

TABLE 3-1
KEY ENVIRONMENTAL, HEALTH AND SAFETY REGULATORY REQUIREMENTS

<i>Air Quality Regulatory Requirements</i>	<ul style="list-style-type: none"> • Regulation of the General Law of Ecological Equilibrium and Environmental Protection on the Matter of Prevention and Control of Atmospheric Pollution ("<i>Reglamento de la Ley del Equilibrio Ecológico y Protección al Ambiente en Materia de Prevención y Control de la Contaminación de la Atmosfera</i>"). • Solid particulate from stationary sources (NOM-043-ECOL-1993). • Maximum permissible limits of smoke, total suspended particulate, SO₂, and NO_x from stationary sources (NOM-085-ECOL-1994). • Environmental specifications for liquid and gaseous fossil fuels used in stationary and mobile sources (NOM-086-ECOL-1994). • Ambient air quality with respect to ozone (O₃) concentration value determined to safeguard the public health (NOM-020-SSAI-1993). • Ambient air quality with respect to CO for protection of the public health (NOM-021-SSAI-1993). • Ambient air quality with respect to SO₂ (NOM-022-SSAI-1993). • Ambient air quality with respect to NO₂ (NOM-023-SSAI-1993). • Ambient air quality with respect to total suspended particulate (NOM-024-SSAI-1993). • Ambient air quality with respect to particulate matter smaller than 10 micrometers (NOM-025-SSAI-1993).
<i>Water Quality Regulatory Requirements</i>	<ul style="list-style-type: none"> • Federal Law of Rights Related to Waters ("<i>Ley Federal de Derechos en Materia de Agua</i>"). • Law of National Waters ("<i>Ley de Aguas Nacionales</i>"). • Regulations of Law of National Waters ("<i>Reglamento de la Ley de Aguas Nacionales</i>"). • Ecological criteria on water quality (CE-CCA-001). • Maximum permissible limits of pollutants in wastewater discharges to rivers and national waters (NOM-001-ECOL-1996). • Maximum permissible limits of pollutants in wastewater discharges to municipal sewer systems (NOM-002-ECOL-1996).
<i>Noise Emission Regulatory Requirements</i>	<ul style="list-style-type: none"> • Regulations of Protection of Environment Against Noise Emission ("<i>Reglamento para la Prevención Ambiental Contra la Contaminación Originada por la Emisión de Ruido</i>"), November 29, 1982. • Noise emission from stationary sources (NOM-081-ECOL-1994).
<i>Endangered Species Regulatory Requirements</i>	<ul style="list-style-type: none"> • Ecological criteria to determine which species are endangered, rare, on the verge of extinction, or subject to special protection (NOM-059-ECOL-1994).
<i>Hazardous Waste Regulatory Requirements</i>	<ul style="list-style-type: none"> • Regulation of General Law of Ecological Equilibrium and Environmental Protection on Matter of Hazardous Waste ("<i>Reglamento de la Ley del Equilibrio Ecológico y Protección al Ambiente en Materia de Residuos Peligroso</i>"). • Hazardous wastes characteristics and list (NOM-052-ECOL-1993). • Requirements of sites destined for the final confinement of municipal solid waste (NOM-083-ECOL-1996).

