

**BANK MANAGEMENT RESPONSE TO
REQUEST FOR INSPECTION PANEL REVIEW OF THE
ARGENTINA: SANTE FE ROAD INFRASTRUCTURE PROJECT
(Loan No. 7429-AR)**

Management has reviewed the Request for Inspection of the Argentina: Santa Fe Road Infrastructure Project (Loan No. 7429-AR), received by the Inspection Panel on September 13, 2007 (with clarifications dated September 26, 2007) and registered on October 19, 2007 (RQ07/08). Management has prepared the following response.

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ABBREVIATIONS AND ACRONYMS

AADT	Annual Average Daily Traffic
BP	Bank Procedure
DNV	National Road Directorate
DPV	Provincial Road Directorate
EA	Environmental Assessment
ESMP	Environmental and Social Management Plan
IBRD	International Bank for Reconstruction and Development
IDA	International Development Association
IIRSA	Initiative for the Integration of Regional Infrastructure in South America
INTA	National Institute of Agricultural Technology
IPN	Inspection Panel
ISDS	Integrated Safeguards Data Sheet
MRM	Modified Rational Method
Mercosur	Southern Common Market
NPV	Net Present Value
OP	Operational Policy
OPRC	Operations Procurement Review Committee
PAD	Project Appraisal Document
PAP	Project Affected People
PID	Project Information Document
PIU	Project Implementation Unit
PSF	Province of Santa Fe
RAP	Resettlement Action Plan
ROW	Right of Way

Currency Unit

(Exchange Rate Effective (November 14, 2007))

Currency Unit	=	AR Peso
AR\$1.00	=	US\$0.32

I. INTRODUCTION

1. On October 19, 2007, the Inspection Panel registered a Request for Inspection, IPN Request RQ06/05 (hereafter referred to as “the Request”), concerning the Argentina: Santa Fe Road Infrastructure Project (Loan No. 7429-AR) financed by the International Bank for Reconstruction and Development (the Bank).

2. This Request follows two earlier Requests that were submitted to the Inspection Panel in 2006. The First Request was submitted on September 11, 2006, (IPN Request RQ06/05) and concerned the Argentina: Provincial Road Infrastructure Project which is being financed by the Bank through Loan No. 7301-AR, and the Argentina: Santa Fe Road Infrastructure Project, which was under preparation at the time. The Second Request (IPN RQ06/05-2) also concerned the same two Projects and was registered on September 27, 2006. For reasons of economy and efficiency, the Second Request for Inspection was added to the First Request and the Management Response accordingly addressed issues raised in both Requests (the “2006 Requesters”). Management clarified that the Provincial Road Infrastructure Project (Loan 7301-AR) did not finance any activity related to the Requesters’ claims; therefore, the Management Response did not refer to the Provincial Road Infrastructure Project.

3. Management submitted its Response on October 18, 2006. In addition to responding to specific claims by the Requesters, Management asked that the Panel consider the Requests ineligible for investigation because Management did not have adequate time to address the concerns raised by the Requesters before the Requests were filed. According to the Notice of Registration, on August 28, 2006, the Panel had received a Request for Inspection dated August 20, 2006. This was only five days after the August 15, 2006 letter by which Management was made aware of the Requesters’ concerns. For the Second Request, Management received the letter on September 21, 2006, the same date it was sent to the Inspection Panel. The Project team had engaged with the Requesters and the Province of Santa Fe (PSF) on the issues raised in the letter, although none of these interactions were recorded in the Request for Inspection.

4. On November 16, 2006, the Panel issued its Report and Recommendation, with the following conclusions:

“The Requests and Management Responses contain conflicting assertions and interpretations about the issues, the facts, compliance with Bank policies and procedures, and harm. The Panel can only address these issues during an investigation.

While the Requesters are otherwise eligible to submit a Request for Inspection, the procedural criterion of paragraph 9(c) requiring that the Requesters have brought the “subject matter (...) to Management’s attention and that, in the requester’s view, management has failed to respond adequately demonstrating that it has followed or is taking steps to follow the Bank’s policies and procedures”

has not been fully met. Therefore the Panel cannot make a recommendation on whether to investigate the subject matter of the Requests for Inspection.”¹

5. ***Structure of the Text.*** The document contains the following sections: Section II presents the Request. Section III provides background information on the Project. Section IV discusses special issues and Section V contains Management’s response. Annex 1 presents the Requesters’ claims, together with Management’s detailed responses, in table format. Several other annexes of supporting information are attached, along with a map of the Project area.

II. THE REQUEST

6. The Request was signed by Mr. Hector E. Jullier and Ms. Ana Rosa Tizianel, residents of Franck, PSF, Argentina, who submitted the Request on behalf of themselves and on behalf of 10 other area residents who are landowners and who have also signed the Request (all of them collectively referred to as the “2007 Requesters”).

7. Attached to the Request are a number of documents providing background and technical information related to the concerns of the Requesters regarding compensation, highway design and alleged adverse environmental and economic impacts of the Project, together with copies of letters to and from Provincial and Federal authorities and World Bank staff. In addition, the 2007 Requesters asked the Panel to treat a letter addressed to the Panel on August 31, 2007, and its attached documents, as part of the Request for Inspection. No further materials were received by Management in support of the Request.

8. The Request contains claims that the Panel has indicated may constitute violations by the Bank of various provisions of its policies and procedures, including the following:

OP/BP 4.01, Environmental Assessment, January 1999, revised August 2004

OP/BP 4.12, Involuntary Resettlement, December 2001

OP 1.00, Poverty Reduction, July 2004

OP/BP 13.05, Project Supervision, July 2001, revised in August 2004, September 2006, and April 2007, respectively; and

World Bank Policy on Disclosure of Information, September 2002.

¹ See Inspection Panel’s Report and Recommendation dated November 16, 2006, paragraphs 63 and 64.

III. PROJECT BACKGROUND

PROJECT DESCRIPTION

9. ***The Santa Fe Road Infrastructure Project is a USD 173.1 million Project to upgrade road infrastructure and provide institutional support for a strategic corridor linking the PSF to regional and international transportation and trade hubs.*** The Project has triggered the following Bank operational policies: Environmental Assessment (OP 4.01); Involuntary Resettlement (OP 4.12); Project Supervision (OP/BP 13.05) and The World Bank Policy on Disclosure of Information (September 2002). The Environmental and Social Management Plan (ESMP), which includes the Land Acquisition and Resettlement Action Plan (RAP) prepared by the PSF, has been available to the public through its website since August 31, 2006. The Project Appraisal Document (PAD) decision meeting was held on September 7, 2006², the Project was approved by the Board of Directors of the World Bank on February 13, 2007 and the Loan Agreement became effective on August 17, 2007.

10. ***Improving National Road 19 is a cornerstone of the development of a transport corridor in the PSF, which is a fundamental step in fostering regional integration in the Center Region.***³ The investment in National Road 19 is a priority component of an infrastructure strategy being developed by the PSF, aimed at sustaining recent high rates of economic growth and positioning Santa Fe to be the most competitive province in Argentina. The infrastructure strategy includes projects under national jurisdiction, for example, the dredging of the Paraná River, and other projects under provincial jurisdiction, such as the relocation of the Santa Fe city port. While financing for the improvement of National Road 19 would normally be provided by the national government, due to limited fiscal resources and significant infrastructure backlogs, the national government accepted an offer by the PSF to finance this project. The national government is working with the PSF in this Project through the National Road Directorate (DNV).

11. The improvement of National Road 19 is a two-phase project. The first phase (to be financed by Loan 7429-AR) involves the construction of a two lane carriageway to convert National Road 19 into an *Autovia*,⁴ while the second phase plans to transform National Road 19 into an *Autopista*⁵ with total control access.⁶ The acquisition of the right of way (ROW) by the PSF for the construction and safe operation of the *Autovia* will allow future construction of an *Autopista* without any additional land requirements.

² See Annex 6 for project milestones and a list of preparation and other project-related missions.

³ The Center Region was officially created in 2004 and comprises the provinces of Córdoba, Santa Fe and Entre Rios.

⁴ A divided highway with a two lane carriageway in each direction. This highway is without full control of access, i.e., it has toll booths at certain points. Any driver entering and exiting the highway between these points does not pay a toll.

⁵ A divided highway with at least a two lane carriageway in each direction and which can only be entered or exited at toll booth points (i.e., a limited control of access freeway).

⁶ For more detailed project background information see the Project Appraisal Document (Report 38464-AR).

12. ***There is a broad consensus on the need to develop this transport corridor.*** The two main chambers of commerce in PSF⁷ produced a joint report⁸ contributing to the formulation of a strategic plan for the Center Region. In the report, the upgrading of National Road 19 between San Francisco and Santa Fe was recognized as a necessary infrastructure intervention to facilitate the flow of goods in the Center Region. Within a broader integration perspective, the Initiative for the Integration of Regional Infrastructure in South America (IIRSA) highlighted the upgrading of National Road 19 as an integral part of the bi-oceanic corridor that constitutes the Mercosur-Chile transportation corridor.⁹

13. ***The improvement of National Road 19 has become all the more urgent because of the significant growth in traffic levels.*** Between the last study conducted by DNV in 2003 and one carried out for project preparation in March 2006, Annual Average Daily Traffic (AADT) grew approximately 40 percent. Traffic composition changed, increasing the relative importance of trucks, which in some segments of the road account for more than 45 percent of total traffic, supporting its regional relevance. The economic evaluation of this project produces a Net Present Value (NPV) of USD 63 million. The economic benefits of the project increased significantly since the NPV of the project was estimated in 2006. The provincial Gross Domestic Product grew 9.3 percent in 2006 and is expected to grow 8.5 percent in 2007. These rates of economic growth generated higher than anticipated growth in traffic in the PSF road network. Traffic growth coupled with the very high incidence of fatal road accidents along National Road 19 has increased the economic and social justification for upgrading National Road 19.

PROJECT OBJECTIVES

14. ***The overall purpose of the Project is to improve transport conditions along a strategic road corridor that links the PSF with regional and international markets.*** Adding capacity to National Road 19 will reduce logistics costs, facilitate access to major regional consumption and export markets and foster the effective economic integration of the Center Region provinces. The Project also aims to provide institutional support to the PSF to achieve the following specific objectives: (i) improve road safety by implementing pilot interventions capable of providing valuable qualitative and quantitative informa-

⁷ Bolsa de Comercio de Santa Fe y Bolsa de Comercio de Rosario.

⁸ *Aportes para la Formulación del Plan Estratégico de la Región Centro de la República Argentina. Informe Técnico N2: Relevamiento de Acciones Gubernamentales y Obras de Infraestructura de Transporte y Logística a Evaluar con el Gobierno de la Provincia de Santa Fe. Bolsa de Comercio de Santa Fe y Bolsa de Comercio de Rosario, November 2004.*

⁹ Mercosur is the Southern Common Market, a customs union between Brazil, Argentina, Uruguay, Paraguay and Venezuela, founded in 1991 by the Treaty of Asunción, which was later amended and updated by the 1994 Treaty of Ouro Preto. Its purpose is to promote free trade and the fluid movement of goods, peoples, and currency. The organization has a South and Central America integration vocation. The Mercosur-Chile transportation corridor is the main industrial area in South America, with high value added industries (automotive, construction materials, petrochemical, agroindustrial) and some of the most productive agriculture lands in the world. Further increases in the commercial flows, which are essential to the formation of more efficient supply value chains in both ends of the axis, are threatened by the poor conditions and capacity of infrastructure. To this end, IIRSA prioritized the upgrading of National Road 19.

tion to the comprehensive road safety action plan elaborated by the PSF in 2005; (ii) identify transport infrastructure and trade facilitation constraints by setting up a system to measure logistics costs in the PSF; (iii) reinforce the PSF's planning capacity to foster economic growth; (iv) strengthen provincial capacity to assess and manage environmental and social impacts of large civil works; and (v) create provincial capacity to monitor and evaluate large infrastructure projects.

PROJECT FINANCING

15. Total Project cost is USD 173.1 million, of which USD 126.7 million is being provided by the Bank loan and the remaining USD 46.4 million by the PSF.¹⁰ The Bank loan is guaranteed by the Argentine Republic.

PROJECT COMPONENTS

16. The Project has two key components, which are explained in the PAD.

- *Component 1 – Upgrading National Road 19* (estimated cost, including contingencies, USD 167.4 million of which USD 123.9 million will be financed by the Bank Loan). This component will transform 130 kilometers of National Road 19 in the PSF into a four lane highway (*Autovia*) with separate two lane carriageways in each traffic direction to expand the capacity and road safety of this heavily traveled corridor. This is the first stage in upgrading the corridor, which DNV plans to transform into a limited access freeway in the future. The component entails building: (i) a two lane carriageway within the ROW that will serve East-West traffic, which in the future will become one of the main carriageways of the freeway; (ii) three four-lane bypasses of the towns of San Jerónimo del Sauce, Sa Pereyra and Frontera (and its twin city San Francisco) within the PSF; (iii) alignment improvements for three sharp curves on the existing two lane highway; (iv) grade separation interchanges at high trafficked intersections – National Roads 34 and Rosario Santa Fe Freeway – and overpasses for railroad crossings; (v) ground-level interchanges at intersections with provincial and rural roads; and (vi) turn lanes and returns at intervals of about 6 kilometers to facilitate safe access to properties along the corridor.

The national government, through DNV, will also finance the upgrading of 6 kilometers of National Road 19 in the Province of Córdoba (from the border with PSF to National Road 158), using the same design standards applied to the upgrading of this road in the PSF. DNV design standards for National Roads that will be converted into freeways require 120 meter ROW. In the 1970s, DNV acquired the land north of the existing alignment needed to meet the 120 meter ROW requirement for about 54 kilometers (approximately 40

¹⁰ See Annex 5 of the PAD, page 57.

percent of the Project length). The PSF has been acquiring the land for the remaining section of the Project.

- *Component 2 – Institutional Strengthening* (estimated cost USD 2.8 million, all Bank-financed). This component will consist of four subcomponents:
 - Sub Component 2.1 – Road Safety;
 - Sub Component 2.2 – Measurement of logistics costs in the PSF;
 - Sub Component 2.3 – Strengthening the strategic planning capacity of the PSF;
 - Sub Component 2.4 – Strengthening the capacity of the Provincial Road Directorate (DPV) to enhance environmental and social management; and
 - Sub Component 2.5 – Design of a capacity building program to incorporate monitoring and evaluation analysis in infrastructure projects.

PROJECT UPDATE

17. As of November 2007, the loan still has had no disbursements. However, progress has been made in the two components. The PSF concluded the bidding process for the upgrading of National Road 19. This process required the clearance of the Bank Operational Procurement Review Committee (OPRC) twice, for the bidding documents and for the evaluation of the prequalification process. Construction of the new carriageways was divided into five contracts and 46 bids were submitted in total. It is expected that the PSF will conclude the evaluation process by the end of November 2007. It should be noted that the Project works will not commence until the pertinent provisions of the Resettlement Action Plan (RAP) have been carried out in accordance with the terms of the RAP, and in a manner acceptable to the Bank.¹¹

18. Bidding documents for hard and soft road safety interventions on Provincial Road 21 will soon be ready as the PSF is making the changes requested by the Bank during the supervision mission of September 2007. Progress has also been made in the implementation of the institutional components. The Terms of Reference for the measurement of logistics costs, the design and implementation of a base line to measure Project indicators and the agenda for the first workshop to conduct a strategic environmental assessment have all been sent to the Bank for no objection.

IV. SPECIAL ISSUES

19. The Project team had the opportunity to meet with the 2007 Requesters in Franck, PSF, on October 31, 2007. The meeting deepened the understanding of the 2007 Requesters' major concerns, which can be summarized as: increased risk of flooding as a

¹¹ See Section I.A.5 of the Loan Agreement entered into between the Bank and the PSF, dated June 12, 2007 for Loan No. 7429-AR.

result of the upgrading of National Road 19; excessive land expropriation (2007 Requesters ask to limit expropriations to 30 meters up to km 18); inadequate monetary compensation and delays in compensation payment for land expropriation; and lack of adequacy of the consultation process¹². These issues are addressed below. The 2007 Requesters' claims, accompanied by Management's detailed responses, are provided in Annex 1.

FLOODING RISKS RESULTING FROM THE UPGRADING OF NATIONAL ROAD 19

20. ***The 2007 Requesters state that the upgrading of National Road 19 as proposed will constitute an unnecessarily high embankment that will cause flooding in the surrounding area. However, they include no engineering or other evidence to support their assertion.*** The 2007 Requesters do not accept the proposed elevation (an average of 80cm) of the new carriageway. However, from a safety and engineering perspective, the elevation of the new carriageway is necessary. If the carriageway is not elevated, water could cross over the upgraded National Road 19 as has occurred in the present road during the last decade after two episodes of intense rain.¹³ The Project approach has been to elevate the new carriageway, adopting basic principles of road design standards and including drainage canals and bridges, longitudinal canals, culverts and passage pipes of sufficient size to avoid any blocking effect from an elevated road.

21. ***The professional rigor of the engineering designs for upgrading National Road 19, and the stringent quality control process to which they were subject, provide assurance that concerns about the possibility for upgrading of National Road 19 to produce a 'dam effect' are not well founded.*** The engineering designs, prepared by well-known Argentine engineering firms, paid particular attention to the hydrological conditions of the area. As part of the quality control process, the engineering designs were reviewed by the Bank and formally approved by the DPV, the Provincial Ministry of Hydrological Affairs and DNV.

22. ***Management considers that OP/BP 4.01, Environmental Assessment, has been consistently followed in this Project and that the studies and simulations conducted during project preparation and the re-examination made after the flooding of March 2007 are sound and lead to the conclusion that the upgrading of National Road 19 will***

¹² On November 20, 2007 Management received a fax from the 2007 Requesters suggesting an amendment to the minutes of the meeting held on October 31, 2007 between the Bank and the 2007 Requesters. The amendment acknowledges that the PSF did not interact with them with a lack of respect. However the 2007 Requesters suggest in the amendment that there were many instances where the DPV called landowners to urge them to sign the voluntary agreements (Convenios de Advenimiento). The Requesters suggest that elderly (80 years old or more) people perceive this as psychological pressure. Management's recall of the meetings referred to in the minutes does not coincide with the Requesters on this point. However, Management takes very seriously any allegations of discrimination and intimidation, and therefore Management will follow up closely on this issue to confirm that no such incidents have taken place and to ensure that all communications are proper (see also para. 34 of this response).

¹³ The existing carriageway gets flooded (water passing over the road). That is one of the main reasons why it will not be part of the future freeway, remaining as a service road once the *Autovía* is upgraded to a motorway (*Autopista*).

not worsen the hydrological situation of the area surrounding it.¹⁴ On the contrary, all the engineering evidence suggests that the risk of flooding in the surrounding area will be reduced compared to the without-project situation. The ESMP, prepared by the PSF with the assistance of an independent consulting firm, details the possible impacts for a wide range of hydrological aspects of the upgrading of National Road 19. The ESMP lists all recommendations that were carefully taken into account in the engineering designs, including an assessment of the site “Los Cuatro Sauces” (km 22+850m) cited by the 2007 Requesters as a critical spot (see Annex 6).

23. ***During Project preparation, the Project team took an active role to guarantee that the engineering designs comply with sound standards that satisfactorily address the risks of flooding.*** In light of potential new information about hydrological impacts in the area after the unusual magnitude of the March 27-28, 2007 floods, a Bank mission travelled to Santa Fe immediately afterwards to re-check the engineering designs. While the evaluation of the engineering designs was taking place, the national authorities withheld the approval process of the engineering designs and the PSF requested its Ministry of Water Affairs to carry out a new analysis and a re-examination of the designs in order to double check their robustness. The re-evaluations carried out independently by the PSF and the Bank validated the proposed engineering designs and concluded that such designs do not increase the risks of flooding faced by residents along National Road No. 19.

