REPORT ON THE STATE OF CONSERVATION
OF QUEBRADA DE HUMAHUACA

ARGENTINA

2022

1. EXECUTIVE SUMMARY OF THE REPORT

This report is prepared about what was requested by the World Heritage Committee through Decision 44 COM 7B.62.

This work was developed jointly between the World Heritage Coordination and the Heritage Directorate, both agencies of the Ministry of Culture and Tourism of the Province of Jujuy.

This report attempts to describe the progress made in Quebrada de Humahuaca concerning the conservation of the Outstanding Universal Values and their attributes and the processes aimed at updating the management and governance system; Both processes started in 2020 to update the Plan of Management.

Likewise, it seeks to demonstrate the progress of the Railroad reactivation project on the property, such as the management of the Rio Grande.

It is essential to highlight the effort invested in the property management process, which we believe will bear fruit in terms of the conservation of the O.U.V of the property through a system that includes the visions, worldviews, and voices of the main managing actors with direct influence in the areas of maximum protection as the buffer zone.

This process is not only being carried out by the Ministry of Culture and tourism, but also with the full participation of the eleven municipal governments and with the collaboration of provincial organizations and various communities, groups, institutions, associations, and people residing in the property.

With the implementation of the management system, some of the most important factors related to the intercommunication between organizations operating on the site will also be resolved and allow for a richer flow of information, not only internally but also with the Center and the Heritage Committee. World, especially concerning the permanent report of relevant actions in the area of maximum protection.

2. RESPONSE TO THE DECISION 44 COM 7B.62 OF THE WORLD HERITAGE COMMITTEE. 44th REGULAR MEETING IN FUZHOU, CHINA; 2021

Desicion 4 "Welcomes the State Party initiative to develop an updated Management Plan 2020-2028 and urges it to submit this Plan to the World Heritage Centre and the Advisory Bodies for review as soon as possible;"

As a result of the diagnosis made by the World Heritage Coordination and the Heritage Directorate at the end of 2019 on the situation of the Management of Quebrada de Humahuaca, the level of progress of the Management Plan and the status of the Local Site Commissions were verified and was detected the need to update this planning tool to guarantee the conservation of the OUVs and their attributes, maintaining their authenticity and integrity.

Likewise, the need to revitalize participatory management in the head towns was identified, making the updates and modifications that are considered appropriate with the diagnosis made, the characteristics of the property, and the relationship between the different actors involved, always having as objective the conservation of the OUV and the mission built (together with communities) in 2008 with the incorporation of certain concepts that give it more comprehensive and participatory values.

Mission:

"To ensure that the Outstanding Universal Values (OUVs) for which Quebrada de Humahuaca was inscribed on the UNESCO World Heritage List on July 2, 2003, in the category "Cultural Landscape", is transmitted to future generations, maintaining integrity and authenticity, recognized at the time of registration, and promoting a harmonious and sustained development of the property and of the communities that live in it, taking into account its complexity, the provincial and regional integration through a comprehensive, systemic, participatory and holistic management system."

To meet the objective of building the management system, a series of guiding premises were established, also resulting from the diagnosis carried out in 2019, from the evolution of theoretical and technical knowledge regarding asset management and a deeper understanding of the property from practical experience and contact with different knowledge and visions of a wide variety of actors (managers, holders of rights or interested parties).

These premises included the following points:

1. A useful tool should be built for the property that organizes actions, resources, and actors over time that mitigate or minimize the effects of the factors identified that affect it and in the future, that ensures the conservation of the OUVs., its integrity, and authenticity in a participatory, transdisciplinary way.
2. A governance structure should be proposed in which the different visions of the very diverse actors are part of the decision-making process and thus ensure management adapted to the property and the specific possibilities of the province.
3. It would be essential to review and/or reinterpret the property to have a clearer and more certain notion of what we must preserve to provide more accurate answers. This point is oriented to the fact that it has been detected that not all the actors have a full understanding of the OUV and of what Quebrada de Humahuaca itself is, having partial views and focusing on certain interests, values , and/or attributes.
4. A new management system should be essential to guarantee its application and durability over time, going from the drafting of a document limited to a certain time frame and a reality determined at the time of its creation to a "management system or process", of evolutionary, participatory, systemic construction and permanent monitoring[1], where the mission is always kept in mind throughout the construction process.

This particular point arises from the understanding that the Quebrada de Humahuaca is not only not a single cultural landscape, but rather a large conglomeration of landscape units, with their own identities, interrelated by a series of itineraries, in different temporal layers, that have been interrelated in time and where not only the last 10,000 years of human history must be interpreted, but also the millions of years of construction and evolution of a natural context that has been and is the soul of a culturally unique community and that have generated spaces with specific identities that forces us to look at the good in an integral and particular way simultaneously.

Taking this new approach into account, a planning of activities, proposals, and strategic axes has been developed that tends to consolidate the Management System, which has already started.

This system was organized according to strategic axes, which organize a series of objectives, actions, actors involved, and evaluation and follow-up indicators, based

[1] Monitoring is not only understood by monitoring of the F.A.B. or the OUV but also to a continuous process of evaluation of the actions developed, and in process, in order to achieve adjustments in real time in relation to the results obtained and the reality of each moment of evaluation of these (Principle of adaptability).

on the structure developed in the action plans for Latin America and the Caribbean[2] and South America[3].

It is very important to emphasize that it was considered essential to reformulate the management system subject to a document concept, to a process that contemplates an evolutionary system related to the characteristics of the property and a joint construction between all the actors involved.

It is essential to emphasize the context in which the property is administered, framed mainly by a federal government system, led by the provincial government, where municipalities have autonomy in their territory and where the majority (9 Municipal Commissions) have management changes every 2 years, which generates, in most cases, changes in political-administrative management with new approaches and interest and the need to introduce them into the process of valuation and management of heritage assets.

Axes:

A. MANAGEMENT:

They involve all the internal, inter-institutional mechanisms concerning the Local Site Commissions to generate a governance system that ensures correct implementation of the conservation objectives of the OUV, their attributes, integrity, and authenticity of the property within the framework of the vision built jointly with the communities of the site and what is established in the World Heritage Convention and its Guidelines.

For this, a process has been initiated (Early 2020) for the diagnosis and reactivation of Local Site Commissions[4], for the construction of the Provincial Management Unit, and for updating the Management System, in which the toolbox of "Improving our Heritage 2.0" was used (tested in the "Heritage Place Lab" of the ICCROM-IUCN World Heritage Leadership Program during 2021-2022 in which the management team of Quebrada de Humahuaca participated with research teams in this collaborative work with 7 other world heritage sites).

These tools, which are being used in this process, will not only serve as a management assessment system but also for the construction and definition of new local values, the definition of Factors that affect the property and interrelation systems of key actors, and incorporation of knowledge and

[2] https://whc.unesco.org/es/actividades/846/#regional
[3] https://whc.unesco.org/es/actividades/846/#PAAS
[4] See ANNEX 1

different points of view in a methodological framework centred on values and people.

B. IDENTIFICATION AND REGISTRATION

This space intends to incorporate and work on all the actions tending to know and recognize the OUV and other scales of values (National, provincial, and above all local), attributes, actors and factors that affect the property and generate registration systems, inventories and/or catalogues updated that allow the management, conservation, dissemination, and other actions.

C. CONSERVATION

This axis provides for all actions aimed at the conservation of values and attributes, whether preventive or corrective.

Likewise, it incorporates other key programs such as Disaster Risk Management, and Climate Change assessment, to be developed jointly by the key managers involved in the property and based on the characteristics of Quebrada de Humahuaca. These works, of strong transdisciplinary management, can only be developed once the Provincial Management Unit is formed and put into operation, for its development in a collaborative way where the knowledge of all the actors, areas, and worldviews that make and shape the property are interrelated, based on rigorous planning and monitoring parameters.

For these particular points, the documents issued by UNESCO[5], the guidelines developed particularly for the management of Risks for the sites and segments of Qhapaq Ñan Argentina, or any other system or future document that helps a better understanding or management of risks will be taken.

This axis will also try to resolve the actions of the FABs or even the factors themselves, as the case may be.

It has been considered that one of the fundamental lines of action is related to "Heritage Impact Assessments" (within the framework of the ICOMOS guidelines), a line that will be linked to other axes such as Education and Management, due to the very characteristics of the subject that requires strong capacity building and the installation of said evaluation as a natural action in

[5]https://whc.unesco.org/document/130491#:~:text=La%20GRD%20tiene%20por%20objeto,los%20bienes%20materiales%20y%20los

the development of major projects inside or outside the property with potential effects on Quebrada de Humahuaca.

D. PUBLIC USE

This axis mainly raises the development and evaluation of the use of the heritage site, mainly tourism.