TABLE 3-1
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<i>Health and Safety Regulatory Requirements</i>	<ul style="list-style-type: none"> • Federal Regulations of Safety, Hygiene, and Work Environment (“<i>Reglamento Federal de Seguridad e Higiene y Medio Ambiente en el Trabajo</i>”). • Health and safety conditions in buildings, sites, facilities and areas of work centers (NOM-001-STPS-1993) and the proposed changes published on May 21, 1999. • Safety conditions for fire prevention and protection(NOM-002-STPS-1994). • Protective system and safety devices (NOM-004-STPS-1999) and its clarification published on July 7, 1999. • Safety conditions for flammable and combustible substances in work centers (NOM-005-STPS-1998). • Health and safety conditions in work centers (NOM-009-STPS-1993). • Health and safety conditions in work centers where chemicals are manufactured, stored or handled (NOM-010-STPS-1993). • Health and safety conditions in workplaces where noise is generated (NOM-011-STPS-1993). • Health and safety in work centers where ionizing radiation is generated or emitted (NOM-012-STPS-1993) and the proposed changes published on January 1, 1999. • Health and safety conditions in work centers where non-ionizing electromagnetic radiation is generated (NOM-013-STPS-1993) and the clarification published on February 23, 1996. • Health and safety conditions for work conducted under abnormal environmental pressures (NOM-014-STPS-1993). • Occupational exposure to elevated or reduced thermal conditions (NOM-015-STPS-1994). • Personal protection equipment for workers in workplaces (NOM-017-STPS-1994). • Requirements and characteristics of showers, locker rooms, and lockers (NOM-018-STPS-1993). • Formation and operation of safety and hygiene committees (NOM-019-STPS-1993). • Medication, first aid materials, and first aid personnel (NOM-020-STPS-1994). • Occupational hazard occurrence reports (NOM-021-STPS-1994). • Safety conditions in which static electricity represents a hazard (NOM-022-STPS-1999). • Safety colors and their application (NOM-026-STPS-1998). • Health and safety conditions for the operation of pressurized containers and steam generators or boilers (NOM-122-STPS-1996) and the clarification published on October 22, 1997.
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TABLE 3-2
AIR QUALITY EMISSIONS STANDARDS⁽³⁾

Pollutant	Design Maximum	Mexican Standards	World Bank	USEPA New Source Performance Standards
Sulfur Dioxide (SO ₂)	⁽¹⁾	NA	2,000 mg/m ³ (120 tons per day)	150 ppm
Nitrogen Dioxide (NO ₂)	137.35 mg/Nm ³ (67 ppm)	705.5 mh/Nm ³ (375 ppm)	750 mg/Nm ³	75 –150 ppm ⁽²⁾
Particulate Matter (PM)	50 mg/Nm ³	NA	50 mg/m ³	11.1 mg/Nm ³ (0.03 Lb/MMBtu)
<p>Notes: ⁽¹⁾ The exclusive use of natural gas will result in low sulfur dioxide emissions.</p> <p>⁽²⁾ Standard varies with fuel-bound nitrogen.</p> <p>⁽³⁾ ppm - parts per million (volume) mg/m³ – milligrams per cubic meter Lb/MMBtu – pounds per million Btu</p> <p>NA Not applicable.</p>				

TABLE 3-3
MEXICAN AMBIENT AIR QUALITY STANDARDS ⁽¹⁾

Pollutant	Averaging Time	Concentration Limit		Regulation
Sulfur Dioxide (SO ₂)	24-hour	341 µg/m ³	0.13 ppm	NOM-022-SSA1-1993
	Annual	79 µg/m ³	0.03 ppm	
Nitrogen Dioxide (NO ₂)	1-hour	395 µg/m ³	0.21 ppm	NOM-023-SSA1-1993
Total Suspended Particulate	24-hour	260 µg/m ³		NOM-024-SSA1-1993
	Annual	75 µg/m ³		
Fine Particulate (PM ₁₀)	24-hour	150 µg/m ³		NOM-025-SSA1-1993
	Annual	50 µg/m ³		
Carbon Monoxide (CO) ⁽²⁾	8-hour	12,595 µg/m ³	11.0 ppm	NOM-021-SSA1-1993
Ozone (O ₃) ⁽³⁾	1-hour	216 µg/m ³	0.11 ppm	NOM-020-SSA1-1993
Lead	3-month	1.5 µg/m ³		NOM-026-SSA1-1993
Notes: ⁽¹⁾ µg/m ³ – micrograms per cubic meter; ppm – parts per million. ⁽²⁾ The CO standard is a rolling average not to be exceeded more than once per year. ⁽³⁾ The ozone standard is not to be exceeded more than once per year over a three-year period.				