24. ***The PSF has met regularly with the 2007 Requesters and other project-affected people (PAPs) during Project preparation and implementation to discuss flooding and drainage issues.*** The most recent community meetings were held in July 2007, when specifics of the engineering designs were discussed in public hearings in all communities located near the ROW. Flooding and drainage issues were discussed extensively during those meetings and representatives from the engineering firms and the provincial Ministry of Water Affairs made presentations and answered questions about these issues. It is important to note that during a meeting held on the premises of the Project Implementation Unit (PIU) on November 29, 2006 in the context of the Project pre-appraisal mission, one of the people who acknowledged that the hydrological problems pre-date the Santa Fe Road Infrastructure Project was a Requester for the most recent Inspection Panel Request. He also acknowledged that resolving the issue of flooding in the PSF falls outside the scope of the upgrading of National Road 19.¹⁵

LAND EXPROPRIATION LIMITED TO 30 METERS UP TO KM 18

25. ***Thorough attention was devoted from the early stages of Project preparation to the amount of land required to upgrade National Road 19.*** In the first preparation mission the Project team requested the PSF to study alternative schemes to reduce land expropriation. The PSF and the DNV indicated that they decided to adopt a 120 meter ROW following the prevailing standard for *Autopistas* in Argentina. The Project team, as part of its due diligence during Project preparation, asked the PSF to present a written

¹⁴ Evidence provided by engineering studies, available in Project files.

¹⁵ This is in the Aide-memoire of November 2006 which is in the Project files.

justification for the need to adopt the 120 meter ROW for the upgrading of National Road 19.¹⁶

26. ***In a July 27, 2006 report, the PSF reaffirmed the 120 meter width standard and planned location of ROW.*** It justified its decision on the following basis:

- *Additional construction costs and potential negative environmental externalities.* A reduced ROW would not allow sufficient lateral extraction of soil for the construction of embankments, and the additional soil would need to be extracted from land to be purchased elsewhere, and then transported to construction sites. Consultants estimated that additional soil transportation costs would double the embankment construction costs.¹⁷ In addition, extracting soil from sites located outside the ROW could create negative environmental liabilities. Land extraction sites, without proper and continuous control, could become informal solid waste dumps.
- *Construction of frequent returns in response to the request of affected communities to minimize restrictions on access to properties.* Incorporating returns at about 6 kilometer intervals in line with the outcome of consultations with affected communities requires a wide separation between the existing carriageway and the one to be financed under the Project, in order to provide enough space for acceleration lanes and returns compatible with the project design speed, without compromising road safety and the quality of the road alignment.
- *Standards applied by DNV in similar projects.* In similar projects under preparation or execution, DNV is mandating a 120 meter ROW for improvement works aimed at the eventual construction of a limited access freeway. Examples of this practice are the two roads that are currently being upgraded – National Roads 9 and 5.

27. ***It should be noted that the specific proposals of the 2007 Requesters regarding land acquisition (30 meters up to Km 18) would not be compatible with a design that is safe and cost effective.*** The proposal to expropriate 30 meters of land would result in a 60 meter wide ROW—not enough space to build a two-carriageway *Autovia* with ground-level returns and even below the 100 meter national standard stipulated for one-lane carriageway roads. The proposal of an incremental expropriation, in which the acquisition of the 120 meter ROW is deferred until the decision to build the freeway with full access control is made, was considered by the PSF but rejected for the reasons explained in the previous paragraph. The 2007 Requesters do not explain why land acquisition should be reduced to 30 m only up to Km 18 and there does not seem to be any tech-

¹⁶ Argentina. Proyecto Infraestructura Vial en Santa Fe. Ayuda Memoria. Misión de Preparación. Junio 2006. This Aide Memoire is in the Project files.

¹⁷ Annex 2 presents an estimation of cost savings comparing alternative ROWs.

nical merit for this request since from Km 8.1 onwards the land is used for agricultural purposes.

COMPENSATION FOR LAND EXPROPRIATION

28. ***The road infrastructure will be located alongside the existing alignment, requiring only acquisition of land for the expansion of the ROW.*** National Road 19 is located in an area characterized by low density population and intensive agricultural and live-stock production. The average size of the affected properties is 100 hectares and in fifty percent of the properties less than 4 hectares will be acquired to expand the ROW. The expansion of the ROW affects 1,313 hectares. Of these 1,313 hectares, 662 (50.4 percent) were acquired by the national government (DNV) in the 1970s. The remaining hectares to be acquired (633) are located in 236 properties along the road in the PSF. A total of 27 buildings will be displaced: 20 houses (6 with businesses), 6 businesses and one school.

29. ***Consistent with Bank policy, the PSF prepared a RAP that meets the requirements of OP 4.12.*** A census was undertaken to identify PAPs. The RAP covers not only the portion of the project in the PSF, but an additional 6 kilometers of road that traverses the neighboring Province of Córdoba¹⁸. The RAP will be fully implemented prior to any physical works¹⁹. The RAP includes an information and communication program, and administrative procedures to be followed to make available previously expropriated land (land acquired by DNV in the 1970s). For owners of land to be acquired and for households and businesses to be displaced, additional programs are included. A summary of the RAP is included in Box 1.

30. ***Its implementation is being carried out by the PSF in a manner considered satisfactory by the Bank.*** The Project team is closely supervising the implementation of the Land Acquisition and RAP through frequent missions to Santa Fe 9 (see Annex 3). The PSF produces a monthly report with the state of implementation of each program. The aide memoire produced after each mission lists the Project team's observations and agreements with the Project authorities on areas for follow-up and strengthening of implementation.

¹⁸ See paragraph 4 of OP 4.12.

¹⁹ See footnote 11 above.

Box 1: Land Acquisition and Resettlement Plan

- *Information and Communication:* Stakeholders will be informed through mass media and a newsletter which will be distributed monthly. The Project has also created an electronic address where stakeholders can send their questions and comments and get answers. Additionally, several "Community Points" will be established along the road to maintain a direct dialogue with affected communities. Two social specialists will be assigned by the PSF and monitored by the PIU to manage these Community Points.
- *Land Acquisition and Compensation:* Through this program the land required by the Project will be acquired and compensated.
- *Implementation of Former Expropriations:* This program aims at determining if the properties expropriated by the national government more than 30 years ago are ready to be used for construction of the new carriageways of National Road 19. The program includes information and communication activities, and administrative procedures to be followed to make available the previously expropriated land.
- *Assistance for Socioeconomic Restoration:* This program will provide support for the families and businesses that will be physically displaced to restore their socioeconomic conditions to the level that existed prior to displacement.
- *Assistance for Partially Affected Properties:* This program is designed to assist owners of partially affected properties, whose houses will be close to the road, to mitigate any problems related to safety, noise or privacy.
- *Relocation of the General San Martin rural school:* A specific program was design to relocate this school. This program will be implemented with the Ministry of Culture and Education of the PSF.
- *Grievance Mechanism:* A grievance mechanism was designed to receive and respond to any grievance that could emerge during the implementation of the Plan.

31. ***The land acquisition process is governed by specific laws in the PSF.*** The Provincial laws provide that the expropriating entity is authorized to reach voluntary agreements (*Convenios de Avenimiento*) with affected landowners in connection with the expropriation of their land.²⁰ In case an agreement cannot be reached, the expropriating entity initiates the judicial proceedings in the PSF courts to resolve the dispute over the amount of compensation to be paid. It should be noted that if the expropriation case goes to court, the expropriating entity shall, at the time of filing the complaint, deposit in "escrow" (*consignacion judicial*) with the court the amount of compensation offered to the affected landowner.²¹ The affected owners also have the possibility of addressing their claims to the provincial ombudsman office ("Defensoria del Pueblo de la Provincia de Santa Fe"), which is an independent body that reports to the Provincial legislature.²² The

²⁰ See articles 28-30 of Provincial Law No. 4908 (as amended and restated), and articles 24, 25 and 28-34 of Provincial Law No. 7334-Expropriation law (as amended).

²¹ See articles 28 and 29 of Provincial Law No. 4908 (as amended and restated), and articles 35-50 of Provincial Law No. 7534, as amended). With respect to payment of interest, it should be noted that the Supreme Court of Santa Fe has ruled that the expropriated landowner is entitled to the payment of interests with respect to any amount of compensation not acknowledged by the expropriating entity at the time of displacement (see Domingo, Osvaldo J. v. Provincia de Santa Fe, Suprema Corte de Justicia de Santa Fe, March 3, 1999 - Lexis N° 70007854). The Supreme Court of Santa Fe ruling cited herein is in line with the Federal Supreme Court precedents, and Provincial Law No. 7534 (as amended) is also consistent with the federal legislation on expropriation (see also article 31 of Provincial Law No. 7534 (as amended) and Marienhoff, Miguel S., Tratado de Derecho Administrativo (Lexis N° 2206/001716), Section 1371 on the right to claim interest over expropriation amounts).

²² The main mandate of the Ombudsman office is to protect the rights/interests of its citizens and the community against actions/omissions carried out by the public administration (including its agencies) which imply, inter alia, abusive, arbitrary, illegitimate, discriminatory and negligent practices in connection with

PSF has a proven track record of reaching voluntary agreements for the acquisition of land. Statistical information about the outcome of previous processes of land acquisition was obtained during project preparation. This information shows that for works initiated between 2004 and 2006, there were challenges with regard to only four out of 455 plots of land (0.9% of total plots) with respect to the amount of compensation offered by the PSF in the provincial courts.²³

32. ***The PSF agreed with the Bank to follow Bank compensation policies for land acquisition.*** The valuation methodology of affected land followed by the DPV is the following:

- According to article 17 of Provincial Law No. 7534²⁴ the amount of compensation (“*indemnización*”) to be paid shall be equal to the objective value (“*valor objetivo*”) of the land plus any direct and immediate damage caused by the expropriation of the affected land.
- Pursuant to the Provincial Law,²⁵ the DPV is the entity in charge of carrying out the valuation of land affected to road projects. In order to carry out said mandate, the DPV may seek information/assistance from the Provincial Cadastre,²⁶ which it does under the present case.
- Pursuant to article 25 of Provincial Law No. 2996 – “Valuation and Cadastre of Real Estate” (as amended), the valuation of real estate shall be based on objective background information (“*antecedentes objetivos*”) which shall not take into account personal nor incidental factors. Moreover, article 25 of the same Law provides in part that the amount of compensation (“*justiprecio*”) to be paid must be adjusted to the time in which payment is made²⁷.

the performance of its functions, or which might be perceived as a deviation of its power (see articles 1 and 22 of Provincial Law No. 10396).

²³ Please note that Court precedents indicate that the Argentine Supreme Court has historically rejected valuations of the objective value (“*valor objetivo*”) which are not consistent with “market value” (see Marienhoff, Miguel S., *Tratado de Derecho Administrativo*, Tomo IV). According to Marienhoff, (op. cit. Section 1359) “the expropriation should reflect a replacement in value: the valuation of the expropriated asset is replaced by its equivalent monetary value. The legal principle that the compensation must be ‘fair’ (*justa*) means that there should be a rigorous equivalence in value between the expropriated asset and the amount of compensation. Without such equivalence, the compensation is not ‘fair’.”

²⁴ As amended.

²⁵ See third paragraph of article 25 of Provincial Law No. 7534 (as amended), and article 3 of Provincial Law No. 12653.

²⁶ See article 2 (a) (6) of Provincial Law 10921.

²⁷ See also *Provincia de Santa Fe v. Jannarelli, Luis, et al*, Suprema Corte de Justicia de Santa Fe, November 11, 1981 - Lexis N° 70026277 in which the court applied adjustments to the value of compensation to be paid to the expropriated landowner to compensate for the depreciation of the local currency due to inflation. According to the court ruling, the adjustment to the amount of compensation for local currency depreciation shall be paid by the Province from the date of displacement to the date in which full compensation is paid to the expropriated landowner. The Court also ruled that the expropriated landowner was entitled to interest payments during said timeframe.

- The following are the elements that the valuation of rural land shall take into account:
 - (a) the soil configuration, the quality of the land and the underground water, the productivity of the land (including its subdivision, the intensity of its economic production compared with the predominant land production in the area, the real rent/income (“*renta real*”) set in (private) contracts or public deeds or the presumed income (“*renta presunta*”) that takes into account statistical information on estimated production and the production average prices for a range period of not less than 5 years; and
 - (b) as supplemental background information, the owner’s tax return, the current fiscal valuation, the average sales prices (since the last valuation) of similar land within the area, court rulings on expropriation cases, the valuations carried out by official mortgage financial institutions, the information that may be provided by the provincial tax authority, and the information reflected in the real estate registry, municipal cadastre registries (for urban and semi-urban land) and the Provincial Directorate of Cadastre and Mapping (“*Dirección Provincial de Catastro y Cartografía*”).
- Once the DPV obtains the price information mentioned above, and in order to determine the objective value (“*valor objetivo*”), the DPV also seeks information from: (a) banks, real estate agencies, cooperatives (“*Cooperativas*”) and the municipality (“*Comuna*”) with respect to the prevailing price per hectare; and (b) (i) real estate publications, and local and national newspapers with respect to physical improvements/fixtures; and (ii) inter alia, the Instituto Nacional de Tecnológica Agropecuaria (INTA) with respect to the value of the crops.²⁸
- Thereafter, and before the DPV makes a final compensation offer (“*valor objetivo*” plus any direct and immediate damage caused by the expropriation of the affected land) to the affected landowner, the DPV also takes into account a series of characteristics related to the affected land which increase the final price to be paid to the landowner by an amount which shall not exceed 30 percent of the amount of the land valuation issued by the Provincial Cadastre.²⁹ The characteristics that the DPV takes into account include, inter alia, the location of the land (for example, the proximity of the land to trade centers is an important factor) and the expropriated surface (such as if the land has been affected in whole or in part).

²⁸ See RAP, pages 55-56.

²⁹ See article 25 of Provincial Law No. 2996 and article 29 of Provincial Law 4908, as amended and re-stated.

- Finally, the DPV notifies the affected owner of the expropriation and at the same time offers the owner the final compensation, as described above.³⁰

33. Evidence collected in meetings held with landowners who signed a voluntary agreement indicates the PSF is carrying out the land acquisition process in an equitable way. To further study the application of the agreed valuation of land, Bank Management will review in detail a sample of 20 cases in which voluntary agreements have been signed, as part of its next supervision mission.

34. ***Management considers that the PSF is applying adequately the provisions of the RAP and the Provincial law that regulates expropriations.*** The supervision carried out by the Project team has reviewed a sample of the administrative files that include the valuation of lands and structures and all administrative documents that are used to elaborate a monetary offer. The Project team has found no inconsistencies in the principles followed by the DPV³¹ to value the affected land and structures. The 2007 Requesters have acknowledged that there is no doubt that the PSF is acting according to the law in their letter of August 27, 2007 (section: Objeciones al procedimiento de notificación de advenimientos por expropiaciones a frentistas), which is included in the IPN Request RQ07/08.

35. ***Management takes very seriously any allegations of discrimination and intimidation. To date, Management has not seen any evidence of intimidatory communication or discrimination by the PIU or any other provincial agency towards the land owners.*** The Bank has been working with the 2007 Requesters and other PAPs to address issues that have arisen during Project implementation and relations have been cordial and constructive. On different occasions members of the Project team asked affected landowners (including the 2006 and 2007 Requesters) to provide details of the interaction with the DPV unit in charge of conducting the expropriation process. When asked specifically about “lack of respect” from the DPV unit, the PAPs indicated they had not experienced this problem. The Project team has worked closely with the PIU since the start of Project preparation to make sure all concerns raised by potentially affected populations are addressed promptly and effectively by the PSF through the PIU. The 2007 Requesters clearly acknowledge, in a letter sent to the PIU and dated August 24, 2007, which is included in the Request (Ref V/Nota 352 del 24/07/07 RN19/Autovia) the comprehensive

³⁰ It should be noted that rural land valuation under the best of circumstances inevitably involves a degree of subjectivity. Land is not a fungible commodity equivalent to exactly replicable goods. No two plots of land are ever identical, so comparisons with neighboring plots as a valuation basis can never be perfect and affected landowners will understandably see their particular land as perhaps more valuable than would others. The situation is exacerbated in the case of a tight land market with relatively few recent transactions, as appears to be the case in the vicinity of the intersection of National Road 19 and Provincial Road 6, the location (or area) most cited by the 2006 and 2007 Requesters. In such circumstances, the emphasis should be on affirming the validity (consistent with Bank policy) of the valuation principles to be applied under local law, with an understanding that the exact value result they may yield is not predictable with scientific precision. The Requesters in this case, were they to dispute the resulting valuation, have access to the various formal dispute resolution mechanisms (including courts) at their disposal in Santa Fe with a proven track record for dealing equitably with such cases.

³¹ DPV has the legal mandate to carry out the expropriations for this Project.

verbal and written communication between the 2007 Requesters and the PIU and they thank the PIU for providing explanations to their concerns and demands.

LACK OF ADEQUACY OF THE CONSULTATION PROCESS

36. ***The consultation process has given numerous opportunities to all interested parties to express their concerns.*** The communication channels include: meetings open to the public at large in the communities where the 2007 Requesters live or own properties, an electronic mailbox (inforuta19@santafe.gov.ar), mailboxes placed in 15 localities along the road corridor, and direct telephone communication with the PIU.

37. ***The consultations have been critical in the decision making process, prompting several changes to the design of National Road 19, including road alignments of bypasses, location of road crossings and returns, the need for special safety measures such as bus stops, and the definition of the types of restoration programs to be carried out in urban areas.*** The case of Estación Josefina and the location of the bypass of Frontera is an example of how the engineering design was changed to accommodate a community's concerns. Estación Josefina, according to the first design, was supposed to be outside the bypass but after a series of consultations, it was decided to change the bypass location, leaving Estación Josefina inside the bypass to maintain its connectivity with the city of Frontera. By accepting this change, the cost of the project increased as a result of the increased size of the bypass. Several other changes to the road design were made at the request of landowners, including the cases of Degano (km 23.3), Imhoff (km 35), and Maurino (Km 37), among many others.³²

38. ***The 2007 Requesters have participated actively in the consultation process and their concerns about access to productive land have been accommodated in the Project.*** Some of the 2007 Requesters, like many other landowners along National Road 19 and along most of National Roads in Argentina, have built informal access roads to their properties. Building this type of access is extremely dangerous for road safety. The upgrading of National Road 19 will end this unsafe practice by providing adequate and reliable access to the Autovía.

39. ***The Project team has actively participated in the consultation process, being present in several community meetings, visiting affected businesses and houses along National Road 19, exchanging emails and phone calls with landowners and meeting some of them, including the 2007 Requesters, during Bank missions.***³³ The ultimate objective of Bank participation in the consultation process is to ensure that the PSF is in full compliance with the ESMP and RAP. All concerns have been communicated to the PIU for action and significant supervision effort is concentrated in making sure appropriate answers are provided to the concerns of the affected population.

³² Annex 5 provides a sample of the changes made following concerns communicated through alternative channels by the affected landowners. This sample was extracted from the Aide Memoire of the preparation mission of November 2006.

³³ Aide Memoires of preparation and supervision missions and Back to Office Reports present details of Bank participation in the consultation process.

APPLICATION OF BANK OPERATIONAL POLICIES

40. ***The Notice of Registration indicates that the 2007 Requesters' claims may constitute non compliance with the following Operational Policies and Procedures: Environmental Assessment (OP/BP 4.01); Involuntary Resettlement (OP/BP 4.12); Project Supervision (OP/BP 13.05); and The World Bank Policy on Disclosure of Information, September 2002.*** The project design incorporates appropriate mitigation measures for each triggered policy. Previous sections focused on the measures adopted to comply with OP/BP 4.12. This section provides more information regarding compliance with OP/BP 4.01, OP/BP 13.05 and the Disclosure Policy.