For this, it is essential to establish and build baselines and information in this regard to develop monitoring indicators, among other actions.

For this particular case, one of the lines of research developed within the framework of the "Heritage Place Lab" mentioned in the Management axis has been established.

It is also taken into account that this is one of the main axes that must prioritize the improvement of the quality of life of local populations through the reasonable and sustainable use of heritage.

E. AWARENESS, COMMUNICATION, AND DISSEMINATION

This line will try to spread the text and spirit of the Convention, the Values of the property and its attributes, and everything that is considered relevant to ensure increased knowledge of the site and the importance of its conservation and transmission to future generations.

In this framework, we consider it very important to resume the interpretation of Quebrada de Humahuaca as a fundamental action to be able to be clear about "What is it" Quebrada de Humahuaca to determine "what is needed" in the spirit that the complexity of the property, the multiple views and knowledge and the day-to-day may have generated interpretations that are not very accurate, generating conservation actions and management systems that are not suitable for this site (eg Quebrada de Humahuaca, Evolutive Cultural Landscape, made up of a large number of landscape units with particular identities, interrelated by different cultural itineraries that reinforce said evolution and the integrated superimposition of temporary layers that have formed an extremely complex asset).

It is also proposed to encourage the generation of capacity-building proposals to ensure a better response to management and conservation needs, as well as to ensure the continuous implementation of the guidelines of the Convention in academic fields at all levels (initial, intermediate, higher).

On the other hand, actions have been initiated to multiply the tools and platforms for dissemination and communication[6], not only of the OUVs but also of the daily actions of the teams that we are currently advancing in the management, using all the available possibilities.

F. LEGISLATION

Axis will work on all actions aimed at updating the regulations required for the correct management and conservation of the property.

G. EDUCATION

The inclusion of programs in educational curricula is a recognized topic to guarantee the increase of awareness and knowledge about a heritage property in future generations. This line must be one of the priorities in management and joint construction between actors where different visions, knowledge, and worldviews are included to ensure the most comprehensive integration possible of the complexity of the property.

On the other hand, it seeks to generate specific training programs linked to other axes, such as the "Geological, Paleontological, and Archaeological Site Guards Program" already started, which not only trains local inhabitants in the custody and protection of heritage attributes but also It also develops preventive conservation actions.

H. MONITORING

This point in particular tries to identify a key element of the management of heritage properties, not only linked to the assessment of the state of conservation of the site or the monitoring of the factors that affect it, but also to the permanent monitoring of the actions, and their results, in the planning and management process. This means the construction of monitoring indicators and the permanent evaluation of processes and results to ensure immediate corrections or rethinking.

For this particular point, among others, it is considered essential to change the approach to an evolutionary system, to promote the flexibility that a property such as Quebrada de Humahuaca requires.

This is framed in the understanding that rigid constructions do not allow adaptation to reality, which is dynamic, nor to the growth of knowledge or

[6] Accounts on Facebook, Instagram and website under construction.

learning or to the construction of ties between the actors and institutions that allow the construction of collaborative networks.

For all of the above, we hope that the approach that we have decided to contribute to the management of the property is clearly understood and that it is being built, in full agreement with the local communities, in a democratic, collaborative, holistic, and systemic process with the actors considered managers, understanding that the vision or knowledge of the World Heritage Coordination, the Heritage Directorate or the Ministry of Culture, as responsible for the administration, are only one within the range of visions and knowledge.

This "management process" has started and does not set time horizons due to its conception in the form of construction and development and any document to be presented will only be a temporary cut of the process developed and planned up to that moment, so the emphasis it is placed in the "system (or processes)" and not in the management document.

We consider that if the processes of the system are understood and correctly implemented, the results will be those that the property requires for its conservation.

ANNEX 1

Decision 5. Encourages the State Party to consolidate coordination efforts between the management systems in place for Qhapaq Ñan Andean Road System and Quebrada de Humahuaca, to ensure consistency in approaches and decision-making, so as to protect the Outstanding Universal Value (OUV) of both properties;

At this point in particular, and as the administrative body of each of the sites is the same, the same approach and management system is being implemented both, in Quebrada de Humahuaca and "Quebrada Grande - Las Escaleras" segment of Qhapaq Ñan Andean Road System, in this case with the particularity that the latter is also linked, in addition, with the Argentine Federal Management system and the International Management system of the property, in general.

It is important to emphasize that the fact that the segment belongs to a serial and transnational asset with different levels of management is not incompatible with the proposal made for the Jujuy segment, all of which are within the framework of the conservation of V.U.E., attributes, authenticity, and integrity of the asset. and focused mainly on people and community participatory processes, but respecting the federal organization of the Argentine Republic.

The participatory system proposed for the federal management system is aligned with the management system that has been implemented in Quebrada de Humahuaca since its registration.

Decision 6. Acknowledges that the development of a Disaster Risk Management Plan is foreseen in the updated Management Plan and requests the State Party to submit it, for review by the Advisory Bodies, as soon as feasible;

As mentioned in point 4, the Disaster Risk Management Plan for the World Heritage site will be one of the plans to be developed by the management system, once all the key actors are involved in the process, according to what we consider, required by the characteristics and complexity of the site.

The construction of this type of plan, for this type of property, using the tools available for this type of management (as mentioned) requires a transdisciplinary approach, where not only existing or potential threats and risks should be considered, but also the contributions of local communities, through Local Site Commissions and municipal governments to ensure possible responses and needs as priorities that only local knowledge can provide, complemented by technical and academic knowledge.

This is why we cannot provide a Plan as soon as possible until we have the complete governance structure in place, which is expected to be in place by the end of 2023, as planned in the management process (stages 5 and 6).

Once the U.G.P. will develop, in principle, a process of levelling heritage concepts and approaches will be developed among the actors involved for the evaluation of disaster risks in the heritage place, focused on the current manuals for said action and establishing evaluation, preparation, mitigation processes, and plans. of action in case of disasters. Within this framework, professionals from each area should be assigned to develop the problem.

One of the most important moments to take into account at this point is the formation of capacities among the actors involved in these processes, which must be taken into account when planning this process.

No formal training programs have been developed in the country for the development of this problem related to world heritage sites.

Decision 7. Notes with concern the advances in the implementation of the Jujuy – La Quiaca Train Project and also urges the State Party to develop a Heritage Impact Assessment, in line with ICOMOS Guidance on Heritage Impact Assessment for Cultural World Heritage properties, of the project before any further construction is carried out, and also requests the State Party to submit it as soon as possible along with the Environmental Impact Assessment undertaken with regard to the Jujuy Train railway project, both for review by the World Heritage Centre and the Advisory Bodies;

The expansion project of branch C of the Central Norte Railway, which linked the city of Tucuman with San Salvador de Jujuy, dates from 1882, the date on which the works began, to generate an international link with Bolivia, with the objectives of generating a direct link with the Pacific oceans for the export of goods on the one hand and promoting trade in the southern region of Bolivia[7].

In 1902, the works for the Jujuy la Quiaca section were tendered, with the rails arriving at La Quiaca on May 25, 1908. It took until 1925 for the Bolivian rails (toward Uyuni and La Paz) to join the Argentine ones according to the four agreements signed by the two countries for this purpose.

On the other hand, a second line was projected between the two countries to link the city of Perico (Jujuy) with the city of Pocitos (today Yacuiba, Bolivia), releasing the service in 1931 and from there to Santa Cruz, finishing the project of traced in 1943. This branch had the intention not only to mobilize the production of Argentine sugar cane but also to import oil from eastern Bolivia.

See Map 1[7]- See Map 2[8]

Branch C of the General Manuel Belgrano Railway, originally Central Norte until 1948, operated until the end of the 1970s and the last train arrived at La Quiaca in 1994 when the trunk branch was completely dismantled.

The construction of the train in the Quebrada de Humahuaca generated certain important impacts such as the construction of cities around the station squares (eg Volcán, Maimará, Tres Cruces), and without a doubt, it was one of the elements that modified the landscape and the economy of the region[9] and even generated very significant social impacts. The spaces of the platforms and the stations

[7] FERRARI, Mónica. "El Sistema Ferroviario a nivel territorial. Los tendidos férreos", Tesis de maestría.

[8] Marchi, Morales, Machicado. "Bolivia: estrategias viales hacia un país de contactos", Revista Transporte y Territorio /18, 2018, pg 202-221.

[9] GOLOVANEVSKY, Laura (CONICET/FCE-UNJu). "Ferrocarriles y Población: Una mirada compartida en Jujuy (1891-1948-1993). Revista de estudios del ISHiR. Año 2, Número 2, 2012.

generated spaces for the exchange of goods and socialization in the towns of the Quebrada (where going to watch the train go by was a social activity).