TABLE 3-4-1
MEXICAN POLLUTANT LIMITS IN WASTEWATER DISCHARGES TO NATIONAL WATER BODIES FOR BASIC POLLUTANTS (NOM-001-ECOL-1996)

Basic Pollutant Maximum Pollutant Limit (MPL) ⁽²⁾																					
Parameter (Except Where Indicated, Use mg/l) ⁽¹⁾	Water Body																Soil				
	River						Natural and Artificial Bodies				Sea Shore Waters										
	Use for Agricultural Irrigation		Public Urban Use		Aquatic Life Protection		Use for Agricultural Irrigation		Public Urban Use		Fisheries Navigation & Other Uses		Recreation		Estuaries		Use for Agricultural Irrigation		Natural Wetlands		
	(A)		(B)		(C)		(B)		(C)		(A)		(B)		(C)		(A)		(B)		
Temperature (°C) ⁽³⁾	NA ⁽⁶⁾	NA	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	NA	NA	40	40
Oil and Grease ⁽⁴⁾	15	25	15	25	15	25	15	25	15	25	15	25	15	25	15	25	15	25	15	25	
Floating Material ⁽⁵⁾	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Settleable Solids	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	NA	NA	
Total Suspended Solids (TSS)	150	200	75	125	40	60	75	125	40	60	150	200	75	125	75	125	75	125	NA	NA	
Biochemical Oxygen Demand (BOD)	150	200	75	150	30	60	75	150	30	60	100	200	75	150	75	150	75	150	NA	NA	
Total Nitrogen	40	60	40	60	15	25	40	60	15	25	NA	NA	NA	NA	15	25	15	25	NA	NA	
Total Phosphorous	20	30	20	30	5	10	20	30	5	10	NA	NA	NA	NA	5	10	5	10	NA	NA	
Notes:	<div><div>(1)</div><div>(2)</div><div>(3)</div><div>(4)</div><div>(5)</div><div>(6)</div></div> <div>mg/l – milligrams per liter</div> <div>(A), (B) & (C) - Type of Receiving Body in accordance with Mexican Federal Rights Law</div> <div>Instantaneous</div> <div>Grab sample weighted average</div> <div>Absent according to NMX-AA-006 test method</div> <div>NA - Not applicable</div>																				

TABLE 3-4-2

Heavy Metals and Cyanides Maximum Pollutant Limit (MPL) ⁽²⁾																				
Parameter (⁽¹⁾ mg/l)	Water Body																Soil			
	River						Natural and Artificial Dams				Sea Shore Waters									
	Use for Agricultural Irrigation		Public Urban Use		Aquatic Wild Life Protection		Use for Agricultural Irrigation		Public Urban Use		Fisheries and Sail		Recreation		Estuaries		Use for Agricultural Irrigation ³		Natural Wetlands	
	(A)		(B)		(C)		(B)		(C)		(A)		(B)		(B)		(A)		(B)	
Arsenic	0.2	0.4	0.1	0.2	0.1	0.2	0.2	0.4	0.1	0.2.	0.1	0.2	0.2	0.4	0.1	0.2	0.2	0.4	0.1	0.2
Cadmium	0.2	0.4	0.1	0.2	0.1	0.2	0.2	0.4	0.1	0.2	0.1	0.2	0.2	0.4	0.1	0.2	0.05	0.1	0.1	0.2
Cyanide ⁽³⁾	2.0	3.0	1.0	2.0	1.0	2.0	2.0	3.0	1.0	2.0	1.0	2.0	2.0	3.0	1.0	2.0	2.0	3.0	1.0	2.0
Copper	4.0	6.0	4.0	6.0	4.0	6.0	4.0	6.0	4	6.0	4	6.0	4.0	6.0	4.0	6.0	4	6.0	4.0	6.0
Chromium	1	1.5	0.5	1.0	0.5	1.0	1	1.5	0.5	1.0	0.5	1.0	1	1.5	0.5	1.0	0.5	1.0	0.5	1.0
Mercury	0.01	0.02	0.005	0.01	0.005	0.01	0.01	0.02	0.005	0.01	0.01	0.02	0.01	0.02	0.01	0.02	0.005	0.01	0.005	0.01
Nickel	2	4	2	4	2	4	2	4	2	4	2	4	2	4	2	4	2	4	2	4
Lead	0.5	1	0.2	0.4	0.2	0.4	0.5	1	0.2	0.4	0.2	0.4	0.5	1	0.2	0.4	5	10	0.2	0.4
Zinc	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20	10	20
Notes:	⁽¹⁾ mg/l – milligram per liter ⁽²⁾ (A), (B) & (C) – Water Body Type in accordance with Mexican Federal Rights Law. ⁽³⁾ Measured as total																			