OP/BP 4.01 Environmental Assessment (EA)

41. ***Bank staff advised the PSF in the preparation of the EA. The EA was an integral part of Project design, with continuous interaction between the EA team and design engineers.*** The Project team undertook an initial screening of safeguards policies and reviewed with the PSF which policies would be triggered by the Project and the resulting requirements for the PSF. The Bank reviewed the EA and recommended several rounds of consultations with communities located near the ROW.

42. ***Based on the safeguards screening, the proposed Project was classified as Category "B".*** The new road infrastructure will be located alongside the existing alignment. Land acquisition will be required to expand the ROW. There will be few cases of physical displacement. Most of the impacts identified will be managed through sound engineering design and construction practices according to the latest version of construction procedures approved by DNV.³⁴ The Project area is already heavily developed with extensive and intensive cattle ranching and high-value crops, such as soy and corn. The EA concluded that no significant adverse sensitive, diverse or unprecedented environmental impacts are expected to occur.

43. ***The PSF has prepared a comprehensive and detailed ESMP in accordance with Bank policy.*** The ESMP evaluates the existing conditions, identifies the potential environmental and social issues of concern and proposes adequate mitigation measures for each negative impact identified as well as measures for enhancing each identified positive impact. The views and concerns of the PAPs and local governments have been reflected in the ESMP, including a road safety program, landscaping, placement of bus stops, restoration of certain road segments in the urban areas of communities that the improved road will bypass, construction management, and restoration of certain rural roads. The ESMP includes a summary chart where all the problems encountered and proposed mitigation and enhancement measures are mentioned, and their location is provided in alignment maps for the entire road corridor. Monitoring and supervision arrangements, as well as an institutional strengthening program for the environmental unit of DPV are also included in the ESMP. Additionally, the institutional strengthening program for the environmental unit is being financed by Component 2 of the Project. A summary of the

³⁴ MEGA: Manual de Evaluación y Gestión Ambiental de Obras Viales. Revised in 2005.

ESMP is presented in Box 2. All programs of the ESMP include numerous details on design specifications, associated costs, responsibilities and schedule. Project bidding documents include all specifications regarding these programs as well as a mandate to construction companies to hire an environmental and social expert. The nature of the programs included in the ESMP indicates that an assessment of its implementation will need to wait until construction starts. The only exception is the communication program, which has been adequately implemented by the PSF (see section on adequacy of consultation process). A new Annex of the ESMP, "Restoration of Environmental Liabilities along the RN19 Corridor," was prepared in 2007. The assessment concluded that there are no illegal waste dumps along the ROW of National Road 19. The report also identifies all the measures that will be implemented when the relocation of the gasoline station on Km 32 takes place, especially the handling and closure of potentially polluting underground gasoline deposits. This Annex has been added to the ESMP report and disclosed on the PSF website.

Box 2: Environmental and Social Management Plan

- *Landscaping and Re-vegetation Program:* This major environmental enhancement program includes reforestation and re-vegetation of the ROW (including separators) with native species; restoration and augmentation of existing native forest patches; and construction of rest and recreation areas along the ROW.
- *Community Road Safety:* Complementing the engineering road safety design (bus stops, special crossings), this program will implement road safety education in communities along the ROW.
- *Restoration of Rural Road Network:* This includes the construction of special crossings and returns to allow connectivity of the existing rural road network.
- *Improvement in Urban Segment of Santo Tome:* Potentially perhaps the most challenging segment of the Project, this heavily urbanized segment will be subject to a special urban restoration program including specific designs for boulevards, bicycle paths, parking spaces and traffic management measures.
- *Urban Restoration in Bypassed Towns:* Road segments that will be abandoned because of the construction of bypasses will be reconstructed as urban boulevards, with special archways at the entrance points, reforestation, illumination, and special signs that will direct traffic to use businesses and facilities in those towns.
- *Environmental Management of Construction:* In order to adequately control impacts during construction, a rigorous set of good environmental practices will be applied in the Project. These specifications are based on the existing Environmental Specifications for Road Construction designed by the DNV under road programs financed by the Bank. In addition to these specifications, site specific guidelines and restrictions have also been incorporated such as prohibitions on construction camp and asphalt location in or near sensitive watercourses, demarcation of trees and patches of vegetation that need to be protected during construction, special traffic restrictions during harvest time, etc. Chance find procedures for archaeological and paleontological artifacts are part of these specifications. All critical points along the ROW (either environmentally or socially) have been identified and applicable preventive and corrective actions developed. Compliance with environmental specifications during construction will be part of the engineering supervision and will be monitored by the environmental unit of the DPV.

The above programs will be complemented by:

- *Institutional Strengthening in DPV:* The environmental management capacity of the existing environmental unit of the DPV will be improved in order to facilitate monitoring and supervision of the Project.
- *Social Communication Program:* A social communication and public participation program has been designed and implemented for Project preparation and construction to inform communities along the road about the progress of the Project and establish a mechanism to respond to any question or concern.

OP/BP 13.05 -- Project Supervision

44. In accordance with OP/BP 13.05, the Project has conducted several full supervision missions as well as smaller site visits to follow up on the implementation of land acquisition and the RAP as well as to address urgent matters, such as the site visit carried out in May 2007 to review drainage modeling under the engineering designs in light of the flooding of March 2007. Several Bank missions conducted over the past 18 months have included representatives of Bank Management (sector leaders and sector manager), including four missions between the date the Project was approved by the Board of Directors and the day it became effective. A complete list of Bank missions during preparation and supervision is provided in Annex 3. The supervision budget for FY08 is considered adequate (USD 110,000) as it complies with Bank norms.

World Bank Policy on Disclosure

45. The World Bank Policy on the Disclosure of Information, 2002 requires that certain documents be publicly disclosed while the project is under preparation. These are the Project Information Document (PID), the Integrated Safeguards Data Sheets (ISDS), the EA and the resettlement instruments.

46. The PID was disclosed on December 15, 2006. The final version of the EA report (including the ESMP) and RAP were disclosed on December 18, 2006, and the ISDS was disclosed on December 18, 2006. Copies of the documents were made available in the InfoShop and the Public Information Center in Buenos Aires, Argentina. The Executive Summary of the ESMP has been available in the municipal offices of the local communities along National Road 19. The ESMP and RAP are in the local language (Spanish). The ESMP and RAP have been shared and discussed with members of the affected communities. The PIU made available to the 2007 Requesters – after receiving a request from them – a copy of the ESMP and RAP.

V. MANAGEMENT’S RESPONSE

47. Management believes that the Bank has made every effort to apply its policies and procedures and to pursue concretely its mission statement in the context of the Santa Fe Road Infrastructure Project. In Management’s view, the Bank has followed the guidelines, policies and procedures applicable to the matters raised by the Request. As a result, Management believes that the 2007 Requesters’ rights or interests have not been, nor will they be, directly and adversely affected by a failure of the Bank to implement its policies and procedures.

48. ***The risks of flooding will not increase as a result of the upgrading of National Road 19.*** The engineering designs comply with solid and robust international standards for the construction of highways and fully address the risks of flooding. Management considers that the studies and simulations conducted during Project preparation and the robustness check made after the extraordinary flooding of March 2007 lead to the conclusion that the upgrading of National Road 19 will not worsen the hydrological situation of

the area surrounding it. On the contrary, it is expected that the risk of flooding in the surrounding area will be reduced compared to the without-project situation. Neither the Request nor the clarification submitted to the Inspection Panel present any quantitative evidence or additional analysis that challenge the engineering designs approved by the PSF.

49. ***The PSF is applying a well established legal process to determine the value of land to be acquired. This process has been assessed by the Bank, which found it satisfactory, and the PSF is applying it consistently.*** Every land acquisition process creates disagreements regarding the value of land. Precisely because this is a normal occurrence, Management notes that PAPs in the PSF have the right to complain to the Provincial Ombudsman and to challenge in court the value offered by the PSF. To date, no PAP has done so. It is important to note that the recent evidence indicates the PSF has a very low incidence (less than 1 percent) of land acquisition cases challenged in court, an indication that people in the PSF believe there is adequate compensation in land acquisition processes.

50. ***There has been frequent communication between the 2007 Requesters, the PSF and the Bank to address the concerns presented in the 2007 Request, which were already raised in the 2006 Requests.*** The PSF has provided detailed explanations to the 2007 Requesters, arranged meetings with several provincial authorities and made available all Project-related documentation upon request. The 2007 Requesters acknowledged in the information submitted to the Inspection Panel the willingness of the PSF to provide explanations to their concerns and recognized that the PSF acts according to the law.

51. The fact that in many instances the engineering designs were not altered does not mean that the PSF and the Bank did not consider carefully the concerns raised. As noted above, in many instances the Project was altered in response to issues raised by stakeholders. However, sometimes this was not possible for various reasons, sometimes technical, sometimes to balance the interests across all stakeholders of the PSF, or to comply with provincial laws.

52. The 2007 Requesters' claims, accompanied by Management's detailed responses, are provided in Annex 1.

ANNEX 1

CLAIMS AND RESPONSES

No	Claim/Issue OD/OP/BP	Response
Environmental Assessment (OP/BP 4.01)		
1.	The 2007 Requesters assert that construction of the proposed road at a higher elevation (+0.80m) will increase the risk of flooding of their properties.	<p>The PSF suffered significant floods in 2003 that affected approximately 200,000 hectares and the majority of the city of Santa Fe. The PSF has since then adopted measures to minimize the risks of flooding on this scale occurring again. The PSF did experience similar rainfall in 2007 that unfortunately affected farmland; however, it had a much smaller impact on the city of Santa Fe largely because of the measures adopted after the events of 2003. Given the ever present risks of flooding, the ESMP details the possible impacts of the improvement of National Road 19 in terms of a wide range of hydrological aspects. A matrix included in the ESMP (Chapter 3, page 12) links a list of hydrological aspects with measures being taken under the Project and the legislation or procedures applicable to each aspect. A detailed description of the hydrological and hydraulic aspects of the Project, included in Annex 4 to the ESMP, lists all recommendations that were carefully considered in the engineering designs.</p> <p>The construction of a road always affects the natural drainage flows in the surrounding area, consequently introducing risks of flooding. Well aware of the risks and trade offs, the Project team reviewed the engineering designs of the upgrading of National Road 19. The conclusion of the Project team's assessment is that the engineering designs comply with well-established design standards that satisfactorily address the risks of flooding.</p> <p>To measure rainfall drainage in the design of the new lanes at a level +0.80, calculations of the discharge capacity of stormwater management facilities (bridges, culverts and drain pipes) under the embankment of the new roadway have been carried out using the Modified Rational Method (MRM), in line with international best practice in highway design. This method uses the critical storm duration to calculate the maximum volume to be discharged by a facility under a road. The critical storm duration generates the greatest volume of runoff. The MRM assumes that the rainfall average intensity period is equal to the actual storm duration. As a basis for the calculations for this project, the statistical data concerning rainfall have been provided by INTA, the national regulatory authority, and design storm return frequencies of 50 years for bridges and 25 years for culverts and drain pipes have been adopted.</p> <p>Watershed areas have been determined using topographic maps on a scale of 1:50,000. Using both the data and MRM, the design inflow for all watersheds in the area of the highway has been obtained and the corresponding embankment crossing facilities have been designed to accommodate the flows. Many of the existing drainage facilities under the present roadway do not have enough capacity for the resulting runoffs. Therefore, these facilities</p>

No	Claim/Issue OD/OP/BP	Response
		<p>have been enlarged to give them the same capacity of discharge as the drainage channels that will be built for the new carriageway. In addition, new drain pipes crossing the highway embankment have been designed at low points where there were none previously, to improve the existing drainage conditions in those points. With all these improvements, the resulting capacity of discharge flow of the Autovía will be much higher than the current capacity.</p> <p>The quality control process of the engineering designs for upgrading National Road 19 provides assurance that the concerns raised regarding the possibility that the upgrading will produce a 'dam effect' are not well founded. In the quality control process, the engineering designs were reviewed by the Bank and formally approved by the DPV, the provincial Ministry of Water Affairs and the DNV.</p>
2.	<p>Lack of planning and marking of boundaries – No delimitation of suburban or rural areas, nor determination of commercial sites.</p> <p>In the letter, dated August 31, 2007, that the 2007 Requesters submitted to the Panel and that the 2007 Requesters asked to be treated as a part of the Request [...] They request a limitation of expropriations to 30 meters, up to kilometer 18 on the National Road 19.</p>	<p>The PSF is responsible for establishing zoning districts and delimitation of areas (urban and rural), as established by Provincial Law 2996, article 17.</p> <p>National Road 19 passes through three areas, or sections:</p> <ul style="list-style-type: none"> (a) urban area: 1.4 km in the city of Santo Tomé; (b) suburban area: 8.1 km in a semi-urban area with significant presence of economic activity (industries); and (c) rural area: the remaining 126 km (from km 9.5 to the city of Frontera in the PSF). <p>In sections (a) and (b) the upgrade of National Road 19 has been designed as a typical urban road, with 4 lanes separated by only 2 meters, which includes sidewalks and bicycle paths. There will be no expropriations in section (a).</p> <p>The 2007 Requesters do not explain why land acquisition should be reduced to 30 meters only up to Km 18. This request does not seem justified as, from Km 8.1 onwards, the land is used for agricultural purposes. In addition, changing the zoning from rural to urban would go against the purpose of a road corridor and would foster urban sprawl that could gradually encroach on the road.</p> <p>The demand for a 30 meter ROW is also present in the 2006 Requests. Thorough attention was devoted from the early stages of Project preparation to the amount of land required to upgrade National Road 19. In the first preparation mission the Project team requested the PSF to study alternative schemes to reduce land expropriation. The PSF and the DNV indicated that they decided to adopt a 120 meter ROW following the prevailing standard for Autopistas in Argentina. The Project team, as part of its due diligence during Project preparation, asked the PSF to present a written justification for the need to adopt the 120 meter ROW for the upgrading of National Road 19. In addition, to assess the impact of the Project on land use, the Project team requested the PSF to consider the alternative of constructing the central carriageway in the Project instead of the northern carriageway, minimizing expro-</p>

No	Claim/Issue OD/OP/BP	Response
		<p>priations.</p> <p>In a July 27, 2006 report, the PSF reaffirmed the 120 meter width and planned location of ROW. It justified its decision on the following basis:</p> <ul style="list-style-type: none"> • <i>Additional construction costs and potential negative environmental externalities.</i> A reduced ROW would not allow sufficient lateral extraction of soil for the construction of embankments, and the additional soil would need to be extracted from land which would need to be purchased, and then transported to construction sites. Consultants have estimated that additional soil transportation costs would double the embankment construction costs. Extracting soil from sites located outside the ROW could create negative environmental liabilities. Land extraction sites, without proper and continuous control, could become informal solid waste dumps. • <i>Construction of frequent returns in response to the request of affected communities to minimize restrictions on access to properties.</i> Incorporating returns at intervals of approximately 6 kilometers in line with the outcome of consultations with affected communities requires a wide separation between the existing carriageway and the one to be financed under the Project, in order to provide enough space for acceleration lanes and returns compatible with the Project design speed, without compromising road safety and the quality of the road alignment. • <i>Standards applied by DNV in similar projects.</i> In similar projects under planning or execution, DNV is mandating a 120 meter ROW for improvement works aimed at the eventual construction of a limited access freeway. Examples of this practice are the two most recent roads being improved, National Roads 9 and 5. <p>A cost comparison of different ROWs is presented in Annex 2.</p>
3.	<p>Possible future pollution and contamination.</p> <p>There is a failure to demarcate and structure suburban and rural areas, areas for manufacturing, and restrictions on the use of chemical products and contaminants.</p>	<p>According to OP/BP 4.01, during Project preparation the PSF, with Bank supervision, conducted an assessment (included in the ESMP) of induced impacts derived from a better quality road. The likelihood of having new production facilities that either used intensively chemical products and/or were polluting industries was considered very low.</p> <p>The ESMP pays special attention to possible negative environmental effects from construction works. These will be addressed by adopting the provisions of the "Handbook for Environmental Assessment and Management for road works" (MEGA). The ESMP identified the following environmental impacts from construction: nuisances to population (such as re-routing traffic), noise, construction camps and asphalt plants. Construction firms will be responsible for following the Environmental Technical Specifications included in the construction contracts.</p>

No	Claim/Issue OD/OP/BP	Response
4.	<p>The creation of dead space (60 meters) or its use to excavate the soil needed to raise the new roadway (0.8 meter) is a potential place for trash dumps or improper use for precarious human or animal settlements such as those found on the outskirts of the cities of Santa Fe and Santo Tomé.</p>	<p>Management wishes to clarify the following issues raised by the 2007 Requesters:</p> <ul style="list-style-type: none"> • <i>Extraction of soil within ROW justified on economic and environmental grounds.</i> As explained in Item 2 above, a reduced ROW, as the 2007 Requesters propose, would not allow sufficient lateral extraction of soil for the construction of embankments, and the remaining soil would need to be extracted from land to be purchased, and then transported to construction sites. This would double the cost of embankment construction.¹ Extracting soil from sites located outside the ROW could also create negative environmental impacts that would be much more difficult for the PSF to monitor. Land extraction sites, without proper and continuous control, could become informal solid waste dumps; and • <i>Risk of informal waste dumps and emergency settlements minimized by the institutional set up.</i> National Road 19 is under a concession contract. The concession contract mandates the concessionaire to maintain the road and do additional works (for instance cleaning, brush removal) within the ROW. Thus, the possibility of having informal waste dumps and/or emergency settlements is minimal as the ROW will be under daily supervision. Moreover, the evidence in Argentina clearly supports the fact that this risk is very low. There are no waste dumps and emergency settlements in the ROW of the Buenos Aires–Rosario and Rosario–Santa Fe highway, both of which have the same size ROW as the one of the future <i>Autovía</i> of National Road 19.
5.	<p>Incompatibility of the hydrological program and the highway project:</p> <ul style="list-style-type: none"> • The loss of agricultural balance in the soil causes insufficient absorption and retention of rainwater, with heavy and steadily increasing run-offs. • For years, the hydrological program has been based on construction of canals that hasten drainage toward depressions that are not natural evacuation basins. • These flows arrive unchecked from a wide area in the northwest and touch various critical points of the National Road 19/Four-lane highway. 	<p>Management understands that by “hydrological program” the 2007 Requesters refer to the policies that the provincial governments have designed and implemented to plan and regulate the use of water and address problems related to flooding and water management.</p> <p>Management shares the 2007 Requesters’ concerns about the problems faced by productive lands related to the agronomic balance in the soil, the lack of absorption and retention of waterways and agrees with the 2007 Requesters that the problem of informal canals being built by landowners is generating negative externalities which have a potential to damage the productive lands of the Province.</p> <p>Management considers that the studies and simulations conducted by well-known Argentine engineering firms under the supervision of the PSF during Project preparation and the reviews made after the flooding of March 2007 are robust and lead to the conclusion that the upgrading of National Road 19 will not worsen the hydrological situation of the area surrounding National Road</p>

¹ Net savings are estimated at USD3 million.