This last analysis was the least studied, so there is no data on its impact, but it is a claim and a constant remembrance in all the workshops and meetings that the different heritage technical teams have developed.

On the other hand, the lack of the train circulating on the tracks and the inactivity of the FFCC stations has generated a modification in the landscape of the Quebrada that has been diminishing its quality in terms of their state of conservation or their occupation for Various uses, some compatible and others not.

ANNEX 2 - Images National Historical Archive

The rehabilitation project of branch C of the Belgrano Railway that crosses Quebrada, is currently planned as a re-functionalization of the Volcán-Tilcara section, to function, in the first instance, as a tourist train, intervening in the station squares of the towns of Volcán, Tumbaya, Purmamarca, Maimará, and Tilcara, and rehabilitating the tracks according to the pre-existing layout of the line built at the beginning of the 20th century.

The possibility of reactivating the entire line up to the border with Bolivia is being considered, always on the existing tracks and reusing the original materials (rails and sleepers).

It should be noted that, although the railway was inactive at the time of the declaration in 2003, it was fundamental in historical terms in the social, economic, cultural, and landscape conformation of the territory.

We consider it essential to highlight that, in the declaration of the value of the property, the importance that the railway had towards the beginning of the 20th century in the formation of new towns is expressed. It is considered one of the attributes of a world heritage site that contributes to the identification of criteria ii, iv, and v that emphasize the role of the Quebrada de Humahuaca as a place used for more than 10,000 years "...as a crucial step for the transportation of people and ideas from the high Andean lands to the plains[10].

It is recognized that the Quebrada de Humahuaca naturally, due to its conformation and location, was from the beginning of human appropriation, a natural passage

[10] criteria ii: https://whc.unesco.org/en/list/1116

that runs from north to south, forming an essential role in the political, social, economic, and cultural dynamics of Latin America, and The railway, upon its arrival around the year 1906, strengthens that articulating axis between highlands and lowlands, serving as a means of mass transportation and generator of development of existing populations and new urban centres.

Regarding the train reactivation project, the body responsible for its planning and implementation has been requested, at the request of the Heritage Department and the World Heritage Coordination of the province of Jujuy, to develop a Heritage Impact Assessment according to the "Guidelines for the evaluation of Impact on heritage related to World Cultural Heritage assets", to evaluate potential risks on OUVs and their attributes in the project area and its areas of influence. The presentation of said report is expected at the end of December 2022.

So far we do not have complete information on the executive project. We have only received partial information, until the final presentation of the EIP, at which time the World Heritage Coordination will carry out the pertinent evaluations and submit the complete information to CONAPLU and, through them, to the World Heritage Committee.

For what has been expressed, we request an extension of the term to comply with the requested requirements.

ANNEX 3

Decision 8. Notes that construction work is foreseen at the Rio Grande and its affluents as part of the Water Basin Management project and reminds the State Party that such projects must be submitted for review of the World Heritage Centre and the Advisory Bodies in accordance with Paragraph 172 of the Operational Guidelines, before works commence or any irreversible decision is made;

To date, construction works in the Río Grande basin have not begun, the details of reference projects were requested from the area of competence, at the time of being sent it will be submitted to CONAPLU for its information and analysis of the competition.

The tasks carried out on the Rio Grande and its tributaries by the Provincial Directorate of Water Resources are maintenance works and systematization of channels, basins, rivers, streams, and watercourses regularly framed within the provincial Water Mitigation Plan. These are water risk mitigation and maintenance works in the 4 regions of the Jujuy province and particularly in Quebrada de Humahuaca to mitigate impacts during summer periods, such as preventing contingencies[11].

In particular, there is knowledge of a proposal (we have not been able to have access to the project to date), not executed due to lack of national financing, developed by the Secretariat of Infrastructure and Water Policies of the Nation on two tributaries of the Rio Grande (Ríos Purmamarca, Purmamarca, and Huasamayo, Tilcara).

These actions imply channelling actions, longitudinal defences, the adaptation of fords, and the systematization of fills with excess material such as storm drain in urban sectors for the evacuation of surplus water.

ANNEX 4-a and 4-b

[11]http://infraestructura.jujuy.gob.ar/2022/03/17/plan-hidrico-provincial-obras-de-hidricos-de-mitigacion-y-mantenimiento/
http://infraestructura.jujuy.gob.ar/2021/02/24/plan-hidrico-provincial-hidricos-con-obras-en-las-cuatro-regiones-y-mitigacion-de-riesgo/

Decision 9. Further requests the State Party to invite an ICOMOS Reactive Monitoring mission to the property, in order to assess its current state of conservation and the effectiveness of management mechanisms, and to evaluate the impact of the planned and ongoing projects on the OUV of the property;

By note 648-DPP dated December 15, 2021, a formal invitation was made to an ICOMOS Reactive Monitoring mission to the property.

3. OTHER CURRENT CONSERVATION ISSUES IDENTIFIED BY THE STATE(S) PARTY(IES) WHICH MAY HAVE AN IMPACT ON THE PROPERTY'S OUTSTANDING UNIVERSAL VALUE

a. Affectations due to impacts of tourist activity, change in land use and development pressures

One of the main factors that could affect the property have been those related to tourist activity, the pressure of development in some urban areas, with possible changes or impacts on the peripheries or potential changes in land use.

For these particular factors there is no precise information, up to now, to be able to carry out an appropriate evaluation and monitoring, which is why it has been developed, within the framework of the ICCROM call for the "Heritage Place Lab - Pilot Phase"[12] of the "World Heritage Leadership Program", a team made up of researchers from the National Universities of Buenos Aires and La Plata and the technical teams of the World Heritage Coordination and the Heritage Department for the development of lines of research aimed at studying these factors and construct evaluation indicators.

These lines, to be developed during 2023 and 2024, aim to establish parameters for the development, together with the areas responsible for tourism planning in the province and municipalities, of sustainable tourism plans that ensure the benefit of local communities such as visitation and interpretation. properties of the asset and monitoring indicators to be included in the asset management process[13].

These lines of investigation will be explained in **ANNEX 5** of this report and are part of the management process started.

b. Some conflicts related to institutional understanding and the sharing of heritage values by some social actors and mainly at the inter-institutional level have been identified.

This factor has been evidenced by evaluating management through the use of EoH 2.0 tools.

For the concrete resolution of this factor, the governance structure mentioned in the management process is being proposed. This will allow the different actors with management capacity and with current actions in the territory to incorporate into the development of their activities the vision of the conservation of the V.U.E and local values, not only for their own and so important heritage conservation but also

[12] https://www.iccrom.org/news/call-research-practice-teams-heritage-place-lab-pilot-phase-0

[13] https://panorama.solutions/es/solution/interlinking-research-and-practice-improving-management-quebrada-de-humahuaca-world

for the contribution that this perspective generates to the mitigation of the effects of climate change and the progress in risk management.

ANNEX 1 (Governance Structure)

c. Other factors that could affect the V.U.E. of the good are the conservation of specific attributes of scientific, symbolic, geological, paleontological, archaeological, historical value, etc.

For this point, in particular, the "Guardian Program for sites of Geological, Paleontological, and Archaeological Value" has been implemented.

This program, already included in the previous Management Plan but without the possibility of development up to now, implies the training of capacities in members of communities of localities of the Quebrada de Humahuaca, with residence near value sites, pre-selected jointly between the municipalities and the World Heritage Coordination, seeking to generate preventive conservation actions, involvement of communities in the conservation of sites, generation of interpretative content built jointly between professionals and communities and generation of awareness at the level of municipal governments among other objectives.

The program is carried out in stages, linked to each of the localities within the property and to the selected value attributes and in direct relation to requests from the communities, the first being, and now completed, in the locality of Tres Cruces (most north of the maximum protection area) for the protection of the sites of Inca Cueva, Cueva del Indio, Pucara de Tres Cruces, and Puente del Diablo.

In this first stage, the first 12 guards have already been formed, each of whom has a designated place for their custody. Likewise, the process for the second stage has already begun for the towns of Uquía and Huacalera.

This course provides specific training in geology, palaeontology, archaeology, tangible and intangible, historical, natural heritage, first aid, and visitor accompaniment and contemplates specific material in relation to the attributes that will be protected at each stage.

ANNEX 6

4. IN ACCORDANCE WITH PARAGRAPH 172 OF THE PRACTICAL GUIDELINES, DESCRIBE ANY POTENTIAL RESTORATION, ALTERATION, AND/OR MAJOR NEW CONSTRUCTION PLANNED WITHIN THE PROPERTY, THE BUFFER ZONE AND/OR CORRIDORS, OR OTHER AREAS, WHERE SUCH DEVELOPMENTS MAY AFFECT THE OUTSTANDING UNIVERSAL VALUE OF THE PROPERTY WELL, IN PARTICULAR ITS AUTHENTICITY AND INTEGRITY.