TABLE 3-5
WORLD BANK EFFLUENTS FROM THERMAL POWER PLANTS

Parameter	Maximum Value
PH	6 – 9
Total suspended solids	50 milligrams per liter (mg/l)
Oils and grease	10 mg/l
Total residual chlorine ⁽¹⁾	0.2 mg/l
Chromium (total)	0.5 mg/l
Copper	0.5 mg/l
Iron	1.0 mg/l
Zinc	1.0 mg/l
Temperature increase at the edge of the mixing zone	Less than or equal to 3°C ⁽²⁾
<p>Notes: ⁽¹⁾ So-called “chlorine shocking” may be preferable in certain circumstances. This involves using high chlorine levels from a few seconds rather than a continuous low level release. The maximum value is 2 mg/l for up to 2 hours, not to be repeated more frequently than once in 24 hours, with a 24 hour average of 0.2 mg/l (the same limits would apply to bromine and fluorine).</p> <p>⁽²⁾ The effluent should result in a temperature increase of no more than 3°C at the edge of the zone where initial mixing and dilution takes place. Where the zone is not defined, use 100 m from the point of discharge when there are no sensitive aquatic ecosystems within this distance.</p>	

TABLE 5-1
MONTERREY III POWER PLANT STACK CHARACTERISTICS

Stack Height	45 meters
Stack Diameter	5.2 meters
Exit Temperature	383 degrees kelvin
Exit Velocity	19.58 meters per second
Nitrogen oxides emission rate	19.88 grams per second per turbine
Carbon monoxide emission rate	14.28 grams per second per turbine
Particulate matter emission rate	20.79 grams per second per turbine
Source - Iberdrola (April 2000); UNAM (April 2000)	

TABLE 5-2
DISPERSION MODELING RESULTS ($\mu\text{g}/\text{m}^3$) ^{(1) (4)}

Scenario	Averaging Period	Predicted Increase	Baseline Value	Total	Mexican AAQS ⁽²⁾	World bank Guidelines
One-hour NO ₂ - Maximum Project Impact	1-hour	117.1	196.2	313.9	395	N/A ⁽³⁾
One-hour NO ₂ - Maximum Baseline	1-hour	7.8	358.0	366.0	395	N/A ⁽³⁾
Long-term NO ₂	Annual	2.4	27.6	30.0	341	150
Carbon Monoxide (CO)	1-hour	85.0	---	---	N/A	N/A
	8-hour	35.7	---	---	12,595	N/A
Particulate Matter (PM)	24-hour	17.8	---	---	150	150
	Annual	3.8	---	---	50	50
Notes:						
(1)	Unit indicated in this table are micrograms per cubic meter (µg/m³)					
(2)	AAQS – Ambient air quality standard					
(3)	N/A – Not applicable					
(4)	Source – UNAM (April 2000)					