No	Claim/Issue OD/OP/BP	Response
	<ul style="list-style-type: none"> • Culverts for passage of water in the highway project are inadequate. The new raised elevation of the roadway will act as a dam and the drainage ditch on the north side will serve as a collector of ever greater flows that will cause problems for neighboring fields and hurt residents of the area, as happened in December 2006, and the flooding disaster of March 27-28, 2007 and it will increase the risk of flooding in the city of Santo Tomé. <p>MORE INFORMATION: "La Tierra se muere" ("The Land is Dying") of 03/03/2007 and Its Annexes, Chapters 2 and 3, and Program for the Restoration of the Agricultural Potential of the Soil in the Central Zone of the Las Colonias Department.</p>	<p>19. On the contrary, all of the studies indicate that the risk of flooding in the surrounding area will be reduced compared to the case without the project.</p> <p>The 2007 Requesters acknowledge that the hydrological problems that create recurrent flooding in the PSF pre-date the Santa Fe Road Infrastructure Project. The PSF has met regularly with the 2007 Requesters and other PAPs during Project preparation and implementation to discuss flooding and drainage issues. The most recent community meetings were held in July 2007, where specifics of the engineering designs were discussed in public hearings in all communities located near the ROW. Flooding and drainage issues were discussed extensively during those meetings and representatives from the engineering firms and the provincial Ministry of Water Affairs made presentations and answered questions about these issues. It is important to note that during a meeting held on the premises of the PIU on November 29, 2006 in the context of the Project pre-appraisal mission, one of the people who acknowledged that the hydrological problems pre-date the Santa Fe Road Infrastructure Project was one of the 2007 Requesters. He also acknowledged that resolving the issue of flooding in the PSF falls outside the scope of the upgrading of National Road 19 (a copy of the Minutes of the meeting with the Requesters is included in the Aide Memoire of the November 2006 Project preparation mission, available in Project files).</p> <p>Management would like to emphasize the commitment of the Project team and the PSF to seriously address the issue of flooding risks in the Project. After the flooding of March 27-28, 2007, the Senior Engineer of the Project team (Mr. Jose María Alonso Biarge) travelled to Santa Fe to re-evaluate the engineering designs (Mr. Alonso Biarge's conclusions can be found in the Aide Memoire dated May 2007 and available in Project files). At the same time, the PSF stopped the national authorities' approval process of the engineering designs and requested the provincial Ministry of Water Affairs to prepare a new analysis and a re-examination of the designs. To double check the soundness of the plans, the Bank and the Provincial Government independently came to the conclusion that the engineering designs will not cause the problems mentioned by the 2007 Requesters. In addition, it is important to note that the DNV needs to give its approval to all engineering designs produced by the PSF. The PSF shared with the Project team the observations made by DNV during the preparation of the engineering designs. Thus, DNV has functioned as an additional level of quality control, reducing even further the possibilities of mistakes in the design of drainage measures included to address risks of flooding.</p>
6.	In the letter, dated August 31, 2007, that the 2007 Requesters submitted to the Panel and that the 2007 Requesters	A detailed technical analysis was made regarding the elevation of the road and its potential consequences on drainage and flooding. The technical standards of the design were found satisfactory

No	Claim/Issue OD/OP/BP	Response
	asked to be treated as a part of the Request [... They request] the elimination of the projected elevation of the layout to "level +0.80".	<p>by the Bank, the PSF, and the DNV (as National Road 19 will remain under the jurisdiction of the Federal Government, the DNV has the mandate to approve the final design of the road).</p> <p>The elevation of the layout to "level +0.80" responds to basic principles of road design standards, which are specified and adopted by DNV. In addition, the elevation of this road will improve the transit conditions of National Road 19, a heavily used trade corridor, and a key arterial road for local producers. Historically, there have been instances where water crossed over National Road 19, making its use impossible. By elevating the road and improving drainage conditions, the Project will bring a more reliable mode of communication/transport to the adjacent communities, including improved access by emergency vehicles in crisis situations. Moreover, by elevating the road, the humidity conditions of the soil will allow a reduction of maintenance costs, improving the sustainability of the investment. See Item 1 for more details.</p> <p>The 2007 Requesters allege that the design of the road, and, in particular, its elevation by an additional 80 cm, will worsen the effects of flooding on adjacent fields, including their own. Beyond a general statement to this effect, only one reference is made to a specific location (km 22+850m) where the proposed drainage pipes are deemed inadequate. A one-page calculation is attached in the 2007 Request to substantiate this claim. The precipitation and run-off in this section was modeled by the provincial Ministry of Water Affairs in 2004 and also evaluated in detail by an independent engineering consulting firm (Ing. Cornero Consultora S.A.) during the preparation of engineering designs in 2006 and again after the severe flooding that affected the area in March, 2007. The results (see Annex 6) demonstrate that the proposed drainage pipes are sufficiently large to handle a 50-year flood event.</p>
7.	[In the same letter, ...], they request that the project must include proper preparation of the drainage areas, and launching of a parallel program to encourage water absorption in the soil of the whole zone, eliminating artificial diversion of water to places without natural watersheds.	<p>Management considers that OP/BP 4.01 has been consistently followed in this Project. Drainage capabilities of the upgraded National Road 19 will be better than the existing drainage conditions.</p> <p>The establishment of a program that supports the absorption of residual waters from the "entire area" should be pursued by the PSF but it is an activity that clearly goes beyond the scope of the Project.</p> <p>The issue of drainage canals in the entire area of central Santa Fe was discussed in different meetings held with PAPs, in particular agricultural producers. The PSF developed a public private partnership ("<i>Comités de Cuenca</i>") with local governments and producers to elaborate possible solutions to improve drainage in the area and reduce the destructive practice carried out by some producers who build informal drainage canals. Part of this discussion was summarized by the PIU in notes taken during the July 2007 meetings organized with the communities along National Road 19.</p>

No	Claim/Issue OD/OP/BP	Response
Involuntary Resettlement (OP/BP 4.12)		
8.	Discrimination and harassment – Intimidating communications	<p>Management takes very seriously any allegations of discrimination and intimidation. To date, Management has not seen any evidence of intimidating communication or discrimination by the PIU or PSF towards the land owners. The Bank has been working with the 2007 Requesters and other PAPs to address issues that have arisen during project implementation and relations have been cordial and constructive. On different occasions members of the Project team asked affected landowners (including the 2006 and 2007 Requesters) to provide details of the interaction with the DPV unit in charge of conducting the expropriation process. When asked specifically about “lack of respect” from the DPV unit, the PAPs indicated they had not experienced this problem.</p> <p>It should be noted that affected land owners may express their concerns to the PIU but also to other provincial actors that are independent of the executive branch of government. Examples of these actors are: local governments (“presidentes comunales”) and the Provincial Ombudsman (“Defensor del Pueblo de la Provincia de Santa Fe”).² The RAP explains all the mechanisms available to project-affected landowners (see section on Compensation for expropriations that starts on RAP page 48).</p> <p>The Project team has found no evidence of discrimination as all potential PAPs have been invited to Project information meetings. There is no limitation to the participation of PAPs and the PIU has responded to all communications sent through the available channels (mailboxes, e-mail, letters and phone calls). Annex D of the RAP summarizes the communication activities carried out until December 2006. Updated information on the communication activities is available upon request from the PIU. The PIU registers all communications with PAPs and produced minutes of all community meetings.</p> <p>The Project team has worked closely with the PIU since the start of Project preparation to make sure all concerns raised by potentially affected people receive a fast and clear answer from the PIU. The 2007 Requesters clearly acknowledge, in a letter dated August 24, 2007, which is included in the Request (Ref V/Nota 352 del 24/07/07 RN19/Autovia) the comprehensive verbal and written communication between the 2007 Requesters and the PIU and they thank the PIU for providing explanations to their concerns and demands.</p>

² The main mandate of the Ombudsman office is to protect the rights/interests of its citizens and the community against actions/omissions carried out by the public administration (including its agencies) which imply, inter alia, abusive, arbitrary, illegitimate, discriminatory and negligent practices in connection with the performance of its functions, or which might be perceived as a deviation of its power (see articles 1 and 22 of Provincial Law No. 10396).

No	Claim/Issue OD/OP/BP	Response
9.	<p>In the 1970s there were plans for construction of a four-lane highway bordering National Road 19. Expropriations for that project were planned and surveys done. This data was used to calculate the area needed for the new four-lane highway.</p> <ul style="list-style-type: none"> • Using these figures for the majority of the frontage properties affected would result in an area up to 15 or 20% larger than that reported in notes 192, 193, 197, and 198 of the Project Implementation Team. • There was inequity in the appraisal of the properties to be expropriated, because for adjacent properties with the same productive potential there were differences of up to 70% in the settlements proposed. • They did not respect the amounts, terms, and form of payment specified in the Bank management's criteria, as set forth in point 36 of the Inspection Panel's report that was received. 	<p>The Government of Argentina planned the upgrading of National Road 19 in the early 70s. For that purpose, it prepared the corresponding cadastre measurement and acquired 660 hectares in the PSF. To carry out the works to be financed under this Project, the PSF needs to buy approximately 650 additional hectares. The Province hired three engineering firms to update the cadastre information of the affected properties. The cadastre information is reviewed and approved by the <i>Dirección de Catastro y Cartografía</i>. Whenever inconsistencies are found, the cadastre measurements are rejected and corrections are made. Official offers for land acquisition are only made after the approval of the cadastre by the <i>Dirección de Catastro</i>.</p> <p>The DPV, which is in charge of land acquisition in the PSF, has been signing voluntary agreements (<i>Convenios de Avenimiento</i>, see below) for the purchase of land using cadastre information that corresponds to the final road design. It should be noted that in the event affected landowners identify problems in the cadastre information they can contact the PIU to request the revision of the cadastre. This indeed is what happened with one of the 2007 Requesters, and his concerns were addressed and solved through the mechanisms in place and the prompt response from the PIU.</p> <p>The land acquisition process is governed by specific laws in the PSF.³ The Provincial laws provide that the expropriating entity is authorized to reach <i>Convenios de Avenimiento</i> with affected landowners in connection with the expropriation of their land. In case an agreement cannot be reached, the expropriating entity initiates judicial proceedings in the PSF courts to resolve the dispute over the amount of compensation to be paid. It should be noted that if the expropriation case goes to court, the expropriating entity shall, at the time of filing the complaint, deposit in "escrow" (<i>consignación judicial</i>) with the court the amount of compensation offered to the affected landowner. The affected owners also have the possibility of addressing their claims to the Provincial Ombudsman. The PSF has a proven track record of reaching voluntary agreements for the acquisition of land. Statistical information about the outcome of previous processes of land acquisition was obtained during project Preparation. It shows that for works initiated between 2004 and 2006, there was a challenge regarding only four out of 455 plots of land (0.9 percent of total plots) with respect to the amount of compensation offered by the PSF in the provincial courts.</p> <p>The PSF agreed with the Bank to follow Bank compensation policies for land acquisition. The supervision carried out by the Project team has reviewed a sample of the administrative files that include the valuation of lands and structures and all administrative documents that are used to elaborate a monetary offer. The Project team has found no inconsistencies in the principles followed</p>

³ See paragraphs 31-34, and footnotes 18-28, in the Narrative section of the Management Response.

No	Claim/Issue OD/OP/BP	Response
		<p>by DPV to value the affected land and structures.</p> <p>The procedure of land acquisition is explained in detail in the RAP (see pages 48-61), a final version of which was made public in December, 2006 and is available to all interested parties. A summary of the valuation methodology of affected land followed by the DPV is the following:</p> <ul style="list-style-type: none"> • According to article 17 of Provincial Law No. 7534 the amount of compensation ("<i>indemnización</i>") to be paid shall be equal to the objective value ("<i>valor objetivo</i>") of the land plus any direct and immediate damage caused by the expropriation of the affected land. • Pursuant to the Provincial Law, DPV is the entity in charge of carrying out the valuation of land affected to road projects. In order to carry out said mandate, the DPV may seek information from the Provincial Cadastre, which it does under the present case. • Pursuant to article 25 of Provincial Law No. 2996 –“Valuation and Cadastre of Real Estate” (as amended), the valuation of real estate shall be based on objective background information ("<i>antecedentes objetivos</i>") which shall not take into account personal nor incidental factors. Moreover, article 25 of the same Law provides in part that the amount of compensation ("<i>justiprecio</i>") to be paid must be adjusted to the time in which payment is made. • The following are the elements that the valuation of rural land shall take into account: <ul style="list-style-type: none"> (a) the soil configuration, the quality of the land and the underground water, the productivity of the land (including its subdivision, the intensity of its economic production compared with the predominant land production in said area, the real rent/income ("<i>renta real</i>") set in (private) contracts or public deeds or the presumed income ("<i>renta presunta</i>") that takes into account statistical information on estimated production and the production average prices for a range period of not less than 5 years; and (b) as supplemental background information, the owner's tax return, the current fiscal valuation, the average sales prices (since the last valuation) of similar land within the area, court rulings on expropriation cases, the valuations carried out by official mortgage financial institutions, the information that may be provided by the provincial tax authority, and the information reflected in the real estate registry, municipal cadastre registries (for urban and semi-urban land) and the Provincial Directorate of Cadastre and Mapping ("<i>Dirección Provincial de Catastro y Cartografía</i>"). • Once the DPV obtains the price valuation mentioned above, and in order to determine the objective value the DPV also

No	Claim/Issue OD/OP/BP	Response
		<p>seeks information from: (a) banks, real estate agencies, cooperatives (“<i>Cooperativas</i>”) and the municipality (“<i>Comuna</i>”) with respect to the price per hectare; and (b) (i) real estate publications, and local and national newspapers in respect of physical improvements/fixtures; and (ii) inter alia, the INTA in respect of the value of the crops.</p> <ul style="list-style-type: none"> • Thereafter, and before the DPV makes a final compensation offer (“<i>valor objetivo</i>” plus any direct and immediate damage caused by the expropriation of the affected land) to the affected landowner, the DPV also takes into account a series of characteristics related to the affected land so as to increase the final price to be paid to the landowner, which increase shall not exceed 30 percent of the amount of the land valuation issued by the Provincial Cadastre. The characteristics that the DPV takes into account include, inter alia, the location of the land (for example, the proximity of the land to trade centers is an important factor) and the expropriated surface (such as if the land has been affected in whole or in part). • Finally, the DPV notifies the affected owner of the expropriation and at the same time offers the owner the final compensation, as described above. <p>Management has made all possible efforts to assess the validity of the allegations of inequity in the appraisal of properties. Specifically the Project team asked the PSF to take the two examples provided by the 2007 Requesters and explain the justification for the differences in the appraisal. The PSF sent a letter on October 8, 2007 (available in Project files) where it says that the plot cited by the 2007 Requesters in Example 1 (Plano 69157/1973) will not be subject to any expropriation. The letter indicates that the difference in example two is explained by the very different quality of soil.</p>
10.	<p>Unfair appraisals. The amounts, payment terms and timeframes according to the criteria of the Bank’s Management expressed in point 36 of the report received from the Inspection Panel are not respected.</p> <p>In the letter, dated August 31, 2007, the 2007 Requesters ask for the application of a fair system for compensation for the lands to be used for construction of the four-lane highway.</p>	<p>Evidence collected in meetings held with landowners who signed a voluntary agreement indicates the PSF is carrying out the land acquisition process in an equitable way. To further study the application of the agreed valuation of land, Bank Management will review in detail a sample of 20 cases in which voluntary agreements have been signed, as part of its next supervision mission.</p>
Poverty Reduction (OP 1.00)		
11.	<p>Restriction of economic and social development – Concerning rural activities in the zone of influence of National</p>	<p>The trends cited by the 2007 Requesters (disappearance of dairy farms, the gradual replacement of cattle farming by soy) are a reality in the PSF and the whole Pampa Region in Argentina, but</p>

No	Claim/Issue OD/OP/BP	Response
	<p>Road 19/Four-lane highway</p> <ul style="list-style-type: none"> • The disappearance of dairying as a rural family activity in recent years has led to the end of thriving economic activity and depopulation of the zone. • Subdivision of the land (<i>minifundio</i>), condominiums, and landownership by elderly persons has encouraged farming by contractors or tenants. • This makes it impossible to carry on dynamic activities, and initiation of new activities (farms, orchards, ranches, etc.) would demand non-existent economic resources. 	<p>they clearly pre-date the Santa Fe Road Infrastructure Project. While the Project cannot by itself reverse these trends, the upgrading of National Road 19 is expected to be beneficial to economic development. When a road is upgraded and access to it maintained or even improved, as is the case of National Road 19, the value of nearby land increases, as transportation costs to demand centers decrease. A more reliable National Road 19 might influence firms' location decisions, which could translate into job creation activities for the communities along the road. It is worth noting that if the zoning district is changed to increase the urban area, as the 2007 Requesters say they would prefer, the trends described above would be aggravated.</p> <p>At the request of affected communities, ground-level interchanges with speed reducers are included every 6 kilometers or less. Moreover, the future freeway will include a collector road to maintain access to the road and, as part of the Bank financed project, intersections with unpaved rural roads will be upgraded. This will have a positive effect on rural connectivity and will reduce the cost of doing business for new developments (farms, vegetable gardens and other productive activities mentioned by the 2007 Requesters).</p>
12.	<p>The proposed project will mean effective loss of use of the single paved road in a large area, and the restricted access implied by the four-lane highway will perpetuate passive economic activity, with stagnation or recession.</p>	<p>The upgrading of National Road 19 will foster productivity and competitiveness through cost reductions in transport and logistics. It is expected that an improved National Road 19 will open development opportunities for the local communities, as agricultural production and agribusinesses located in the area will benefit from reduction in logistics costs. The economic evaluation conducted during Project preparation estimated the NPV of the proposed Project at USD 63 million.</p> <p>The upgrading of National Road 19 includes the construction of improved access to productive facilities. Currently, most of these access roads are informal and dangerous. The new Autovía will, by no means, create any restriction of use or access. On the contrary, having an improved road, with many roundabouts to facilitate interconnection of productive facilities in the hinterland of National Road 19, will provide more dynamism and economic opportunities to the PSF.</p> <p>Traffic levels along National Road 19 in the territory of the PSF have been growing significantly. Between the last study conducted by the DNV in 2003 and the one carried out for Project preparation in March 2006, AADT grew approximately 40 percent. Traffic composition changed, increasing the relative importance of trucks, which in some segments of the road account for more than 45 percent of total traffic. According to the latest traffic study, it is expected that the average AADT will exceed 7,500 by 2015 along all segments of the road in the PSF, and 10,000 along the segments close to urban areas. Observed traffic levels have justified the upgrading of National Road 19.</p>

No	Claim/Issue OD/OP/BP	Response
Project Supervision (OP/BP 13.05)		
13.	<p>In the letter, dated August 31, 2007, that the 2007 Requesters submitted to the Panel and that the 2007 Requesters asked to be treated as a part of the Request, the 2007 Requesters refer to their previous Requests and state that the situation of the project has not improved and now facts have developed that support their previous concerns, especially the progressive flooding in the area of National Road 19.</p>	<p>When the 2006 Requests for Inspection (RQ06/05 and RQ06/05-2) were registered, the Project was in a pre-appraisal stage. The Project is currently under supervision and progress is being made on all components. The Project team has conducted a detailed Project supervision (for a list of missions see Annex 3), with special emphasis on the implementation of the RAP. Two local consultants have been hired to follow up on implementation of the ESMAP and RAP. They travel to Santa Fe every two months.</p> <p>The preparation process followed by the PSF and Bank team—from project identification up to the current stage of supervision—has incorporated a review of the specific concerns raised by the 2007 Requesters regarding the upgrading of National Road 19. The consultation process continues; for example, consultation meetings have been organized in several communities along National Road 19. The 2007 Requesters have participated in these meetings.</p> <p>Management would like to emphasize that the consultation process has addressed concerns raised by the affected population. The Aide Memoire of the November 2006 mission (available in Project files) provides many examples of changes in the design of the road to respond to specific needs and concerns of landowners. Annex 5 presents a report that summarizes some changes to the design adopted following requests made by affected landowners (the report is extracted from the Aide Memoire of the November 2006 preparation Mission).</p> <p>An example of the successful implementation of the RAP is the program to relocate the rural General San Martin school. A meeting was organized in June 2007 with representatives of the provincial Ministry of Education, parents, teachers, the police and representative of the communal government. This is the first consultation of this type in the PSF; previously there has never been a process of consultation undertaken when a school needed to be relocated as a consequence of an infrastructure project.</p>
14.	<p>We have made our complaints in writing and personally on the following occasions: 4/3/07 to the World Bank; 7/10/07 to the SPIFE [Undersecretariat for Investment Projects and External Financing]; 7/19/07 to the Bank; 8/8/07 to the SPIFE; and 8/27/07 to the Bank and the SPIFE. The replies and explanations did not offer solutions to the problems posed, because they did not alter the original proposal. The letters sent on 8/27/07 to the SPIFE and the Bank were not answered.</p>	<p>The Project team and the PIU have interacted with the 2007 Requesters in many more instances than those pointed out by them in the Request (see Annex 4).</p> <p>Management and the PIU have carefully responded to concerns raised by the 2007 Requesters in their letters. The 2007 Requesters clearly acknowledge, in a letter dated August 24, 2007, which is included in the Request (Ref V/Nota 352 del 24/07/07 RN19/Autovia) the intense verbal and written communication between the 2007 Requesters and the PIU and they thank the PIU for providing explanations to their concerns and demands.</p> <p>With respect to the letter sent on 08/27/07 it should be noted that the Task Team Leader asked the 2007 Requesters to send a</p>

No	Claim/Issue OD/OP/BP	Response
		<p>letter to the PIU, as a follow up to a telephone conversation held on August 20, 2007 (Phone records are available from GSD). Given that the Project team had suggested this letter be sent to the PIU, it understood that the Bank was copied for information only. Moreover, during the telephone conversation of August 20, 2007, the Task Team Leader informed the 2007 Requesters that a Bank supervision mission would travel to Santa Fe the week of September 10, 2007. The mission subsequently took place and there were further consultations with the 2007 Requesters and other PAPs.</p> <p>Management reaffirms its commitment to the ongoing consultation process that has generated meaningful and broad participation and open dialogue which has allowed all interested parties not only to express their views about the project, but to help design, improve, and implement their input.</p>

ANNEX 2

JUSTIFICATIONS OF THE RIGHT OF WAY ADOPTED FOR THE UPGRADING OF NATIONAL ROAD 19

DNV, the entity in charge of the federal network, to which National Road 19 belongs, has defined a ROW 120 meters wide for existing and future freeways, in Argentina considered to be Category I (standard set by DNV). National Road 19, being part of a bi-oceanic corridor, is considered Category I.