Currently, the main work under development within the maximum protection area is the reactivation of the Belgrano Branch C railway which has been developed in the previous points

ANEXOS

ANNEX 1

QUEBRADA DE HUMAHUACA MANAGEMENT SYSTEM

ABSTRACT

This document attempts to explain, in a synthetic way, the management system designed for Quebrada de Humahuaca as a World Heritage property in response to the request issued by the World Heritage Committee through Decision 44 COM 7B.62.

For this, it is considered essential to start with clarifications based on the starting point and the approach adopted to update the property's management system.

First of all, it is essential to mention that it was decided to work from an approach based on the development of a "**Management Process**" and not that of a **Management Plan**. This implies developing holistic systems and tools that not only propose actions to be implemented in a certain time, but also the construction of governance systems, deepening the identification of heritage values (different scales) and their attributes, reactivation of participatory processes, at various levels, and cyclical processes of planning, execution, and monitoring.

This approach implies moving from the construction of a document with a defined time frame to a "timeless" process marked by cyclical stages that will develop specific actions, designed and defined by the governance structure in a specific planning framework.

This process began with the diagnosis developed in 2019 regarding the situation of the Management Plan built in 2008 and the governance structure that was part of said Plan.

Likewise, it seeks to introduce adaptations to the realities and deep complexities of the property, such as the government system of the province and municipalities, the resources and operating structures, and the definitions of the patrimonial site, translated into realistic planning.

DESCRIPTION OF THE PROPERTY

This document does not include a description of the property or the declaration of outstanding universal values as it is a summary that tries to describe the management system.

It is important to emphasize that the management system is developed around the OUVs, their authenticity and integrity as well as the factors that affect them, positively and negatively, but also emphasizing other assessment scales.

GENERAL OBJECTIVE

- Ensure the conservation of the Outstanding Universal Values of the property with the same degree of authenticity and integrity at the time of its inscription on the World Heritage List, for present and future generations.

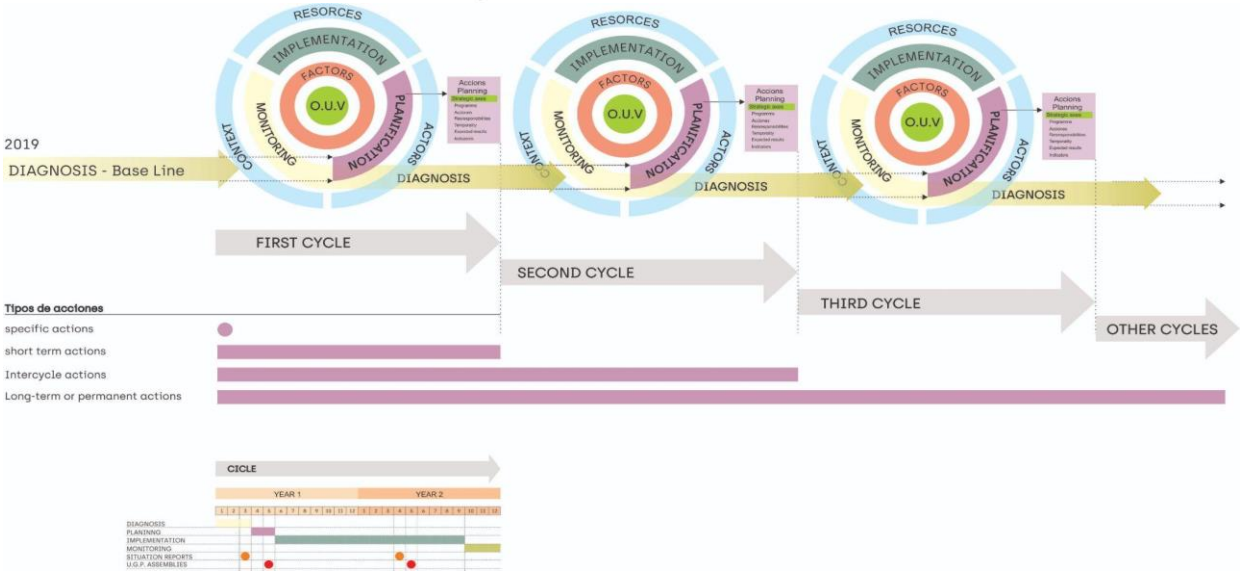
PARTICULAR OBJECTIVES

- Center management processes around the identification, conservation and diffusion of Exceptional Universal Values, and other scales, and the attributes that manifest them.
- Ensure participatory management processes in the management system that includes the visions of both local communities and organizations as well as the different levels of government (municipal - Provincial) as main actors.
- Develop a management system based on continuous, cyclical, holistic processes that integrate knowledge and points of view.
- Develop a governance system that ensures the construction, implementation and monitoring of actions aimed at ensuring the main objective and minimizing the factors that negatively affect the site.
- Design cyclical processes that include stages of diagnosis, Adjustment-development-implementation and monitoring of actions and the state of conservation of the property.
- Develop indicators to monitor the state of conservation of the property.
- Introduce the Heritage Impact Assessment as an assessment tool.
- Introduce Risk Management in the Heritage Site as a strategic axis of the management process.
- Introduce the evaluation and permanent monitoring of climate change processes and their impacts on the property.

METHODOLOGY – APPROACH

As mentioned repeatedly in the introduction, the management system, in the process of development, is based on a continuous, timeless and cyclical system focused on the heritage values and attributes of the site (VUE and premises, mainly) taking into account the factors that affect good and adapted to the extreme complexities and realities that frame it (internal and external).

In general terms, they are consecutive cycles made up of four stages (Diagnosis – Planning, Implementation and Monitoring) led by the Provincial Management Unit (governance structure also included in this management process) which will be led by the Coordination of World Heritage as the institution that manages the property.



It is important to emphasize that for the management of the site, the focus is placed on the **Management Process** and on the **governance structure** where the actions incorporated in the process are a consequence of these first two factors. It is considered that, if the processes are consistent and the actors represent the reality of the property, these actions will be oriented towards the achievement of the Mission and Vision of the UGP and the management objectives and it will be possible to ensure the conservation of the OUVs and local values.

Likewise, this scheme seeks to break the continuous construction of rigid documents of traditional administration and ensures the inclusion of monitoring (not only the state of conservation of the property but also the planned actions) as a fundamental part of the process to ensure continuous adaptation, adjustment, and learning.

Within this cyclical process, actions will be planned within a series of strategic axes, already defined, where management (as one of these axes) is an important part of the process that ensures continuous improvement, adaptability (based on permanent monitoring of the actions and their results) and the participation of all interest groups based on capacities, real resources, and context.

The extension and diversity of the property require that this type of axes be taken into account and permanently rethought to guarantee consistent tools and an orderly and clear system, but without ruling out the possibility that the actions respond to several axes.

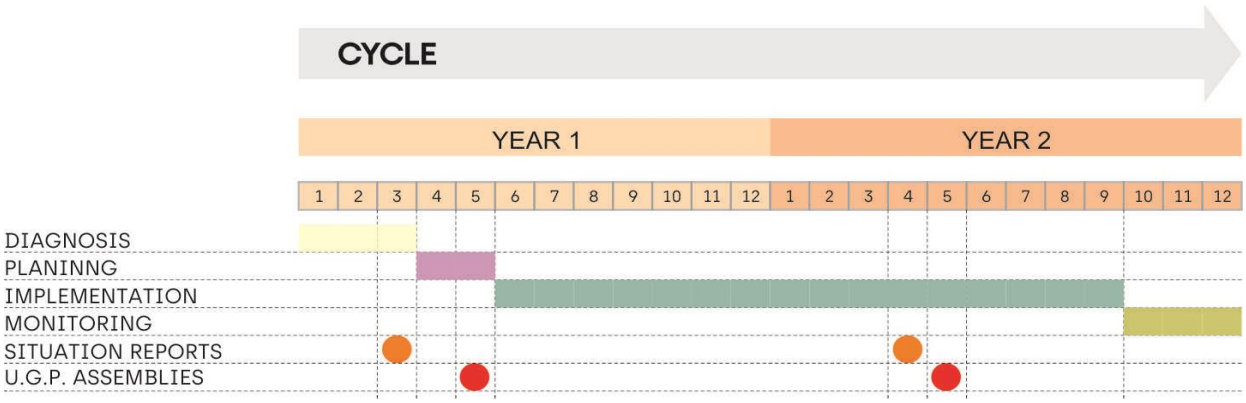
Each of the cycles will last 2 years, in principle[1], in which each of the stages will have the following durations:

- Diagnosis: 3 months
- Planning: 2 months
- Implementation: 17 months

[1] Period subject to review once the governance scheme is completed and all the key actors are integrated into the structure

