤2
Ni		10.28	25-100	<80	≤20
Pb		22.03-67.40	45-200	<100	≤100
Sb		5.60	-	-	-
Se		4.45	-	<5	-
Sr		64.07-104.87	-	-	-
V		16.84	-	-	-
Ti		74.97-112.48	-	-	-
Zn		89.90-124.11	200-1800	<500	≤200





# NATIONAL PARK DESIERTO DE LOS LEONES, MEXICO CITY



1,867 ha





# CONCLUSIONS

- The compost made at PCBP meets the parameters established by the standards except the C/N ratio; C↑.
- The absence of heavy metals, pathogens as well as the appropriate maturity and stability of the compost was evidence that the process was carried out properly, despite the volumes handled.



Recycling of non biodegradable items in  
the MSW ↑  
CH<sub>4</sub> emissions ↓  
Odor nearby the PCBP ↑  
BUT THE MAIN ACHIVEMENT SO FAR →  
**THE SORTING AT A SOURCE  
PROGRAM**

**THANK YOU!**

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