The PSF reaffirmed the 120 meter width and planned location of the ROW. It justified its decision on the following basis.

- *Additional construction costs and potential negative environmental externalities.* A reduced ROW would not allow sufficient lateral extraction of soil for the construction of embankments, and the remaining soil would need to be extracted from land to be purchased, and then transported to construction sites. Consultants estimated that additional soil transportation costs would double the cost of embankment construction (see below for a cost comparison with alternative ROWs). Extracting soil from sites located outside the ROW could create negative environmental liabilities. Land extraction sites, without proper and continuous control, could become informal solid waste dumps.
- *Construction of frequent returns in response to the request of affected communities to minimize restrictions on access to properties.* Incorporating returns at about 6 kilometer intervals in line with the outcome of consultations with affected communities requires a wide separation between the existing carriageway and the one to be financed under the Project, in order to provide enough space for acceleration lanes and returns compatible with the Project design speed, without compromising road safety and the quality of the road alignment.

The ROW established by the DNV will allow the lateral extraction of two million cubic meters of soil for the construction of the embankments for the new roadway and designed improvements in the existing one, a possibility that is critical, given the very flat area of the works. This ROW thus amounts to a savings of USD 3.5 million (see Table A2-1 below). If the ROW were to be reduced to minimize the expropriation area – to 90 meters, for instance – the two million cubic meters of soil for the embankments would have to be excavated from borrow pits more than 200 meters away from the ROW. This would require a lot of additional acquisition of land by the contractor, according to the bidding documents, and impose additional costs for transportation to the work site.

The following table and graphics show the differences for ROWs of 90 and 100 meters, compared with the 120 meters adopted for the Project:

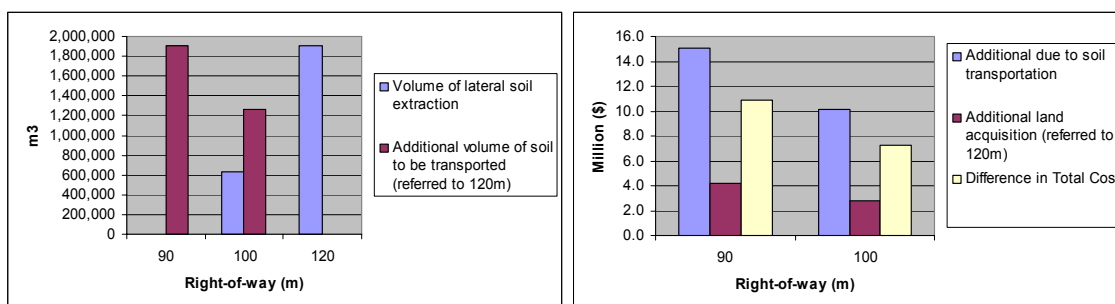
Table A2-1
Right-of-Way Comparison

Right of Way (m)	Expro- piation Area (ha)	Unit Price of Land (AG\$)	Total Exp. Cost (MM\$)	Volume of Lateral Extraction (*) (m3)	Additional volume out of ROW (**) (m3)	Additional unit price for soil transport (AG\$/m3)	Additional cost of soil transport (AG\$)	Difference in Expro- piation Cost (AG\$)	Difference Total Cost (***) (AG\$)
90	624.3	20,000	12.5	0	1,903,488	7.92	15,075,625	4,162,000	10,913,625
100	693.7	20,000	13.9	634,496	1,268,992	7.92	10,050,417	2,774,000	7,276,427
120	832.4	20,000	16.7	1,903,488	0	7.92	-	-	-

(*) Subject to drainage conditions

(**) To be provided by the Contractor. Additional surface needed for extraction.

(***) 1US\$=3AG\$



Furthermore, the 120 meter ROW established by the DNV allows space for two collector roads and their ditches in the last phase as a freeway, in addition to the two main roadways. It also increases road safety for the road users, given the existence of many direct accesses to the properties along the existing road.

The following three cases of established ROWs are interesting comparative examples: (i) the DPV of Buenos Aires Province has established a ROW of 100 meters for two-lane roads; (ii) in the highway Santa Fe–Rosario the ROW is 150 meters but, in addition, there are two collector roads 20 meters wide each, resulting in a total of 190 meters; and (iii) the highway under construction between Rosario and Córdoba has a ROW of 120 meter because it is a Category I road, like the one financed by the project.

ANNEX 3 LIST OF BANK MISSIONS

Date			Type of Mission	World Bank Team	Comments
Day	Month	Year			
21	September	2005	Preliminary Discussions	Tomás Serebrisky, Ana Maria Grofsmacht	In World Bank's Buenos Aires Office
27	October	2005	Pre-Identification	Juan Gaviria, José Luis Irigoyen, Tomás Serebrisky	
17-18	April	2006	Preparation	Fernando Brunstein	Meetings with provincial authorities and with Comunal Presidents
15	May	2006	Preparation	Fernando Brunstein	Meetings with provincial authorities
22-23	May	2006	Preparation	Fernando Brunstein	Josefina, Frontera and San Francisco cities visited
5-8	June	2006	Preparation	Tomás Serebrisky, José María Alonso, Juan Manuel Campana, Lucia Spinelli, Fernando Brunstein, Juan Sanguinetti	Financial Management Specialist (Alejandro Solanot) traveled June 12-16
12-14	July	2006	Preparation	Tomás Serebrisky, Juan David Quinteros, Elena Correa, Fernando Brunstein	
30-31	August	2006	Social and Environmental Pre-Appraisal mission	Juan David Quinteros, Fernando Brunstein	
17-18	August	2006	Preparation - Technical Issues	Juan Manuel Campana, Lucia Spinelli	Informal mission to analyze technical information with DPV
20-22	September	2006	Pre-Appraisal of Technical Issues	José María Alonso, Juan Manuel Campana, Lucia Spinelli	
29-1	November / December	2006	Pre-Appraisal	Tomás Serebrisky, Lucia Spinelli, Jose Luis Irigoyen, Alberto Ninio, Alexandra Bezeredi, Juan David Quintero, Elena Correa, Reynaldo Pastor	Meetings with 2006 Requesters
18	December	2006	Appraisal	Tomás Serebrisky, Lucia Spinelli, Solanot, Mac Gaul.	In World Bank's Buenos Aires Office
14	March	2007	VC for Social and Environmental Issues	Tomás Serebrisky, Elena Correa, Fernando Brunstein, Lilian Pedersen, Lucia Spinelli (WB) Corzo and Vazquez (PIU)	VC in World Bank Buenos Aires offices to discuss social and environmental issues
28-30	March	2007	1st Follow up ESMAP visit	Fernando Brunstein and Lilian Pedersen	Implementation of ESMP and PER
21-25	May	2007	Technical Issues	José María Alonso	Mission to assess technical design after flooding of March 2007
29-30	May	2007	2 nd Follow up ESMAP Visit	Lilian Pedersen and Lucia Spinelli	Implementation of ESMP and PER
28-29	June	2007	3 rd Follow up ESMAP Visit	Fernando Brunstein and Lilian Pedersen	Implementation of ESMP and PER
24-26	July	2007	Participate in Project Dissemination Workshops	Fernando Brunstein and Lucia Spinelli	Workshops in Frontera, San Jerónimo, Sa Pereyra, San Agustín and Santo Tomé

Date			Type of Mission	World Bank Team	Comments
Day	Month	Year			
			(community meetings)		
11-13	September	2007	Supervision Mission	Tomás Serebrisky, Juan Manuel Campana, Lucia Spinelli, Fernando Brunstein, Lilian Pedersen, Alonso Zalzar, Alejandro Solanot	
30-2	October-November	2007	Supervision Mission	Tomás Serebrisky, Elena Correa, Reidar Kvam, Reynaldo Pastor, Franz Drees-Gross, Alberto Ninio	Meeting with 2007 Requesters

Note: In addition, several meetings and visits to Santa Fe took place to analyse Procurement issues.

ANNEX 4

COMMUNICATIONS BETWEEN 2007 REQUESTERS, PIU AND THE WORLD BANK

Date	Form of Communication	Name	Issue	Date Reply	Reply
29-Nov-06	Meeting	Jullier, Hector	Aide Memoire of meeting between World Bank (WB) staff and Mr. Jullier.		
4-Dec-06	Note	Jullier, Hector	PIU requested on behalf of Mr Jullier meetings with: the Ministry of Water Affairs, the Municipality of Santo Tome, and the Coordination Ministry		
5-Dec-06	Fax	Jullier, Hector	Fax sent by Mr. Jullier received		
6-Dec-06	E-mail	Jullier, Hector	Email sent to Mr. Jullier and Arriola copying the note sent by PIU to the ministries mentioned before.		
28-Feb-07	Meeting	Jullier, Hector	Report of meeting held on the 26th of Feb 2007, between Mr. Jullier and officials from the Ministry of Water Affairs		
28-Feb-07	Note	Jullier, Hector	Note from Mr. Jullier to Mr. Felipe Saez (WB) attaching copies of the notes sent to Ministry of Water Affairs and to the Planning and Control Sub-Secretariat		
5-Mar-07	Note	Jullier, Hector	Note sent by WB to Mr. Jullier, informing that his concerns had been redirected to PIU		
9-Apr-07	Note	Jullier, Hector	Note from Mr. Jullier to Mr. Axel Van Trotsenburg (WB) reporting they have not had any news about resettlements and leaving much uncertainty (fax)		
9-Apr-07	Fax	Jullier, Hector	Note from Mr. Jullier to Mr. Saez (WB) requesting to open a gap on ruta 19 Km 21 to clear water from flood	18-Apr-07	WB reply to Mr Jullier that his communication was sent to Mr. Francisco Sobrero
				24-Jul-07	PIU release of Note 352 00301 - 0056987-5 with copies of file to the MAH and DPV
10-Jul-07	Note	Jullier, Hector	Various	31-Jul-07	Fax from WB to Mr. Jullier communicating that through the Letter sent by the Management Unit on July 24th, answers to his inquiries had been provided
8-Aug-07	Interview	Jullier, Hector	Requests information about socio-economic studies, water issues and access to his land		

27-Aug-07	Note	Jullier, Hector	Note of Mr. Jullier to PIU suggesting to revise certain aspects of proposed works	27-Aug-07	Note 387 sent to Ministry of Production, Ing. Ceretto. File 00301 - 0056987 - 5. Documents provided by Mr. Jullier related to soil problems and productive areas are sent.
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This matrix does not detail the dates of telephone conversations held between the PSF and Mr. Jullier and the Project team and Mr. Jullier (the Team leader called Mr Jullier on July 20, 2007 and August 20, 2007).

ANNEX 5
SAMPLE OF MODIFICATIONS TO THE ROAD DESIGN FOR THE UPGRADING OF
NATIONAL ROAD 19 AS FOLLOW UP TO AFFECTED LANDOWNERS' CONCERNS

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CLAIMS OF AFFECTED PARTIES REQUESTING ROUTE CHANGES

Degano Case

Km 23.3

Property record: 092900-091606/0000

Owners: Degano, Sergio Gabriel.

Total area: 31.23 hectares



Mr. Degano participated in the August 7 information meeting held in San Agustín, at which time he left his e-mail address, to which we sent him three e-mails with links to the ESMP, preliminary project planimetric maps, and the Plan for Expropriations and Resettlement.

On September 3, at the offices of the Project Implementation Unit for the National Road 19 upgrading project, there was a meeting requested by Sergio Degano and Willian Gilli, in which Héctor Corzo, Daniel Tuma, and Francisco Sobrero took part. Mr. Degano requested more information on the areas of his property to be expropriated. He was told about the characteristics of the project, and that it was planned to preserve land on his property as a rest area. About 36 percent of his lot would be affected, as shown by the blue or cyan line in the following figure:

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Mr. Degano requested that area not be taken, because his property has 31 economically productive hectares that support two families. His request was noted and he was told that it would be transmitted to the highway designers for consideration.

Finally, in a meeting held on November 27, DPV told the environmental consultant that after evaluation with the engineering consultant it was decided not to locate a rest area on this property. There would only be a turnaround, so the affected area would be reduced as the owner requested. As shown in the graph, this will involve the removal of the trees in the northern sector of said area.

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Don Case

Km 14.95

Property record: 092900-091625/001

Owner: Don, María

Total area: 32.68 hectares



The parcel in question is used for fruit farming, specifically raspberries. According to the preliminary proposal, three barns and a house would be affected. Since this could adversely affect the owner's livelihood, she requested a change in the route. In a meeting with Mr. Garzón (DPV Lands Division), an agronomist was assigned to analyze the case.

The case continues under study.

Chronology of contacts

Means	Date	Subject
Survey	July-Aug.	Surveyed by environmental consultant
Meeting	Aug. 8	Attended meeting in San Agustín
E-mail	Sept. 15	Told that the ESMP is available on the provincial website
E-mail	Sept. 20	Told that a copy of the preliminary project planimetric map is available for consultation in the Commune
Personal meeting	Sept. 25	Meeting at the Project Implementation Unit, with Francisco Sobrero, Héctor Corzo, and Daniel Tuma
E-mail	Sept. 29	Told about publication of the Plan for Expropriations and Resettlement on the provincial website
Meeting	Sept.	Visit to the Provincial Highway Division
Letter	10/10	Letter sent to her in reply to her note to the Governor
Interview	Oct.	Interview at her home (Garzón, DPV Lands Division). It was agreed to designate an agronomist to evaluate the affected raspberry production

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Imhoff Case

Km 35

Property record: 0931000926650000

Total area: 52.138 hectares

Owner: Imhoff, Victor

Mr. Imhoff's parcel is in San Jerónimo del Sauce, a community that the road will bypass.

He is engaged in dairy farming on the property.

Chronology of contacts

Means	DATE	SUBJECT
Sa Pereira mailbox	June 29	Notified that he was surveyed, has no opposition to the project, and offers to sell the complete property ([handwritten] note attached)
San Jerónimo	Aug. 10	Attended the information meeting on the preliminary project proposal and saw the available information
E-mail	Aug. 11	Requested more information on the project and maps of the route
E-mail	Aug. 11	Told that maps of the preliminary project are not yet available
E-mail	Sept. 4	Reply updated with progress on the preliminary project to date
	Sept. 11	Engineering consultant delivers preliminary project, delayed by changes requested by neighbors in San Jerónimo del Sauce
E-mail	Sept. 15	Told that the ESMP is now available on the provincial website
E-mail	Sept. 20	Told that a copy of the preliminary project planimetric map is available for consultation in the Commune
	Sept. 22	IBRD report received on complaint regarding the affected party
	Sept. 26	Ing. Corzo calls him to set up a meeting
Individual meeting	Sept. 27	He voices his concerns, and suggests alternatives with lesser impact. It is suggested that he meet with the engineering coordinator of the project and he presents a note
	Sept. 28	Environmental coordinator A. Vázquez telephones his father and him to set up a meeting with engineering coordinator Ing. Gómez
	Sept. 28	Report from the IBRD country director on a complaint lodged with the Inspection Panel
	Sept. 29	Telephone contact with Ing. Gómez
E-mail	Sept. 29	Told about posting of the Plan for Expropriations and Resettlement on the provincial website
Individual meeting	Oct. 3	Meeting with Ing. Gómez, resulting in a service order for the engineering consultant to study the alternative requested
E-mail	Oct. 7	Requests meeting with the IBRD
E-mail	Oct. 9	Reports he did not receive a reply in the meeting with Ing. Gómez
E-mail	Oct. 10	Told that service order to consultant was issued on October 4
Letter	Oct. 11	Answering the note presented at the meeting on September 27
	Oct. 11	Reply received to e-mail sent on October 10
Meeting	Oct. 13	Meeting with technical team and World Bank
Individual Meeting	Oct. 24	Personal visit by Ing. Gómez and Vázquez
E-mail	Oct. 25	By e-mail he is sent the memorandum of the meeting of October 13

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Visit	Oct. 26	Meeting with Mr. Juan Pablo Garzón (DPV Lands Division)
Visit	Oct. 27	Visit to his property by Messrs. Sobrero and Vissio
E-mail	Oct. 30	Accepts the memorandum with a commitment to come and sign it

Report presented by Ing. Gómez to the chief engineer of DPV Marcelo Gallino

We studied two variations of the route as shown on the attached planimetric map, Variation 1 in green and Variation 2 in blue. The green V1 is very close to the original route studied years ago by the National Highway Directorate (1974). The blue V2 retains the first curve in the same position and connects with the original of the preliminary project before the intersection of the SJ del Sauce exit.