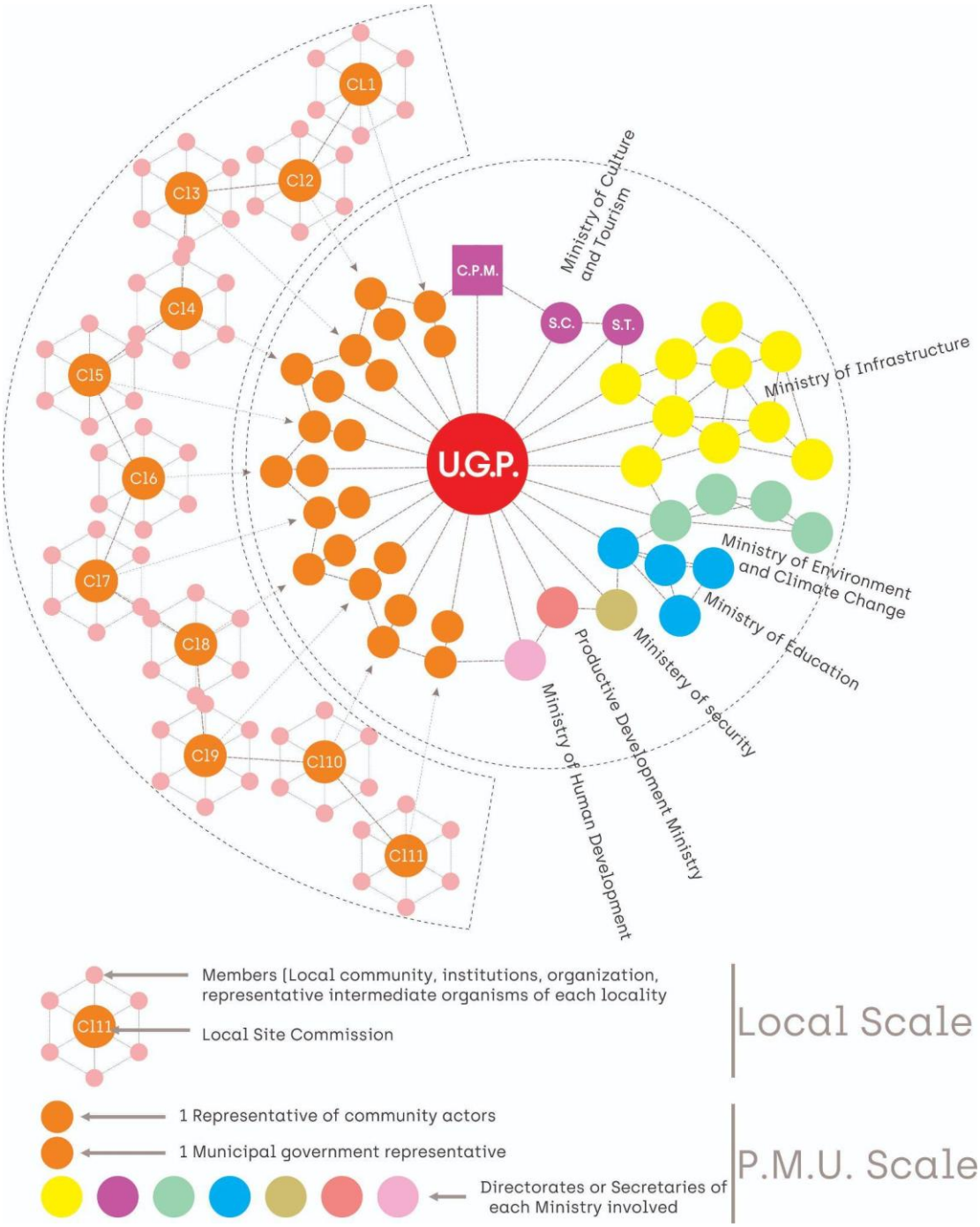
- Monitoring: 3 months. Of two types:
    - Biennial monitoring of the results of the actions
    - With another time scale: Monitoring of the V.U.E and its state of conservation

This process will be accompanied by annual assemblies of the Provincial Management Unit, the body that will decide on the actions to be developed, to achieve the main objective of conserving the property.



The Provincial Management Unit will be made up of a representative of each of the provincial agencies, with interference and impact on the property, together with the representatives of the municipal governments plus a representative of each of the Local Site Commissions.

GOVERNANCE STRUCTURE[2]



[2] *C1 to C11: Local Site Commissions made up of organizations/institutions/associations/communities/etc. representative of each locality elected by its inhabitants plus a representative of the municipal government.*
A representative from each municipality plus a representative from the rest of the members of each CLS will go to the Provincial Management Unit.

STAKEHOLDER MAP

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Worksheet 4a: Identification of actors with recognised authority and responsibilities to manage the property				
Group or institution recognised as managers	**Attributes (or area) for which the group and institution is responsible for**	**Specific role, mandate and responsibilities to manage the property**	**Key instruments and powers at their disposal to implement mandate**	**Comments/ explanation**
National Government				
Argentine World Heritage Committe	OUV Values	Inform and consult the Argentine National Commission for Cooperation with UNESCO (CONAPLU) in all matters relating to the application of the 1972 UNESCO Convention on the Protection of World Cultural and Natural Heritage, approved by law No. 21836, as well as also issue recommendations and resolutions, and ensure their compliance, throughout the territory of the Nation	CONAPLU Resolution 1/2001	
Argentine National Commission for Cooperation with UNESCO (CONAPLU)	OUV Values	Consult the Government in the application of UNESCO Programs and in the presentations made by the Argentine Republic	Decree 7736/58 Resolution 1/2019	
Illicit Trafic National Committe	Cultural and Natural/Illicit trafic fight	Establish adequate procedures and mechanism to prevent and fight illicit traffic of cultural assets. Promote awareness activities programs Prepare "Argentina Red List" on cultural assets in danger of illicit traffic. Propose training programs	Decree 1116/2003	
National Commission on Historic Monuments, Places and Sites	Nationally listed buildings and sites	Administration and control of the varied and rich historical and cultural heritage of Argentina	National Law 12665 (1940) National Law 27103(2015)	
National Institute of Agricultural Technology (INTA)	Agriculture	Promote, invigorate and coordinate the development of agricultural research and extension and accelerate with the benefits of these fundamental functions the modernization and improvement of the agrarian enterprise and rural life	Decree- Law 21.680/1956	
National Roads Administration	National Road /Landscape	Construction, maintenance and repairing of roads	Law 11658/192	
National Institute of Latin American Anthropology and Thought (INAPL)	Intangible/Archaeology	Management, research, advice, training, and protection of national heritage, studies and research are executed in the areas of social anthropology, folklore and archeology. Projects dedicated to the recovery, documentation and management of tangible and intangible cultural heritage are carried out. Also advises on alternative proposals for regional socio-cultural and economic development.	Decree 1943	
Institute of Research and Technological Development for Familiar Agriculture (IPAF)	Agriculture	Center for research and development of technologies for family agriculture in the northwestern region of Argentina	Resolution 2019-448-APN-CD#INTA	
National University of Jujuy	All Eduaction/Research	Research is related to archaeology, anthropology, languaje and medicine disciplines (connected to anthropology department), based in Humanities and Social Sciences Faculty(FHyCS). The research teams and postgraduate studies program from FhyCS has been fundamental for the training and development of young researchers working in the Quebrada de Humahuaca. Since 2019, the University (Unju) created two headquarters in Quebrada de Humahuaca (Tilcara and Humahuaca) with careers oriented in Tourism, Agricultural Production, Social Work where specific heritage subjects are taught.	National Law 20.579/1973	Consultation. It is not an actor directly involved in the Management. Participate at the request of directly linked organs