Figure 1
Project Area

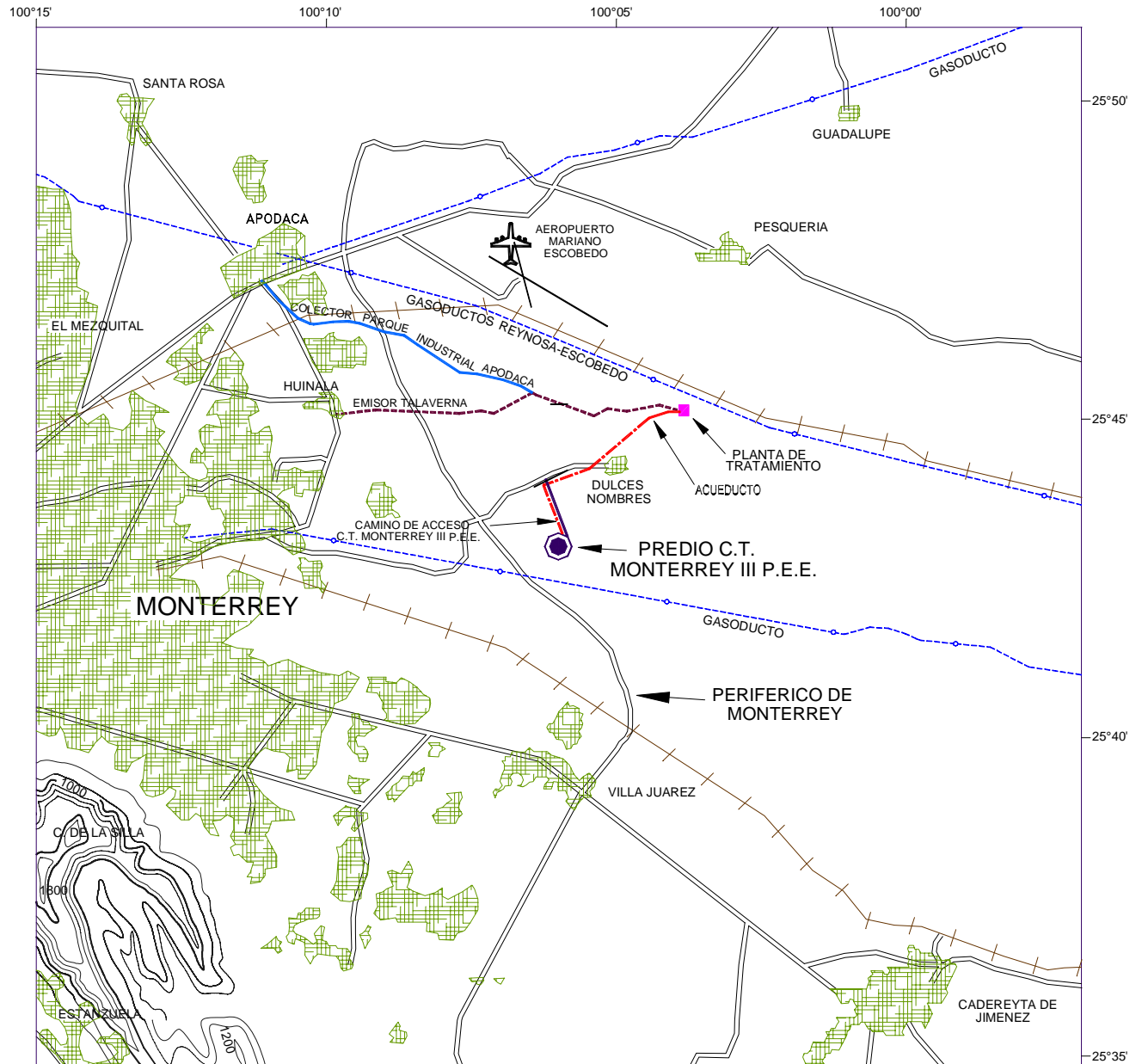


Figure 5-1
One-Hour Nitrogen Oxide Concentrations Including Background