The green is the one that leaves a smaller remnant on the south end of Mr. Imhoff's field, but it is worse for the neighboring properties of Carlos Muller and Albertina Muller. On the other hand, the **blue** is less harmful to them and leaves a somewhat larger remnant on the south of the Imhoff property. **It seems to be the fairest option.**



Areas

The following table shows how each of the variants would affect or not affect given parcels, and how they would change the areas to be expropriated:

Parcel	Affected area	Total area	North remnant	South remnant	% of area affected
Original Solution in Prelim. Project					
Parcel 7: Cignetti Jose Maria (fraction)	16.160	71.741	55.581	-	22.5%
Parcel 9: Theiler Yolanda María et al	6.080	47.098	41.018	-	12.9%

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Parcel 10: Castelli Amelia et al	-	-	-	-	-
Parcel 11: Periotti Abel Bernardo	-	-	-	-	-
Parcel 12: Muller Carlos Alberto + one	0.150	17.018	-	16.868	0.9%
Parcel A: Bieler, Ariel Abel + one	1.440	7.546	6.106	-	19.1%
Parcel B: Bieler, Ariel Abel + one	1.360	7.023	5.663	-	19.4%
Parcel C: Suace Remate S. A.	1.250	40.030	38.780	-	3.1%
Parcel 13: Imhoff Victor	9.610	52.138	17.734	24.794	18.4%
Parcel 14: Muller Faustino	-	40.005	-	-	-
Parcel D:Lacteos San Jerónimo	1.230	7.590	5.364	0.996	16.2%
Parcel 15: Muller Albertina	5.110	35.340	1.470	28.760	14.5%
	42.390				
Variant 1 (Similar to the route established by DNV in the 1970s) (green)	Affected area	Total area	North remnant	South remnant	% of area affected
Parcel 7: Cignetti Jose Maria (fraction)	16.153	71.741	55.588	-	22.5%
Parcel 9: Theiler Yolanda María et al	3.231	47.098	43.867	-	6.9%
Parcel 10: Castelli Amelia et al	0.504	35.895	-	35.391	1.4%
Parcel 11: Periotti Abel Bernardo	2.826	57.230	-	54.404	4.9%
Parcel 12: Muller Carlos Alberto + one	4.320	17.018	3.540	9.158	25.4%
Parcel A:Bieler, Ariel Abel + one	-	7.546	-	-	-
Parcel B: Bieler, Ariel Abel + one	-	7.023	-	-	-
Parcel C: Suace Remate S. A.	-	40.030	-	-	-
Parcel 13: Imhoff Victor	7.095	52.138	40.943	4.100	13.6%
Parcel 14: Muller Faustino	1.707	40.005	-	38.298	4.3%
Parcel D:Lacteos San Jerónimo	0.001	7.590	7.589	-	0.01%
Parcel 15: Muller Albertina	7.549	35.340	6.767	21.024	21.4%
	43.386				
Variant 2 (blue) Adopted	Affected area	Total area	North remnant	South remnant	% of area affected
Parcel 7: Cignetti Jose Maria (fraction)	15.315	71.741	56.426	-	21.3%
Parcel 9: Theiler Yolanda María et al	3.510	47.098	43.588	-	7.5%
Parcel 10: Castelli Amelia et al	0.441	35.895	-	35.454	1.2%
Parcel 11: Periotti Abel Bernardo	2.409	57.230	-	54.821	4.2%
Parcel 12: Muller Carlos Alberto + one	4.216	17.018	2.678	10.124	24.8%
Parcel A:Bieler, Ariel Abel + one	-	7.546	-	-	-
Parcel B: Bieler, Ariel Abel + one	-	7.023	-	-	-
Parcel C: Suace Remate S. A.	-	40.030	-	-	-
Parcel 13: Imhoff Victor	8.260	52.138	36.974	6.904	15.8%
Parcel 14: Muller Faustino	0.179	40.005	-	39.826	0.4%
Parcel D:Lacteos San Jerónimo	0.967	7.590	6.623	-	12.74%

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Parcel 15: Muller Albertina	6.636	35.340	2.090	26.614	18.8%
	41.933				

BUDGETS

According to the consultant's studies, the budgets for the three alternatives, excluding expropriation costs, are as follows:

Original solution in the preliminary project:	\$8,144,017.15	
Variant 1 (green)	\$9,860,445.49	+ 21.1 %
Variant 2 (blue)	\$9,771,521.26	+ 20.0 %

V1 costs \$1,716,428.34 more than the original.

V2 costs \$1,627,504.11 more than the original.

We also evaluated the possibility of putting a connecting culvert under the four lanes of the highway to link both sectors (north and south) so that cattle could circulate between them. This solution could be applicable to any of the three alternatives. Its cost would be \$880,721.00.

Resolution

Change of route: Variant 2 (blue).

- Note deposited by Mr. Victor Imhoff in the mailbox for consultations and suggestions in Sa Pereira.

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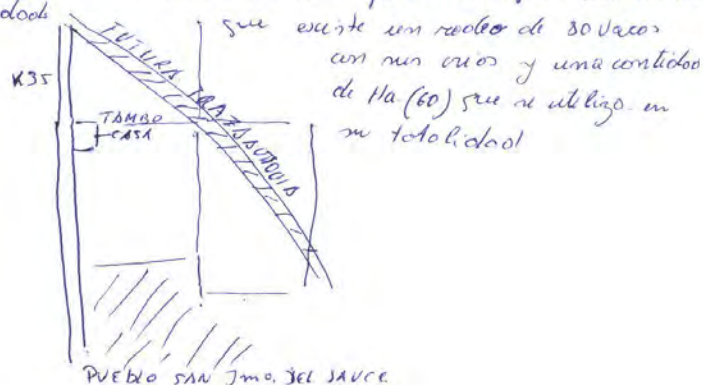
“Social and Environmental Study, National Road 19, section: National Roads 11 to 158

Sres. Gobierno de la Pcia de Santa Fe ^{SH: FERRERIA X} U-8
Consultora
29-06-06

Soy hijo de productor tamborero
nuestro establecimiento está ubicado en el Km 35
donde poco fue la información que nos han dado es
mos en lo comunero de San Jeronimo del Sauce no
se ha hecho publico el proyecto ni no han invitado a
comparacer pero informacion a la misma.

Los temas a consultar son los siguientes:

- ① porque los personas que realizan mediciones y muest
tos no tienen autorización, autorizar a orden para entrar a
nuestras propiedades.
- ② En los encuestas lo que mas se pregunta es sobre la
explotacion o actividad que se realiza en el campo.
- ③ Supuestamente en nuestro campo la autonomia surge
en forma diagonal del mismo, como podemos ver en nuestra
explotacion de



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④ no estamos en contra de la obra:

⑤ seguiremos siguiéndonos produciendo leche y dando ordenanzas
comunes. si pensáramos en cambiar la actividad tomara
por cuenta no se podría pagar estamos pegados al pueblo
y no se pueden realizar substitutions.

⑥ Nuestro negocio es productor.

Es necesario la obra.

Supuestamente por a nueva tierra para encontrar otras
formas de los datos que en proximidades es zona de
bosques.


En consecuencia estamos obligados a vender todo el terreno
60 Has. así poder juntar un dinero que nos permita
comprar un campo de características similares y
podrá seguir produciendo como lo hicimos durante
más de 90 años, pero nos importa el desmoronamiento
por los trabajos.

VICTOR HUGO Imhoff DNE 21689201

Productor. propietario Victor Imhoff

Te. 03404. 495018

" 0342 154080692



Victor Imhoff

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Maurino Case

Km 37

Property record: 092657/0000

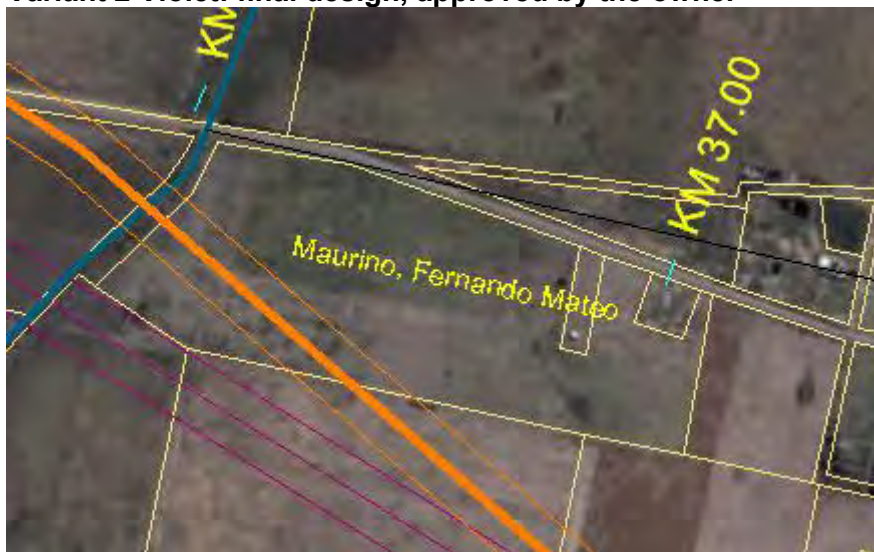
Owner: Maurino, Fernando Mateo

The parcel is situated where there will be a bypass around San Jerónimo del Sauce.

In a meeting with DPV the owner **requested a route change, which was granted.**

Variant 1 Orange: original design

Variant 2 Violet: final design, approved by the owner



Chronology of Contacts

Means	Date	Subject
E-mail	July 6	Asked about the boundary markers for the detour around the urban area of San Jerónimo del Sauce
Meeting	No date	Visit to the Provincial Highway Division, making observations on the route
E-mail	Sept. 4	Told that his request is being evaluated by the engineering consultant
E-mail	Sept. 15	Told that the ESMP is available on the provincial website
E-mail	Sept. 20	Told that a copy of the planimetric map of the preliminary project is available in the Commune
Telephone call	Sept. 22	He raises questions regarding the maps in the Commune, poses no objection to modified route
E-mail	Sept. 29	Told that the Plan for Expropriations and Resettlement is posted on the provincial website

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Pairetti Case

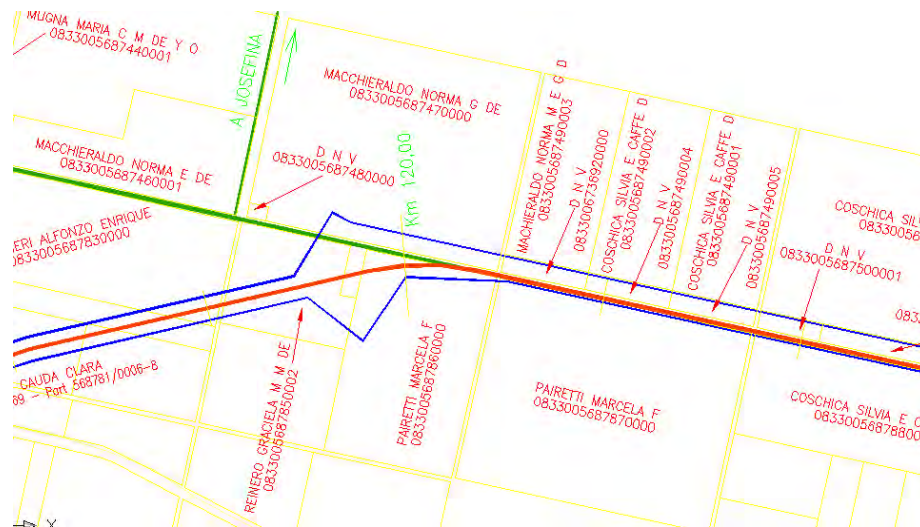
Km 120

Property record: 0286-568786/0000

Owner: Pairetti, Marcela F

Total area: 66.12 hectares

In July Mr. Jorge Pairetti sent two e-mails expressing his concern over the possible expropriation of one of his fields at km 120; one e-mail attached a map showing the field's location (which corresponds to the one owned by Marcela F. Pairetti according to the recorded plat). Initially it was thought that the Frontera-San Francisco bypass would go through this property, as shown in the following figure.



On October 6 Jorge Pairetti and Raúl Pairetti met with Héctor Corzo of the Project Implementation Unit of the project for upgrading National Road 19 to a four-lane highway.

They asked for more precise details about the areas to be expropriated, the date of expropriation, and how the values would be calculated.

They were told about the criteria used for valuation, and that the amount and timing of payment could be determined after the final Executive Project was ready (in about two months) and that the general criteria for compensation takes into account each property's specific situation, based on existing provincial regulations and the guidelines agreed upon with the financing organization.

They asked for information about how much of their parcels would be expropriated, and more details about the timeframe in which the fencing would be up. They were informed of the dimensions and that construction was expected to start in April 2007.

In the end the route was changed, considerably reducing the part of the parcel affected, which will be 2.41 percent of its total area.

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Chiavassa Case

Progressive: 123+500

Property record: 055 568808/0000-4

Owner: Chiavassa, Juan Carlos

Total area: 49.18 hectares

Affected area: 10.79 hectares

Percentage of area affected: 22%

North remnant: 21.90 hectares

South remnant: 16.43 hectares



On June 20 the owner deposited a letter in the mailbox in Frontera, in which he requested a route change because breaking up his parcel would affect ranching on it and its value. (A copy of the letter is attached, in which the owner notes that he has two bordering parcels. According to the information provided by engineering, Parcel A, to which the note refers, is owned by Juan Carlos Chiavassa and has a total area of 49.18 hectares, while Parcel B belongs to Carassio Vairiolatti and has a total area of 37.19 hectares.)

The owner was interviewed in the social survey conducted in July and said that he had requested a route change for the abovementioned reasons. (Interview attached.)

Finally he attended the information meeting in Frontera on August 22, without recording any comment on the case.

The measure was evaluated but it was decided that it is not possible to change the route.

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- Letter deposited by Messrs. Juan Carlos and Lorenzo Chiavassa in the mailbox for consultations and suggestions in Frontera:

San Francisco, June 20, 2006

To INCOCIV Consultora
and ITYAC
Santa Fe

Dear Sirs:

Juan Carlos and Lorenzo Chiavassa, domiciled at Gerónimo del Barco No. 2617 in this city, owners of two rural lots (designated as A and B on the attached map), with the following identification numbers and areas:

Lot A

Parcel 09-41-00-568808/0000-4 Area 441,027 m²
Parcel 08-41-01-569015/0000-4 Area 60,000 m²

Lot B

Parcel 08-41-00-568809/0000-4 Area 360,333 m²

which are used for farming, are writing to your consulting firm regarding the preliminary project for construction of a four-lane highway on National Road 19 on the section from Santa Fe to San Francisco, and wish to state that said preliminary project will seriously harm us because of the magnitude of the area to be expropriated, and the fact that the impaired remaining portion will have limited use and economic value.

We therefore request a change in the tentative route to avoid and/or mitigate the serious damages indicated, so that requirements for public order may be compatible with private property, which is in this case in full productive operation.

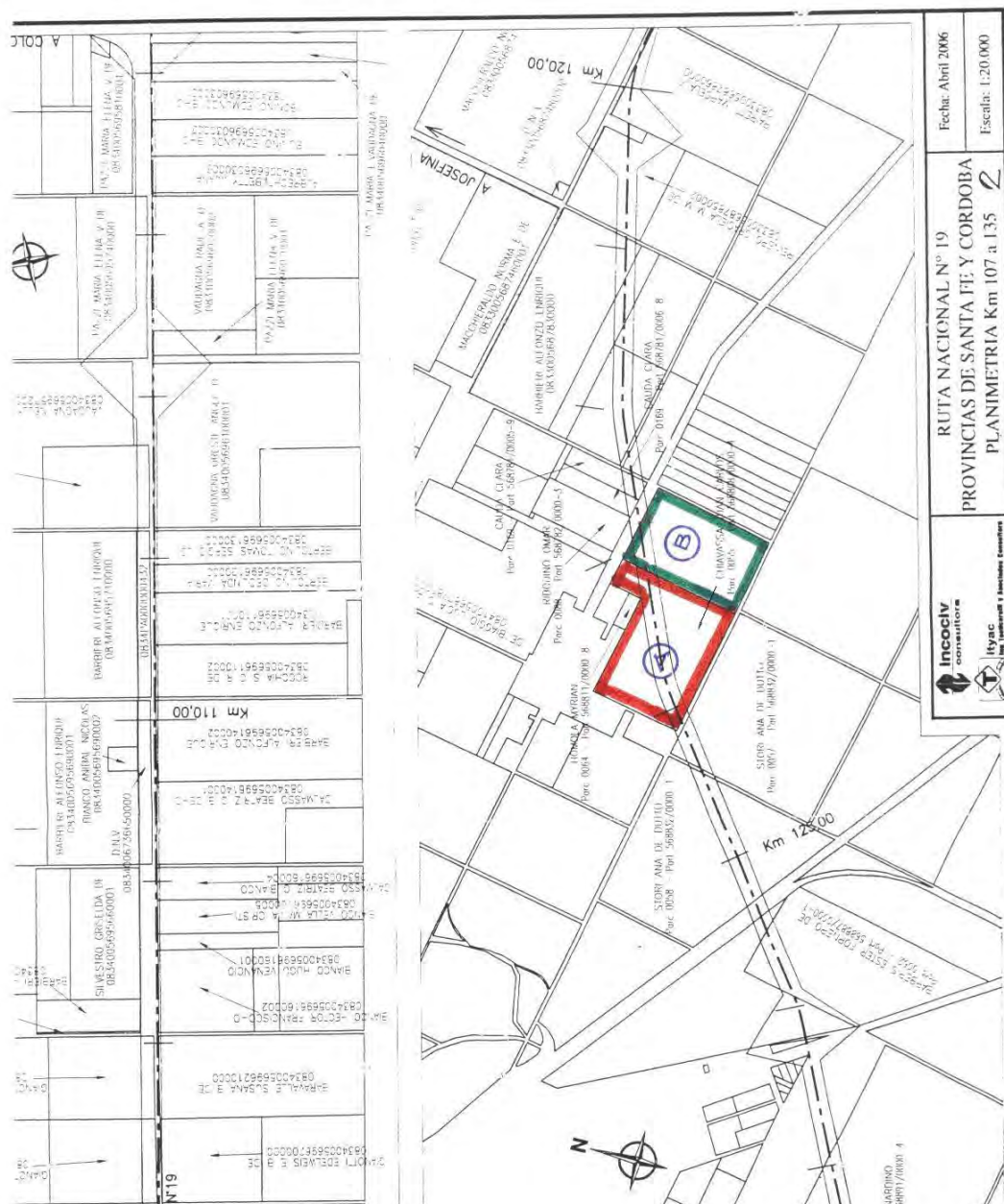
Yours truly,

(two signatures)

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Interview conducted by the environmental consultant's social team

FORM C. ECONOMIC ACTIVITY (PRODUCTION/COMMERCE/PRIVATE SERVICES)

1. Legal description of the property:
--

- a. Correlative number, identification number of the parcel
 - Character of the housing: occupied/unoccupied
 - Identification of photographic register and GPS: **21-22-23 SOUTH, 24 NORTH- GPS 352 (NOT ON NATIONAL ROAD 19, BYPASS FRONTERA- SAN FRANCISCO)**

2. Identification data of the occupants
--

Identification of the owner of the lot // of the house: **JUAN CARLOS LORENZO CHIAVASSA**

- Name of party responsible for productive/commercial/services unit: CHIAVASSA
- Identity document: 3,303,246
- Legal domicile: COLÓN 1553 SAN FRANCISCO (TEL 03564-426450/ CELL 15661281)

3. Type of tenancy, uses and activities of the property
--

- Owned/ leased/possessed / occupied: **OWNED**
- Uses of the property (Housing /commerce / industrial / services): **RANCH**
- Activities on the property (vegetables / poultry / pigs / horses/ cattle/ fruit trees / forest species / dairying / others): **CATTLE**
- Area devoted to each use:

4. Constructive characteristics of the building(s):
--

- Occupancy (occupied/vacant): **OCCUPIED**
- AREAS: TOTAL, CUBIC: -
- Number of rooms: -
- Primary construction materials: -

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–PROVINCIAL HIGHWAY DIRECTORATE – DEPUTY SECRETARIAT FOR INVESTMENT
PROJECTS AND EXTERNAL FINANCING**

Public Bid 73/05

“Social and Environmental Study, National Road 19, section: National Roads 11 to 158

- Age: **45 YEARS**
- Condition (qualitative rating): -

5. Connections to services and/or alternatives

- Electricity: **YES**
- Water: **YES**
- Sewers
- Gas
- Collection and/or treatment and/or disposal of solid waste
- Telecommunications:
- Public transportation

6. Description of the economic use of the unit

- Economic use and activities carried out (closed categories)
 - Production of
 - Manufacture of
 - Sales of **CATTLE**
- Capital assets
 - Machinery : **HARVESTERS, PLANTERS USED FOR ANOTHER FIELD.**
 - spaces and equipment for conservation, refrigeration, storage
 - spaces and equipment for processing of products
 - spaces and equipment for serving clients

7. Setting

- Location of most of the establishment's clients

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SAN FRANCISCO

Location of most of the establishment's suppliers

SAN FRANCISCO

8. Institutional organization

- Official registration (Activity/ Commerce, etc.)