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National Council for Scientific and Technical Research (CONICET)	All /Research	CONICET will have as mission the promotion and execution of scientific and technological activities throughout the national territory and in the different areas of knowledge. The functions are to promote and finance scientific and technological research, promote scientific-technological exchange and cooperation within the country and abroad.	Decree 1661/96	Consultation. It is not an actor directly involved in the Management. Participate at the request of directly linked organs
Buenos Aires University	All Eduaction/Research	Great significance of the UBA in the intellectual, social and political life of Argentina. Trainer of scientists, researchers with a critical spirit and social commitment that are articulated together with CONICET and the University Center of Tilcara in works and investigations in Quebrada de Humahuaca on various topics (Archeology, History, Architecture, Anthropology)		Consultation. It is not an actor directly involved in the Management. Participate at the request of directly linked organs
Tilcara University Center	Archaeology Research	The TILCARA UNIVERSITY CENTER is an institution that articulates the production of knowledge, extension and transfer actions, and local participation aimed at meeting socio-cultural demands in the Quebrada de Humahuaca area. Likewise, it combines an institutional structure with a diverse team of workers, dedicated to improving the quality of the services it provides, recovering local knowledge, promoting technological innovations in general and operating in a reflective and critical way. Therefore, the production of knowledge is the transversal axis that allows to problematize and seek solutions in all the areas that it comprises.		
Provincial Government				
Jujuy Ministry of Culture and Tourism		The Ministry of Culture and Tourism is in charge of setting the cultural and tourism policy of the Province of Jujuy and establishing the strategies that allow transversality and coherence with the provincial and national policies, articulating all socioeconomic sectors ...		
Jujuy Culture Secretariat/Department	Cultural tangible and intangible Values	Plan and implement strategies for the promotion, rescue, preservation, encouragement, enhancement and dissemination of the culture of the Province of Jujuy	Decree 76/2015 Law 5206/2000 Decree 789/2004	
Provincial Heritage Directorate	National and Provincial Tangible and Intangible Values	Design, propose and conduct policies, plans ... and projects for the proper management, registration, inventory, research, conservation, presentation, social use, promotion and dissemination of the cultural heritage of the province to promote the strengthening of cultural identity .	Decree 3095/2021 Law 5751/12(Heritage) Law 3866/82 (Archaeology)	
World Heritage Coordination	All	Property Manager Ensure that the Outstanding Universal Value (OUV) for which the Quebrada de Humahuaca was inscribed on the UNESCO World Heritage List on July 2, 2003 in the category "Cultural Landscape", are transmitted to future generations, maintaining the integrity and authenticity, recognized at the time of registration, and promoting a harmonious and sustained development of the property and the communities that live in it, taking into account their complexity and provincial and regional integration through a comprehensive, systemic and participatory management system. holistic.	Decree 3095/2021 Law 5206/2000 Decree 789/2004	

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Jujuy Tourism Secretary	OUV Transmission Public Use	Develop the destination based on a clear, planned, strategic and sustainable tourism policy, which becomes the engine of development of the communities, generating genuine employment, preserving culture and nature, with unique and enriching tourism products and experiences. Ensure the positive transformation of destinations, through strong investments in infrastructure and excellent tourism offer, within an adequate regulatory framework and clear growth thresholds, ensuring the decentralization of supply and demand. Position Jujuy and connect it with the main source markets. To be, at the same time, a communication and distribution node of tourist flows, entry and exit door for travelers who go to the entire International Andean Corridor. Coordinate, bring together and encourage all actors in the sector, using different communication and management channels and tools in order to achieve results in an effective and responsible manner, with Jujuy human resources as the main capital.	Decree 76/2015	
Environment Ministry				
Environmental Quality Secretariay	Natural	Assist the Environment Ministry in all aspects related to the evaluation of the impact of anthropic activities on the environment, the inspection and control of environmental pollution and the management of hazardous waste, all within the framework of the provisions of the Constitution of the Province of Jujuy, the National Constitution, and current environmental regulations	Provincial Law 5063/1998	
Biodiversity and Sustainable Development Secretary	Natural	Assist the Environment Ministry in the elaboration, execution and follow-up of the Provincial Policy related to the management of natural resources, the conservation of biodiversity, Sustainable Development, the Territorial Planning of Forests and the use of the province's land; guaranteeing the integrity, care and sustainable management of those areas that, due to their biological values, have been classified as a protection category.	Provincial Law 5063/1998	
Provincial Directorate of Territorial Environmental Planning	Natural	Its mission is the environmental regulation, taking into account the political, physical, social, technological, cultural, economic, legal and ecological aspects of the provincial reality, it must ensure the environmentally appropriate use of environmental resources, enable the maximum production and use of the different ecosystems, guarantee the minimum degradation and waste and promote social participation in the fundamental decisions of sustainable development.	Provincial Law 5063/1998	
Strategic Planning and Environmental Proyects Directorate	Natural	Establish general lines in pursuit of achieving objectives and goals that reflect the government plan on environmental issues. Through various mechanisms, it will establish the guideline that the Ministry must follow.	Provincial Law 5063/1998	
GIRSU Jujuy	Natural Landscape	Provide structural solutions that are sustained over time, throughout the provincial territory, in the face of the historical problem of inefficient urban solid waste management and inadequate open-air disposal. With the consequences that this implies and the negative effects on the environment, health, regional economies, tourism, etc.	Provincial Law 5063/1998 Law5954/2016 Decree 8034/2018	

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Infrastructure, Public Services, Land and Housing Ministery		Preparation and implementation of programs for the promotion, planning and implementation of public works and the programming, provision, conservation and supervision of public services throughout the territory,		
Infrastructure Secretary	Urbanism/Architecture /Landscape Infrastructure and services	Manage, execute and control public works in general, urbanization and construction plans, urban development works programs, community equipment and housing construction that are carried out with public funds, coordinating actions with the Planning Secretariat and the different agencies dependent on the execution, inspection, conservation and improvement of works of communication routes, bridges, roads, rural and urban pavements, drains and water and hydraulic works, defenses, urban and rural infrastructure, as well as housing, architecture and urban planning.		
Hydric Resources Provincial Secretary	Hydrology	The main objective of the Directorate is to satisfy the general interest of the population in the use of water in its different forms of use, excluding drinking water for human consumption.	Law 3807/81	
Planning Secretary	Urbanism/Architecture /Landscape	Assist the Ministry of Infrastructure and Planning in carrying out the studies, research and formulations that are necessary for the implementation of government policy planning and in managing the application and comprehensive evaluation of development planning in economic, social and territorial areas of the Province with a view to the common good that specifies the policy established in the matter of Public Works and Services.		
Energy Secretary	Services/Energy	Design, plan, execute and manage the policy and energy of the Province, providing for the development and exploitation of energy sources in a sustainable way.		
Territorial Planning Secretary	Urbanism/Architecture /Landscape	Assist the Executive Power in the planning, development and execution of comprehensive public policies of Territorial Organization and Land Uses at the provincial, municipal and regional levels, the Registration and Publication of property rights throughout the province and everything related to the cadastre provincial, the implementation and development of a Spatial Data infrastructure as an instrument and data integration strategies, as well as defining the general guidelines for Territorial Planning and Urban Development, assisting local municipal governments in this regard, within the framework of the regional and local development plans within the corresponding legal framework; understanding that Territorial Planning and access to housing is a public policy, aimed at guiding the process of social production of space, through the application of measures that aim to improve the quality of life of the population, through its social integration in the territory and the environmentally sustainable and democratic use and exploitation of natural and cultural resources.	Provincial Law 6069/2018	
Provincial Road Administration Directorate	Road Construction and Maintenance	Provincial Road Construction and Maintenance		
Provincial Directorate of Real State	General Cadastre	Organization of the general and single Cadastre of all real state located in the territory of the Province.		

QUEBRADA DE HUMAHUACA
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Provincial Directorate of Statistics and Censuses	Population/Data	Assist the Executive in the programming, planning, execution and monitoring of the plans and programs that specify the policies defined by the Government in the different matters for the fulfillment of the objectives of the State.	INDEC Disposition 176/99	
Jujuy Housing and Urbanism Institute	Architecture/Urbanism	Develop an active housing policy for the entire province, satisfying the demand of those who do not have access to the real estate market, in order to promote a balanced urban development in a habitat equipped with infrastructure and without environmental risk for Jujuy families.	Decree 1166/2016	
Potable Water of Jujuy S.E.	Landscape/Health Services	Ensure access to drinking water and sanitation services for all Jujuy families; incorporating technologies and efficiency into the operating and infrastructure processes with the firm conviction of making continuous improvements in our systems in order to raise the standards in the quality of life of thousands of people from Jujuy.		
Ministry of Education				
Secretary of Education Management	Values Transmission	It is the office that designs, develops and supervises the strategies for the realization of the educational policy at the different levels and modalities of the Provincial Educational System and defines the pedagogical and organizational aspects of the services.		
Innovation and Educational Quality Secretary	Values Transmission	It is the office responsible for the production of information for decision-making of the Ministry of Education. Designs, develops and supervises the strategies for innovation and improvement of educational quality, planning, the formulation of the provincial educational plan and its evaluation.		
Educational Infrastructure Secretary	Architecture (Provincial School building)	It is the office responsible for the implementation of the actions for the planning, project, construction, maintenance and administration of the infrastructure of the educational institutions and of provincial state management and the dependencies of the Ministry of Education.		
Educational Equity Secretary	Values Transmission	It plans, executes and evaluates the actions aimed at all the protagonists of the educational system in order to assess them and offer them the conditions of well-being for the development of their activities, respecting and taking into account their differences.		
Human Development Ministry		Public Policies to improve the quality of life, specifying the real inclusion of the population as a whole, thus achieving Human and social Development in a sustainable way		
Indigenous People Secretary	Intangible Indigenous Rights	The Secretary is the agency of the provincial State that is in charge of promoting, defending and enforcing the rights of Indigenous Peoples in the Province of Jujuy, as well as the implementation of interculturality.	Decree 79-G- 2015	
Economic Development and Production Ministry				
Mining Provincial Secretary	Geology/ Geomorphology/Environmental/Natural/Landscape	Technical office in charge of executing the plans determined by the provincial mining policy. Contribute to the incorporation of modern techniques developed by the various branches of geology and engineering applied to mining. Attend, protect and monitor the mining wealth of the Province, assigning adequate control of mining and related activities, the rational exploitation of deposits and the normal perception of mineral exploitation rights and contribute to the development of mining and industries. that process mineral raw materials to their commercialization status.	Law3792/1981	