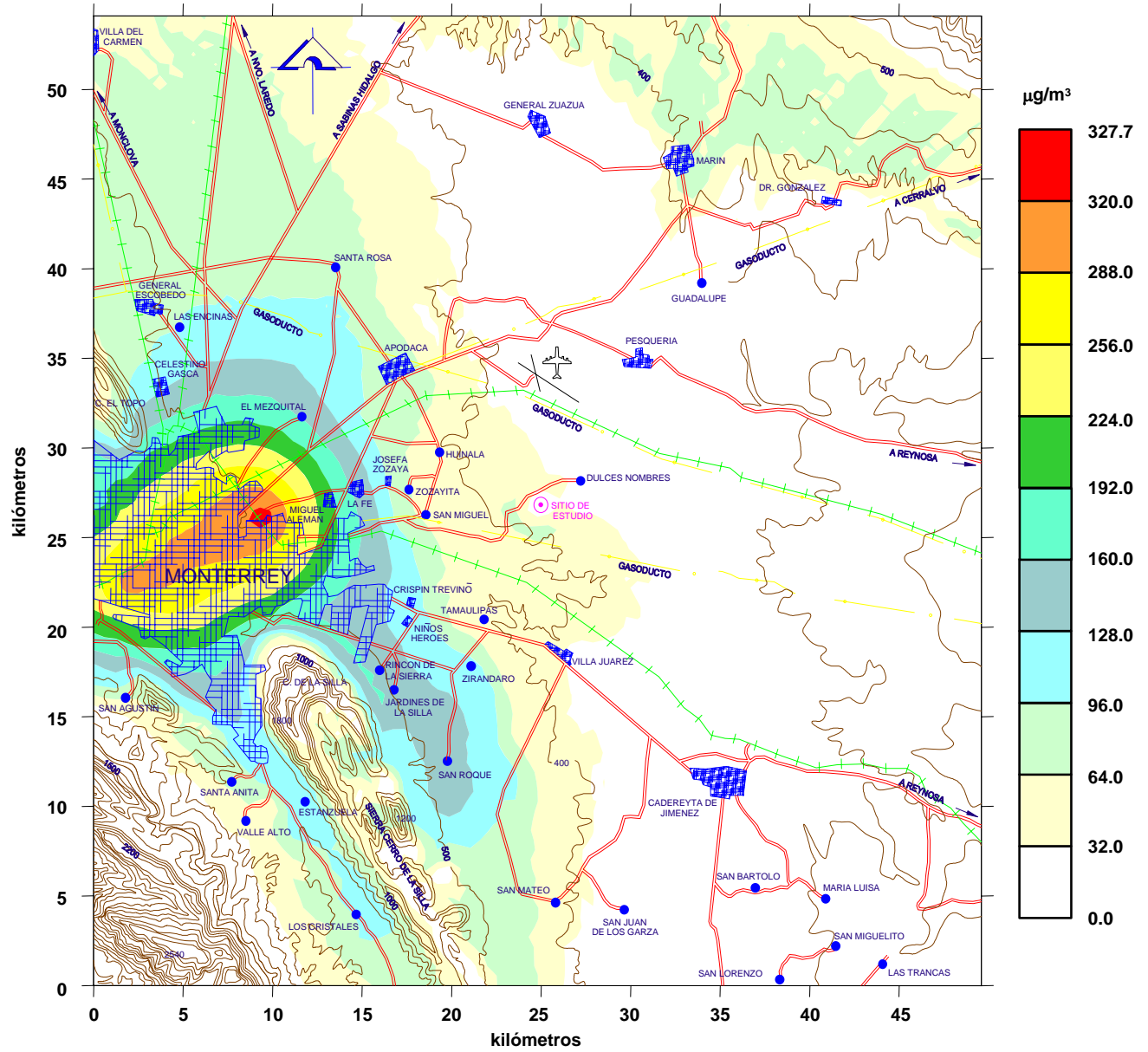


Figure 5-2
One-Hour Nitrogen Oxide Impacts for Near-Field Receptors