REGISTERED AGENT

Membership in local and/or regional Chamber or Association (specify)

9. Observations

The interviewee said he had put a letter in the mailbox in Frontera requesting a change in the route because of problems that fragmentation of the property would pose for carrying on his activity.

**GOVERNMENT OF SANTA FE – MINISTRY OF WORKS, PUBLIC SERVICES, AND HOUSING
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PROJECTS AND EXTERNAL FINANCING**

Public Bid 73/05

“Social and Environmental Study, National Road 19, section: National Roads 11 to 158

Aimar Case

Parcel 0970 – Registry 352724

Owner: Aimar, Daniel Natalio and another

Total area: 4.78 hectares



Mr. Aimar's property is located in the community of San Francisco, Córdoba province, on National Road 158, at the far western side of the project. Initially the expropriation was to affect the property's improvements: two houses (160m² and 50m²), two barns (60m² and 90x15m) and a swimming pool.

In order to have the least possible impact on the improvements, the route was altered; according to the preliminary project presented, about 30 percent of the parcel will be affected, but not the improvements.



ANNEX 6
SIMULATION OF DRAINAGE CAPABILITIES IN THE SITE
“LOS CUATRO SAUCES” (KM 22+850M) NATIONAL ROAD 19



SUPPLEMENTARY HYDROLOGIC AND HYDRAULIC STUDY

OF NATIONAL ROAD 19 SECTION: National Road 11 – Provincial Road 6

This study responds to the **request from the Ministry of Water Affairs** of Santa Fe Province to **verify the design of the structures** done for the subject project in light of the extraordinary rainfall that occurred at the end of March 2007.

This **verification** will consist of the following steps:

1. Description of the extraordinary event
2. Available precipitation data
3. Determination of the recurrence
4. Determination of the hourly precipitation for verification
5. Determination of the runoff flows
6. Verification of the hydraulic sections of the structures already designed.

1. Description of the extraordinary event

This extraordinary event that occurred in March 2007 had the following characteristics (according to the Agricultural Weather Station of the Rafaela Experimental Agricultural Station):

- From midnight on March 23 to 3 p.m. on March 30 (7 ½ days) rainfall was **363.3 mm**.
- Total for the month of March 2007: **539.8 mm**, a record for the month of March during the period for which there are records, 1930–2006.

According to data collected during this meteorological event, the sectors of the section studied by this consulting firm (Santo Tomé – Access to San Carlos) had water levels higher than the elevation of the existing pavement, as described below:

- **Pr. 9+900, San José ravine**, where the water level was about 0.60 m higher than the pavement. These photos show the condition of the road in that sector after that event of great magnitude.



ENGINEERING REPORT CHAPTER 5. BASIC WORKS

- **Pr. 22+900**, the water level is more than 0.60 m above the pavement. The following photos show how the event inundated this sector.

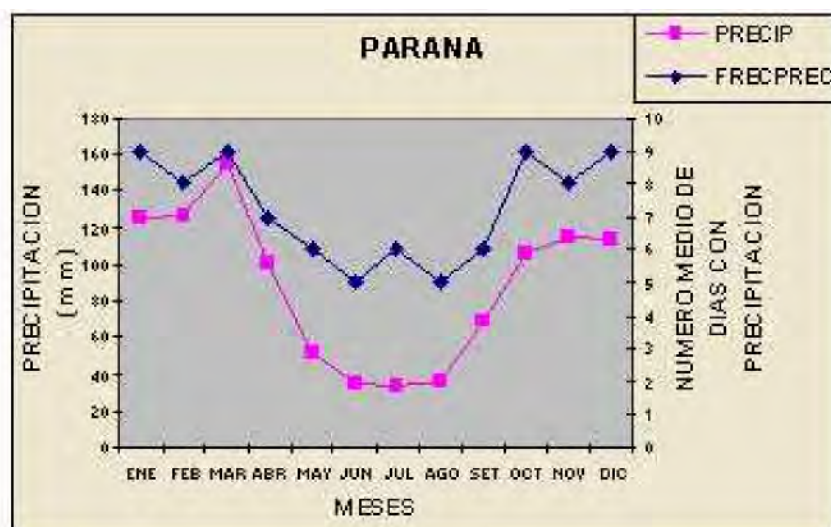


As can be seen in these photos, the slight grades were insufficient to drain the water, thus increasing the flooded area of the basin, both headwater and tailwater.

2. Available precipitation data

March is the year's rainiest month, with an average in the historical series 1930–2006 of **149.7 mm** (Rafaela Experimental Station).

The following figure shows the distribution of average monthly precipitation in the city of Paraná for the years 1961–1990, according to the National Weather Service. Note that the highest precipitation occurred in the month of March:



Source: National Weather Service

Data on **highest monthly precipitation** registered during the period 1930–2007 (above 400 mm for the month) are:

1. 1943, March 410.0 mm
2. 1947, March 419.7 mm
3. 1973, February 469.0 mm
4. 1977, March 402.4 mm
5. 2007, March 539.8 mm

Data from the Rafaela Station pluviometer for March 27–31, 2007 are as follows:

DATE	PRECIPITATION [mm]
27	9.5
28	48.1
29	210.0
30	56.6
31	13.1

Measurements from 9 a.m. to 9 a.m.



3. Determination of the recurrence

Recurrence indicates a given average period of time during which it may be expected that a **magnitude will be equaled or exceeded at least once** at some point during that period. It is the average period of time during which it is considered that a chance event can happen or be exceeded.

The formula usually used to calculate the time of recurrence Weibull's:

$$Tr = \frac{n+1}{m}$$

where:

Tr time of recurrence, in years

n period of recorded data, in years

m *number* of times that the event occurs during the record-keeping time period. It is also called the progression of the event or the order of magnitude of the event.

Recurrence was calculated from the data for **maximum monthly precipitation** recorded at the Rafaela Experimental Station. This is a partial series because we selected all events equal to or greater than a given magnitude (400 mm) that had occurred during the record-keeping period.

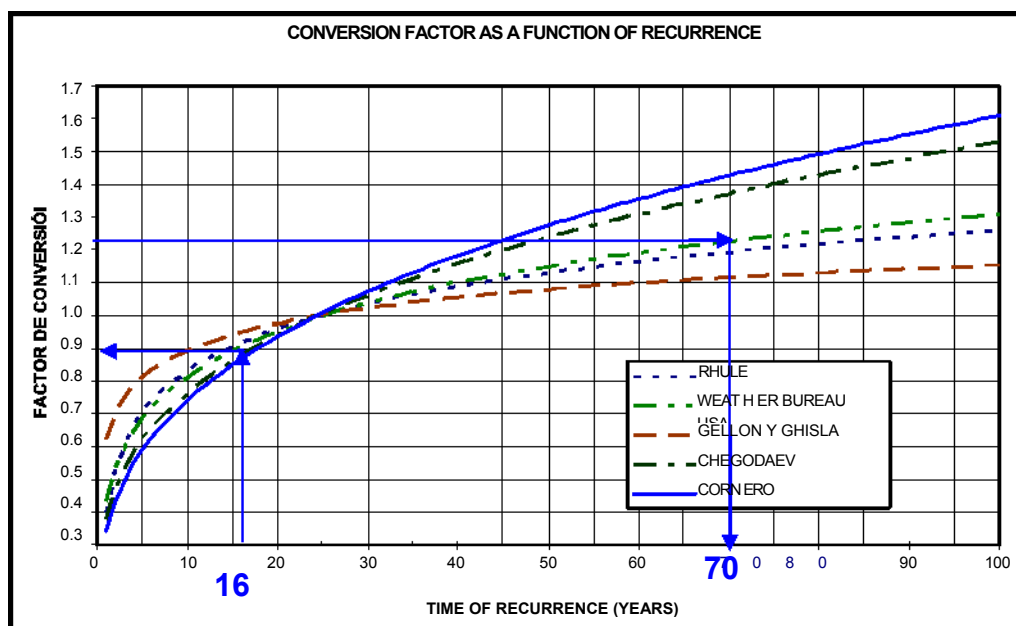
With a progression of the event $m=5$, it is possible to derive statistics to indicate the time of recurrence for actual precipitation conditions in the Rafaela area during the 77 years when data were recorded.

Applying the Weibull formula to calculate the time of recurrence we get:

$$Tr = \frac{77 + 1}{5} \cong 16 \text{ years}$$

So far we have calculated recurrence for **monthly precipitation of 400 mm**.

To determine recurrence for the 539.8 mm of the month of March 2007 we used the formula of the United States Weather Bureau, which gives times of recurrence as an average value of the various formulas shown in the following graph:



From this graph we derive the following figures for this case:

$$\frac{539.8 \text{ mm}}{400 \text{ mm}} = 1.35$$

$$R = 16 \text{ years (400 mm)} \quad \text{Factor} = 0.90$$

$$\text{Factor} = 0.90 \times 1.35 = 1.22, \text{ for an } R = 70 \text{ years}$$

From the values derived, we conclude that the **total precipitation in the month of March 2007** has a recurrence of **70 years** for the area surrounding the highway.

It should be noted that the recurrence calculated is for the **total** monthly rainfall in March 2007. In the final 7.5 days there was 363.3 mm of rain. This situation, of “raining on the already soaked” **will be taken into account in the basin’s background conditions**, in view of the rainfall calculation of 70-year recurrence.

4. Determination of the hourly precipitation for verification

The two methodologies used (the DNV isoyetes map and the I-D-R curves of Rosario) yield very similar values, and the value adopted for **Rt design hourly precipitation** for a **25-year recurrence** is **R₂₅=70 mm/h**.

We should recall here that the structures were designed for a recurrence of **50 years**, with an **R₅₀=80.5 mm/h**.

The **precipitation for verification** should be for a recurrence of **70 years**, for which we used the formula of the United States Weather Bureau in the preceding graph, for a factor (for 25 to 70 years) of **1.22**.

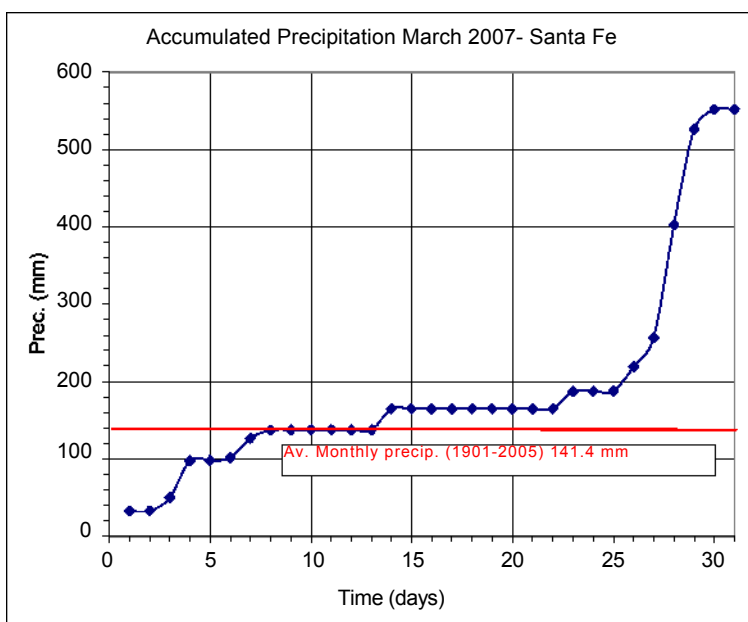
$$\text{For 70 years } R_{70} = 70 \text{ mm/h} \times 1.22 = \mathbf{85.4 \text{ mm/h}}$$

5. Determination of the runoff flows

The determination of these flows was done in a way similar to that used for the original design of the runoff sections, with the Generalized Rational Method of Ing. Rühle, publication of the National Highway Directorate *"Determination of the maximum surface runoff from rainy basins"*, checking it with the Burkli-Ziegler method.

Addressing the problem of the occurrence of two consecutive events within a period too short to allow complete runoff of the rainfall in the first one, we considered that the second rainfall occurred while parts of the total area of the basin (surrounding the current road) were still inundated.

The following figure shows the occurrence of consecutive events of magnitude in the final week of March 2007:



To calculate the runoff coefficient for this situation, we adopted the following criteria:

The basin was divided into three categories according to conditions before the rainfall for verification:

- High: normal (40% of the basin) $c = 0.60$
- Medium: saturated (40% of the basin) $c = 0.70$
- Low: inundated (20%, percentage of the basin obtained from the topographic map based on flooding area at the projected grading elevation) $c = 1.00$

Weighing of these three values gives a runoff coefficient of $c = 0.72$.

Given these conditions and hourly precipitation of 85.4 mm/h ($T_r = 70$ years) we have the following flows:

WORK	PROG.	Q_{50} [m ³ /s]	Q_{70} [m ³ /s]
2	1+484	0.7	0.82
3	1+506	1.0	1.2
4	2+800	6.4	7.5
5	3+024	3.2	4.7
6	4+727	2.0	2.7
7	8+535	1.9	2.6
8	9+885	26	33.1
9 East R	22+800	13	18.0
9 East L	22+800	13	18.0
9 West R	22+830	37	46.8
9 West L	22+830	37	46.8

6. Verification of the hydraulic sections of the structures already designed

The following table shows the hydraulic sections designed for $T_r = 50$ years, and the verification done for $T_r = 70$ years:

WORK	PROG.	Q_{70} [m ³ /s]	DIMENSIONS		SINGLE FLOW	Hr [m]	DNV TYPE PLAN
			SPAN [m]	HEIGHT [m]			
2	1+484	0.82	2.00	1.50	0.41 m ³ /s/m	0.41	O-41211-I
3	1+506	1.2	1.50	1.00	0.80 m ³ /s/m	0.65	O-41211-I
4	2+800	7.5	2 x 1.80	F=1.37	4.00 m ³ /s	1.30	H-10235 (2)
5	3+024	4.7	1.80	F=1.37	4.00 m ³ /s	1.30	H-10235 (2)
6	4+727	2.7	2.00	0.75	1.35 m ³ /s/m	0.90 (3)	O-41211-I
7	8+535	2.6	2.00	0.75	1.30 m ³ /s/m	0.87 (3)	O-41211-I
8	9+885	33.1	4 x 3.00	4.00 (1)	3.00 m ³ /s/m	1.60	Z-2915-I
9 East R	22+800	18.0	5.00	4.00 (1)	3.83 m ³ /s/m	1.85	Z-2916-I
9 East L	22+800	18.0	5.00	3.00 (1)	3.83 m ³ /s/m	1.85	Z-2916-I
9 West R	22+830	46.8	2 x 5.00	4.00 (1)	5.00 m ³ /s/m	2.20	Z-2916-I
9 West L	22+830	46.8 (4)	2 x 5.00	3.00 (1)	4.47 m ³ /s/m	2.10	Z-2916-I

(1) Height of portico, from foundation elevation to grading level. Culvert with pit.

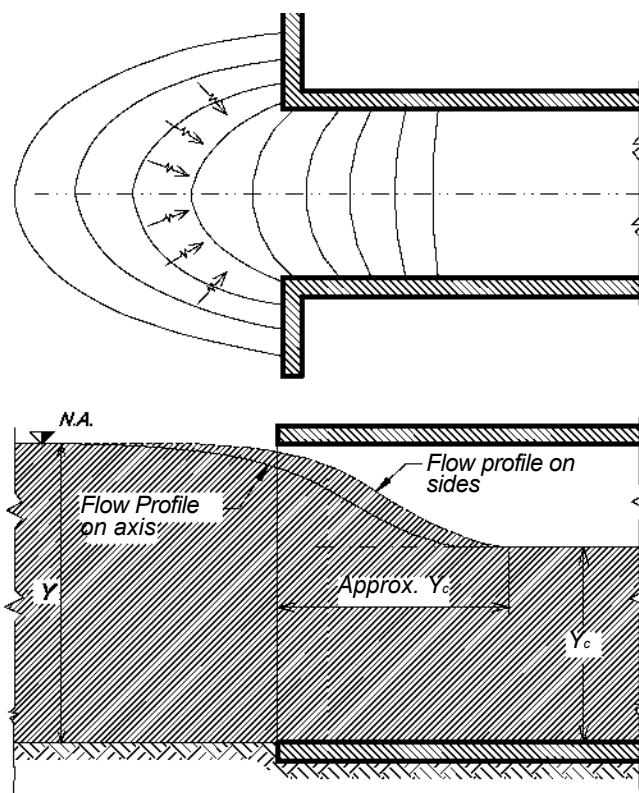
(2) Existing culvert.

(3) The hydraulic height of the culvert is 0.85 m (per type plan). The back-water level will not reach the base of the embankment because the slab is 0.25 m thick.

Conclusions:

The hydraulic sections of the structures projected for a recurrence of 50 years, confirm the flows obtained for a recurrence of 70 years and the abovementioned background conditions.

We might note that a culvert working with backwater level equal to its own height will have within it a flow drop of about one third its height, which makes it possible to work with a backwater level greater than H before working with pressure, as shown in the following figure:



OTHER OBSERVATIONS BY THE MAH [MINISTRY OF WATER AFFAIRS]

1. Maximum level of the water surface and velocity for the design recurrence adopted for each case, for both headwater and tailwater.

The following table shows for each work the maximum headwater level (Hr) and the tailwater velocity, **for a design recurrence of $T_r = 50$ years**:

WORK	PROG.	Q ₅₀ [m ³ /s]	DIMENSIONS		Hr head- water [m]	Veloc. tail- water [m/s]
			SPAN [m]	FREE HEIGHT (*) [m]		
2	1+484	0.7	2.00	1.50	0.37	1.5
3	1+506	1.0	1.50	1.00	0.57	1.9
4	2+800	6.4	2 x 1.80	F=1.37	1.20	2.8
5	3+024	3.2	1.80	F=1.37	1.20	2.8
6	4+727	2.0	2.00	0.75	0.75	2.1
7	8+535	1.9	2.00	0.75	0.75	2.1
8	9+885	26	4 x 3.00	3.00	1.30	2.6
9 East Right	22+800	13	5.00	3.00	1.50	2.9
9 East Left	22+800	13	5.00	2.00	1.50	2.9
9 West Right	22+830	37	2 x 5.00	3.00	1.85	3.3
9 West Left.	22+830	32.2	2 x 5.00	2.00	1.70	3.2

(*) Free height: for the projected porticos the height between the base of the slab and the elevation of the outflow.

Velocity at the entrance to the culverts is relatively low, and since field data are not available on the periods of flooding, it is very hard to derive accurate values to calculate it. It was not taken into account in this analysis because there is already a safety factor for passage of heavier flows.

However, we calculated the equivalent in maximum water level, considering the velocities at the entrance of the structures at an average value of 0.5 m/s and a maximum value of 1.0 m/s. The values derived from these velocities were $h = 0.012$ m for $v = 0.5$ m/s, and $h = 0.05$ m for $v = 1.0$ m/s.

2. Maximum level of the water surface and velocity for the verification recurrence adopted for each case, for both headwater and tailwater.