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Government and Justice Ministery		The objective of the Ministry is to formulate, adopt, coordinate and execute the Executive, Judicial, Public Ministry, control agencies and Municipalities, for the development and consolidation of public policy, improve institutional relations with Municipalities and Municipal Commissions.		
Municipal Affairs and Relations Secretary	Interinstitutional Relationships between Province Government and Municipalities			
Security Ministry		Guarantee the inhabitants of the territory the public conditions for the enjoyment of the rights of the people, referring to psychophysical integrity, freedom of movement and private property. Execute and control compliance with public security policies, determine, formulate and execute policies, programs and projects in the field of citizen security, in coordination with other sectors of the government, with municipalities, with neighborhood organizations and with civil society.		
Public Security Secretary	People/Assets/Security	Assist in everything related to public safety, preserve the freedom, life and heritage of the inhabitants, their rights and guarantees, within a framework of full validity of the institutions of the democratic system.		
Complex Crimes Provincial Agency	Cultural property/ Illicit trafic	Role of prevention, detection and investigation of complex crimes and organized crime. Promote the formation of a network of national and provincial institutions that serve as a source of information for criminal investigation.		
Civil Defence Public Ministry		Represent and defend the poor, the absent, children and adolescents, the incapable and anyone who needs a special guardianship to realize their rights. In particular, it defends and protects human rights within the scope of its competence and in accordance with the prescriptions of Article 18 of the Provincial Constitution.	Law 5903 (modified by Law 5943)	
Jujuy General Emergencies Directorate	All			
Jujuy Colonies Institute	Agriculture	According to article 74 of the Constitution of the Province, it will be the colonization of rural fiscal lands by handing over them as property, in order to be incorporated into the Productive Processes, in agricultural and / or forestry operations.	Law 4394/88	
Municipal Governments				
Volcán Municipal Commission	ALL in the area of influence of each jurisdiction	The local administration of the communities and territories of the Province will be in charge of the Municipalities and Municipal Commissions, in accordance with the National Constitution and other applicable legal norms. Each Municipality has its own legal status, and political, administrative and financial autonomy. They are independent with no other limits than those established in the Constitution of the Province.	Provincial Law 4466 (Organic Municipality Law)	
Tumbaya Municipal Commission	ALL in the area of influence of each jurisdiction		Provincial Law 4466 (Organic Municipality Law) Ord 10/2013 (Urbanistic and Building Caracter)	
Purmamarca Municipal Commission	ALL in the area of influence of each jurisdiction		Provincial Law 4466 (Organic Municipality Law) Ord. 006/1971	
Maimará Municipality	ALL in the area of influence of each jurisdiction		Provincial Law 4466 (Organic Municipality Law) Ord007/2004 (Urban Ejido) Ord. 013/2001 (Signage, Stickers and Advertising)	

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Tilcara Municipality	ALL in the area of influence of each jurisdiction		Provincial Law 4466 (Organic Municipality Law) Ord. 014/1996 (Urban Sector) Ord. 009/1999 (Land Ocupation)	
Huacalera Municipal Commission	ALL in the area of influence of each jurisdiction		Provincial Law 4466 (Organic Municipality Law)	
Humahuaca Municipality	ALL in the area of influence of each jurisdiction		Provincial Law 4466 (Organic Municipality Law) Ord. 009/1971 (Old Town) Ord. 018/1980 (Urban Sector)	
Iturbe Municipal Commission	ALL in the area of influence of each jurisdiction		Provincial Law 4466 (Organic Municipality Law)	
Tres Cruces Municipal Commission	ALL in the area of influence of each jurisdiction		Provincial Law 4466 (Organic Municipality Law)	
Uquia Municipal Commission				
Palca de Aparzo Municipal Commission				
Secretary / Directorates of Culture of the Municipalities	cultural attributes	Promotion and protection of the cultural development of the Quebrada de Humahuaca		
Secretary / Directorates of Tourism of the Municipalities	Cultural / natural / landscape attributes public use transmission of values	Promotion and protection of the cultural and tourist development of the Quebrada de Humahuaca		
Secretary / Directorates of Environment of the Municipalities	cultural attributes	Created to accompany the Strategic Plan "Pachamama Te Cuido", developing municipal plans for the Urban Solid Waste Management		
Aboriginal / Indigenous Communities (76 up to 2021)	ALL in the area of influence of each jurisdiction	Directly involved and interested in the preservation, conservation and transmission of OUV.		
Local Communities	ALL in the area of influence of each jurisdiction	Directly involved and interested in the preservation, conservation and transmission of OUV.		
Local Commission of Volcán Site	ALL in the area of influence of each jurisdiction	Custody, monitoring and control of the cultural assets that are in their jurisdiction or area of responsibility, proposing plans, programs or projects for the safeguard, protection and promotion of them, and to report changes that are detected.	STC Resolution 164/2004 (Creation)	
Local Commission of Tumbaya Site				
Local Commission of Purmamarca Site				
Local Commission of Maimará Site				
Local Commission of Tilcara Site				
Local Commission of Huacalera Site				
Local Commission of Humahuaca Site				
Local Commission of Iturbe Site				
Local Commission of Uquia Site				
Local Commission of Palca de Aparzo Site				
Local Commission of Tres Cruces Site				

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ACTIONS AS OF OCTOBER 2022

The actions listed are those planned in the management process started in 2019 to date. The same process will be completed permanently based on the progress of the same management system and the development of the previous stages that trigger new actions and is subject to the monitoring and diagnostic processes of each stage that allows adaptation to the specific time frames of each cycle.

It is essential to highlight that it has been concatenated with the management evaluation process developed with the use of the Enhancing out Heritage 2.0 – EoH 2.0 toolbox.

This set of tools, although they have not been developed for management and planning, have been used positively for this purpose, mainly the sheets related to Values and Attributes (Toolkit 1), Actors (Toolkit 4), Factors (Toolkit 2) and Objectives. management (Toolkit 1). This document has served to adapt the process started and guide planning in relation to heritage values.

Another issue to take into account, as mentioned, is that the actions developed, to date, have been designed unilaterally by the World Heritage Coordination, since it does not yet have (it is currently being formed) the Provincial Management Unit (UGP). working. It is essential to mention this as well as the proposed management process approach is different from that of the Plan, which allows us to have adaptable time frames and include all the stages in the same process, from the moment of the results of the 2019 diagnosis and the decision to update the management system.

In 2021, two towns that were part of another municipality changed rank and are currently administratively and politically independent, creating the Municipal Commissions of Uquía and Palca de Aparzo, determining the need to create Local Site Commissions in said locations, going from 9 to 11.

Based on all of the above, we affirm that structured planning is being carried out, whose next step is the creation of the PMU, and an agenda of concrete actions are being developed, in a participatory and consensual manner, which will be reflected in a system registry created for such purposes.

Just as the PMU will determine the actions to be developed, evaluation indicators will also be determined to monitor them as well as the factors that affect the property and the Exceptional Universal Values in order to be able to make adjustments in the next management cycle.

Next, an action board developed to date is added which, as mentioned, will continuously grow within this cyclical system, so it should only be considered as a temporary management cut to 2022.