Culverts for paved roads are usually designed for a recurrence of 25 years. This project used a recurrence of 50 years, so it was initially not verified for a different recurrence.

In this annex we did verification for a 70-year recurrence.



3. *Maximum water level and velocity for the meteorological event that occurred from March 28 to 30, 2007. If the hydraulic design of the structure is exceeded, clearly indicate the magnitude of disruption of the road and duration of the effect, and propose hydraulic-structural corrective measures to resolve the problem.*

The following table shows the maximum water level (Hr) upstream and the flow velocity downstream for the **verification recurrence of $T_r = 70$ years**:

WORK	PROG.	Q ₇₀ [m ³ /s]	DIMENSIONS		Hr head- water [m]	Veloc. tail- water [m/s]
			SPAN [m]	FREE HEIGHT (*) [m]		
2	1+484	0.82	2.00	1.50	0.41	1.6
3	1+506	1.2	1.50	1.00	0.65	2.0
4	2+800	7.5	2 x 1.80	F=1.37	1.30	2.9
5	3+024	4.7	1.80	F=1.37	1.30	2.9
6	4+727	2.7	2.00	0.75	0.90	2.3
7	8+535	2.6	2.00	0.75	0.87	2.3
8	9+885	33.1	4 x 3.00	3.00	1.60	3.0
9 East Right	22+800	18.0	5.00	3.00	1.85	3.3
9 East Left	22+800	18.0	5.00	2.00	1.85	3.3
9 West Right	22+830	46.8	2 x 5.00	3.00	2.20	3.6
9 West Left.	22+830	42.0	2 x 5.00	2.00	2.10	3.4

The existing hydraulic structural model consists of the natural system for surface runoff, the canal network, and the existing route's culverts.

The hydraulic structures exceeded by the subject flooding were the existing works of the current route.

This consulting firm did its hydrologic and hydraulic studies based on precipitation statistics for the area and a given recurrence, using the appropriate methodology for these purposes.

4. *Dimensioning of the hydraulics sections of the culverts was done in accordance with the methodology in the book "Proyecto, Construcción, y Conservación de Alcantarillas", Volume II, UNR publisher, based on the abacus of figure 1, for rectangular concrete culvert sections.*

This methodology is based on the manual *Hydraulic Design of Highway Culverts, 2001* of the Federal Highway Administration.

The calculation procedure is as follows:

- 1) Take the maximum possible backwater height H_r [m] based on headwater soil use.
- 2) For that condition, get the Q/L ratio in $m^3/s/m$.
- 3) With the Q/L ratio, select the span of the culvert based on the type plan used.
- 4) Verify the backwater elevation, using the inverse procedure.

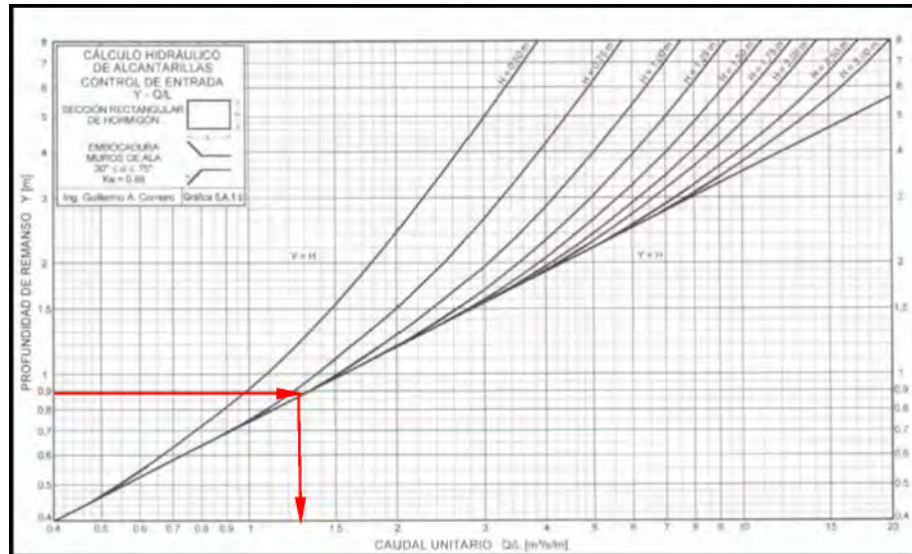


Figure 1. Graph for hydraulic calculation of concrete box culvert sections

Verification of the tapered inlet sections was done in the same way, using the graph to plot the hydraulic dimensions of the spiral rib metal pipe tapered culvert. Figure 2.

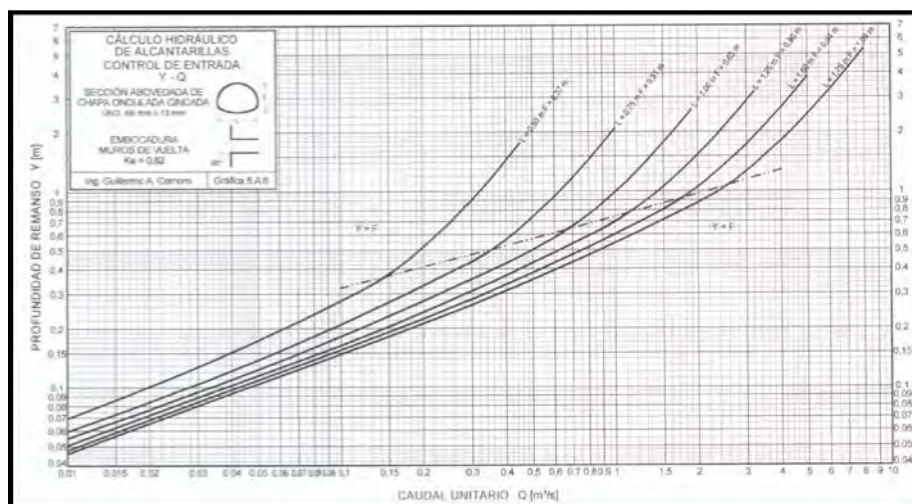
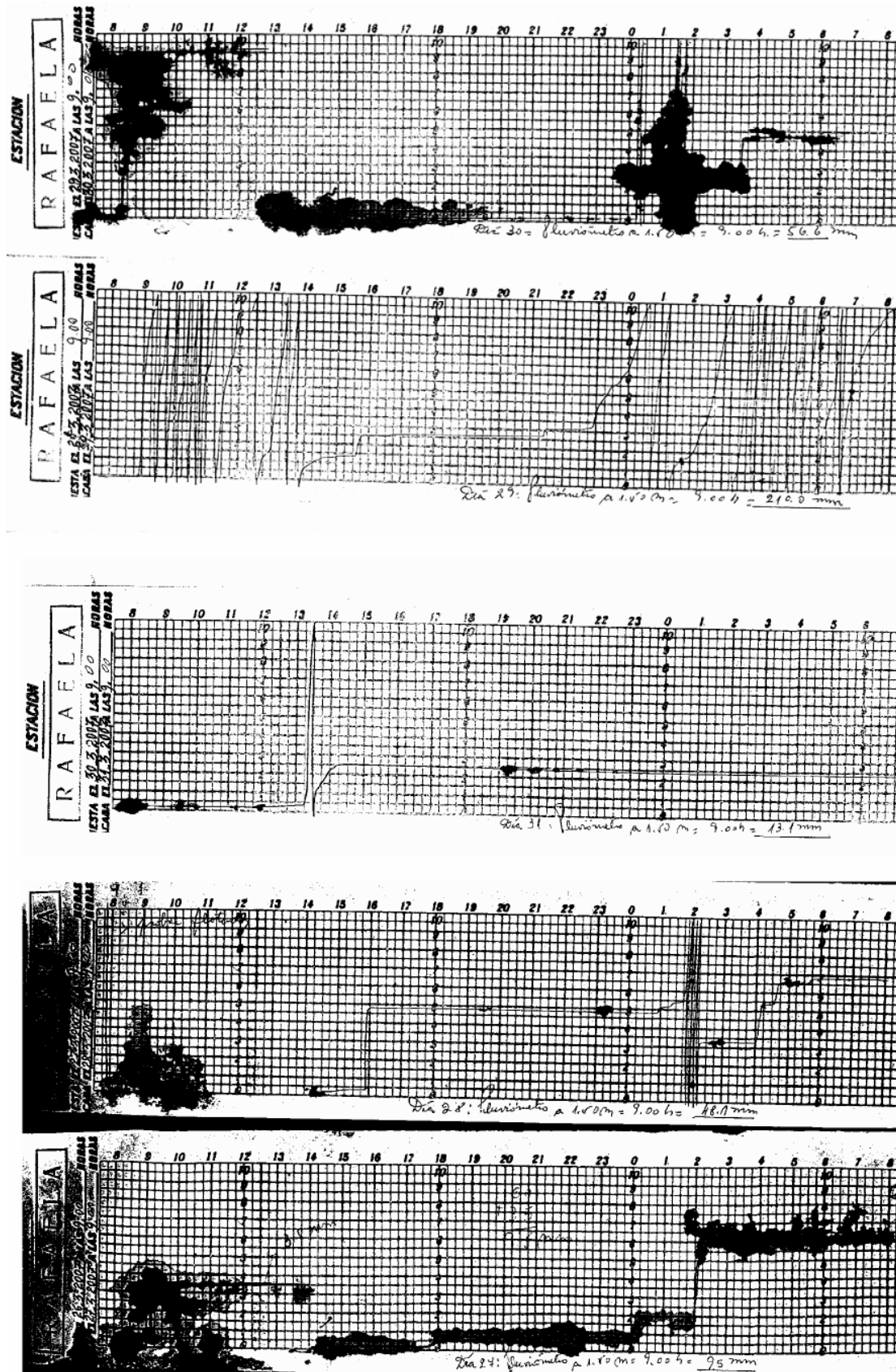


Figure 2. Graph for hydraulic calculation of spiral rib metal pipe tapered culvert with inlet control



DATA FROM THE RAFAELA PLUVIOGRAPH





HYDROLOGIC AND HYDRAULIC CALCULATIONS

ALC. PR. 22+850

Concerning the hydrologic-hydraulic study of the Los Troncos Highway basin (Cuatro Sauces area) that this consulting firm did to calculate the hydraulic dimensions of the culverts crossing National Road 19 in Project 22+850, it should be noted that it built on a study done by the Ministry of Water Affairs (MAH) of Santa Fe Province.

That agency did its study in 2004 in order to upgrade existing structures in the project for rehabilitation of the basin.

The **MAH** obtained the following flows for the Los Troncos basin:

Flow (R=25 years): $45 \text{ m}^3/\text{s}$

Flow (R=50 years): $45 \text{ m}^3/\text{s} \times 1.15 = 51.8 \text{ m}^3/\text{s}$

Feeder area: 133.75 km^2

The existing works are insufficient to accommodate the calculated flows, so the runoff section must be expanded.

The note transmitting the abovementioned report is attached.

Values of the flows obtained by **ING. CORNERO CONSULTORA S.A.** consulting firm for the Los Troncos basin (No. 9) are as follows:

Flow (R=50 años): $13 \text{ m}^3/\text{s}$ (East drainage) + $37 \text{ m}^3/\text{s}$ (West drainage)

Flow (R=50 años): **$50 \text{ m}^3/\text{s}$**

Feeder area: 196.98 km^2

A map of the basin is attached.

Total flows for the basin are similar to those calculated by the MAH.

	Tr (50 years)	Feeder area	Design flow
	(mm/hectare)	(hectares)	(m ³ /sec)
Ministry of Water Affairs of Santa Fe		13,375	51.8
Ing. Cornero Consultora S.A.	80	19,698	50.0 = $13 \text{ m}^3/\text{s}$ (east drainage) + $37 \text{ m}^3/\text{s}$ (west drainage)



Types and sections of existing and projected culverts

WORK	PROG.	EXISTING CULVERTS					PROJECTED CULVERTS		
		TYPE	SPAN	HEIGHT	DIAMETER	CONDITION	TYPE	SPAN	HEIGHT
			[m]	[m]	[m]			[m]	[m]
9 East D	22+800	-	-	-	-	-	Z-2916-I	5.00	4.00
9 East I	22+800	Sheet metal pipe			2 x 1.20	For destruction	Z-2916-I	5.00	3.00
		Rectangular masonry section	1.00	0.75		For destruction			
		H pipe			1.00	For destruction			
9 West D	22+830	-	-	-	-	-	Z-2916-I	2 x 5.00	4.00
9 West I	22+830	H pipe			1.00	For destruction	Z-2916-I	2 x 5.00	3.00
		Rectangular masonry section	1.00	0.75		For destruction			
		Sheet metal pipe			2 x 1.00	For destruction			
		H pipe			2 x 1.00	-			
		H pipe			2 x 1.00	-			

Attached is a Supplementary Report with verification based on the extraordinary rainfall of March 2007.





Provincia de Santa Fe
Ministerio de Asuntos Hídricos

HYDRAULIC REPORT

Subj: Expansion of culverts on National Road 19
on the Los Troncos basin (Cuatro Sauces area)-
Prog. MAH km. 28.1128, Las Colonias Department

The project for Rehabilitation of Los Troncos basin is under way, making it necessary to update the structures in the area.

The situation of the existing culverts on National Road 19 in the Los Troncos basin section can be summarized as follows:

In the **Eastern drainage** of the commune road, the following culverts are in place:

- Two corrugated metal tubes of 1.4 m. diameter, pavement elevation = 34.76 m., depth elevation= 32.33 m.
- One masonry culvert 1 m. long, 1 m. high, pavement elevation = 34.76 m., depth elevation= 33.40 m.
- One Ho. Ao tube 1 m. diameter, pavement elevation = 34.76 m., depth elevation= 32.87 m.

In the **Western drainage** of the commune road, the following culverts are in place:

- Two corrugated metal tubes of 1.4 m. diameter, pavement elevation = 34.76 m., depth elevation = 32.26 m.
- One masonry culvert 1 m. long, 1 m. high, pavement elevation = 34.76 m., depth elevation = 33.29 m.
- One Ho. Ao tube 1 m. diameter, pavement elevation = 34.76 m., depth elevation = 32.80 m.

They are installed at km.28.118 where the grading was done by the Ministry of Water Affairs.

The hydrologic-hydraulic study was done considering the feeder basin of the replacement section for the culverts using the mathematical model HYMO 16 as modified by the Provincial Hydraulic Works Department for changes in rainfall-flow. It considered a storm occurring once in 25 years and checked against the 50-year record, calculated on the basis of the I-D-R curves of the city of Rosario.

From the model, it was determined that:

Flow (R=25 yrs): 45.00 m³/sec

Flow (R=50 yrs): 56.00m³/sec

Feeder area: 133.75 km²

CN adopted: 60

Average velocity of the
section: 0.33 m/sec

Average velocity of the
section: 0.34 m/sec



Provincia de Santa Fe
Ministerio de Asuntos Hídricos

The existing project does not accommodate the calculated flows, so the runoff section must be expanded. It is therefore recommended to replace the masonry culverts (1 m. long and 1 m. high) and the Ho. Ao. Tube (1 m. diameter) installed in the west drainage of the commune road, with a span culvert = two sections of 3 m. and free height = 2.2 m., elevation of pavement = 34.76 m. and elevation of project = 32.20 m. The section will be left with one span = 2 sections of 3 m. and two corrugated metal tubes of 1.4 meter diameter.

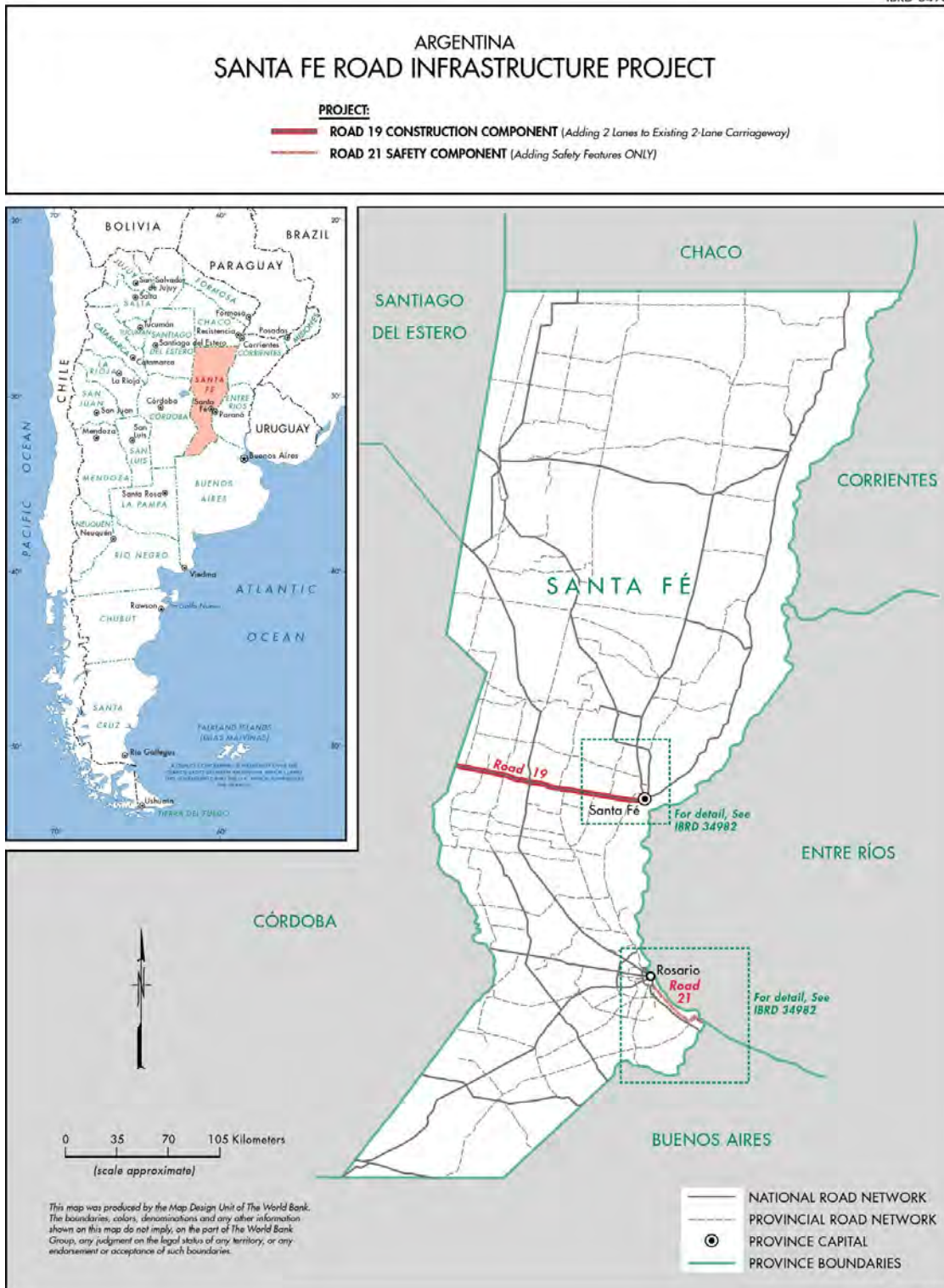
The specific objective of the project is to expand the culvert crossing section to carry the flow from the headwater canals being restored, in order to reduce urban and rural flooding in the area.

Department of Studies and Projects, Santa Fe, April 12, 2004

Ing. MARIA de los MILAGROS VIGETTI
Departamento de Estudios y Proyectos
COORDINACIÓN AREA INGENIERIA
DIRECCION PROVINCIAL de OBRAS HIDRAULICAS
M. O. S. P. y V

MAP NATIONAL ROAD 19, PROVINCE OF SANTA FE

IBRD 34981



DECEMBER 2006