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ACTION BOARD
QUEBRADA DE HUMAHAUCA - PATRIMONIO MUNDIAL

DIAGNOSIS - BASELINE | CYCLE 1 | CYCLE 2 | CYCLE 3 | SUBSEQUENT CYCLES

2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2028 | XX | XX

1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4 | 1 2 3 4

A- MANAGEMENT

PANDEMIA CONVID-19

1. Institutional strengthening
   - i. Evaluation of areas of interest for management.
   - ii. Incorporation of professionals in specific and critical areas for the management and conservation of the property.
2. Increased presence of the UGAQH (Today World Heritage Coordination) in social networks and the media
   - i. Creation of accounts in social networks for the diffusion of patrimonial values, interpretation of the patrimony and communication of actions.
   - ii. Creation of a Web site of Quebrada de Humahuaca – World Heritage
   - iii. Creation of a database of information and digital publications for periodic dissemination.
3. Reactivation of the participatory management system of Quebrada de Humahuaca.
   - i. Design of the reactivation program of Local Site Commissions.
   - ii. **Stage 1. a:** Inter-institutional meetings with municipal governments for the design and planning of participatory workshops by locality (Stages 2-3-4-5).
   - iii. **Stage 1. b** – Communication and dissemination system design.
   - iv. **Stage 2:** Development of community workshops (11) for the dissemination of OUVs, analysis of particular situations in each community, evaluation of potential approach strategies.
   - v. **Stage 3:** Development of participatory workshops for the detection of heritage values and attributes at a local scale, detection of key actors, positive and negative factors that could affect the property and reactivation and reformulation of C.L.S.
     1. **Stage 3-A:** Participatory workshops for the dissemination of the OUVs of Quebrada de Humahuaca and for the detection of Heritage Values and Attributes at a local scale. (Use of EoH Tools 2.0 – Tk 1).
     2. **Stage 3-B:** Participatory workshops for the detection and classification of key actors and identification of factors that could affect the property (positively or negatively) on a local and general scale).
     3. **Stage 3-C:** Participatory workshops for the formation of local site Commissions and appointment of representatives.
     4. Completeness of EoH 2.0 Tools
   - vi. **Stage 4:** Incorporation of provincial state organizations into the participatory management system
     1. Preparation of the necessary regulatory framework
     2. Promotion of the regulatory framework and creation of the PMU
     3. Workshop with provincial organizations for the dissemination and awareness of the World Heritage Convention, Declaration of Quebdada de Humahuaca as World Heritage, OUVs, Mission and Function of the PMU, Quebrada de Humahuaca Management System, responsibilities of each organization .
     4. Determination of regulatory body and technical support body
   - **vii. Stage 5: ESTABLISHMENT OF THE PROVINCIAL MANAGEMENT UNIT (PMU)**
     1. First assembly of the PMU
     2. Beginning of the first cycle of the Planning system
4. Construction of new links with national organizations to ensure the dissemination and application of the WH Convention.

B- REGISTRATION

1. Update the registry / inventory / catalog of the heritage attributes of the Quebrada de Humahuaca
2. Analyze and develop the registry of Quebrada de Humahuaca Landscape units

C- CONSERVATION

PREVENTIVE CONSERVATION

1. Program for Guards of Sites of Geological, Paleontological and Archaeological Value
   - i. **Etapa 1:** Tres Cruces
   - ii. **Etapa 2**: Huacalera - Uquia
   - iii. **Etapa 3:** To determine subsequent stages

RISK MANAGEMENT

To be developed by PMU (Permanent Program)

ASSESSMENT OF THE IMPACT OF CLIMATE CHANGE ON THE PROPERTY

To be developed by PMU (Permanent Program)

RESEARCH - MANAGEMENT

1. Heritage Place Lab - World Heritage Leadership Program - ICCROM
   - i. Development of research line 1: Assessment of the Impact of Tourism on the property - Development of Indicators
   - ii. Development of research line 2: Evaluation of the pressure of Development on the property - Elaboration of Indicators
   - iii. Desarrollo de la línea de investigación 3: Evaluación de cambio de uso del suelo en el bien - Elaboración de Indicadores

D- PUBLIC USE

i. Implementation of impact indicators of tourist activity in Quebrada de Humahuaca
ii. Development of a sustainable tourism development plan for World Heritage sites (Quebrada de Humahuaca / Quebrada Grande las Escaleras Segment - Qhapaq Ñan A.R.S.) (to be defined by PMU)
To be developed by PMU

E- COMMUNICATION, DISSEMINATION AND AWARENESS

To be developed by PMU

F- REGULATORY FRAMEWORK

1. Construction of building codes for the towns of QH.
   - i. Survey and analysis of urban areas and landscape units
   - ii. Development of evaluation systems for the detection of settlement patterns
   - iii. Drafting of building codes inserting the rescue and valuation of the landscape, urban and architectural heritage
   - iv. Development of training courses for municipal personnel for the interpretation and application of regulations

To be developed by PMU

G- EDUCATION

i. Dissemination program in schools of Quebrada de Humahuaca (Permanent Program)
ii. Strengthening of heritage themes in the school curriculum at the primary and secondary level (to be defined by the PMU)
iii. Promotion / Creation of programs for the formation of capacities according to the needs of heritage management (to be defined by the PMU)
To be developed by PMU

ANNEX 2

HISTORICAL IMAGES RAILWAY – BRANCH C – FFCC GRAL. BELGRANO, QUEBRADA DE HUMAHUACA – JUJUY

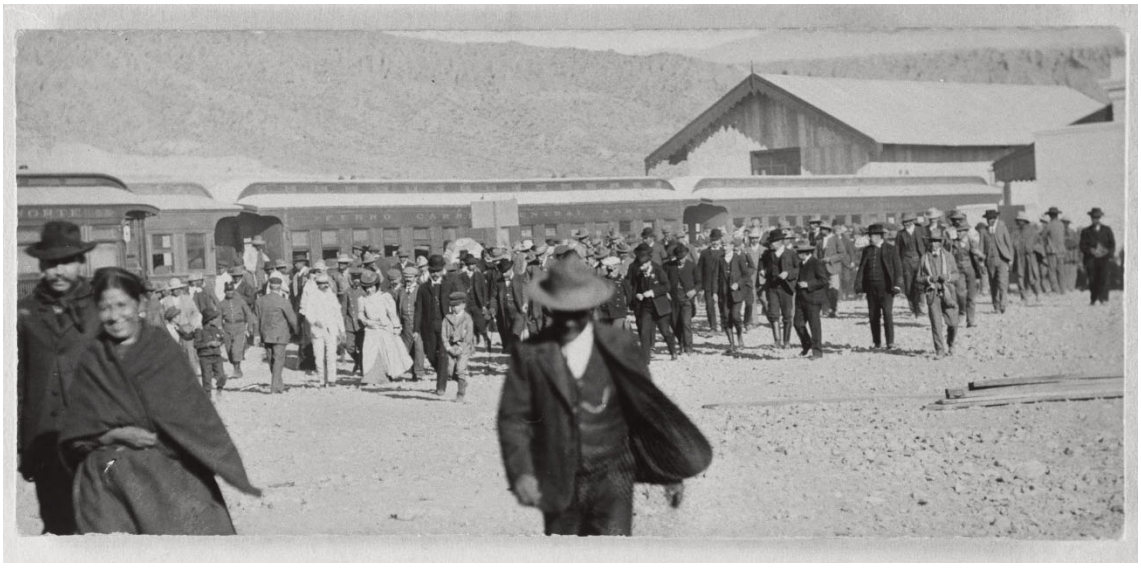
Source: General Archives of the Nation



Historical archive of the Nation - 001_1



Historical archive of the Nation - 010_6l



Historical archive of the Nation - 015_6c



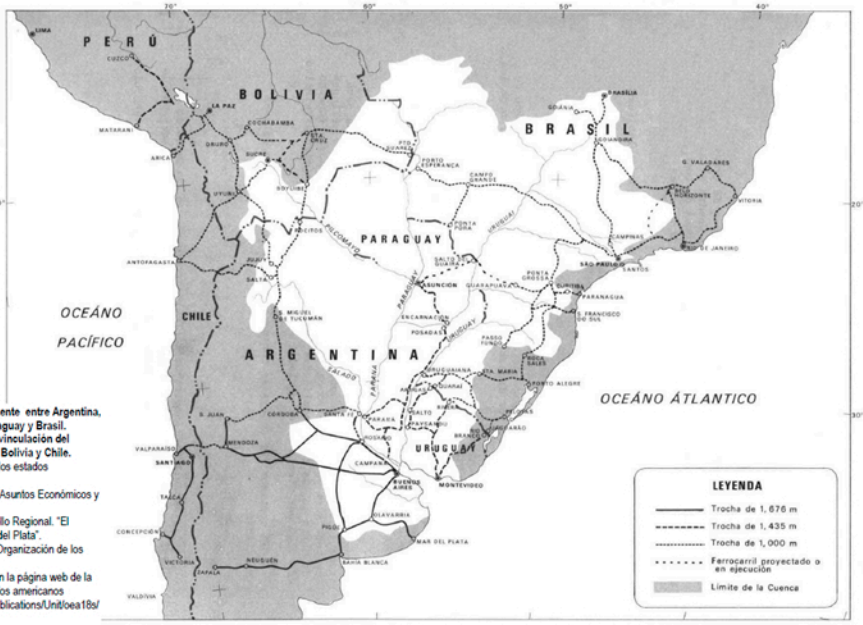
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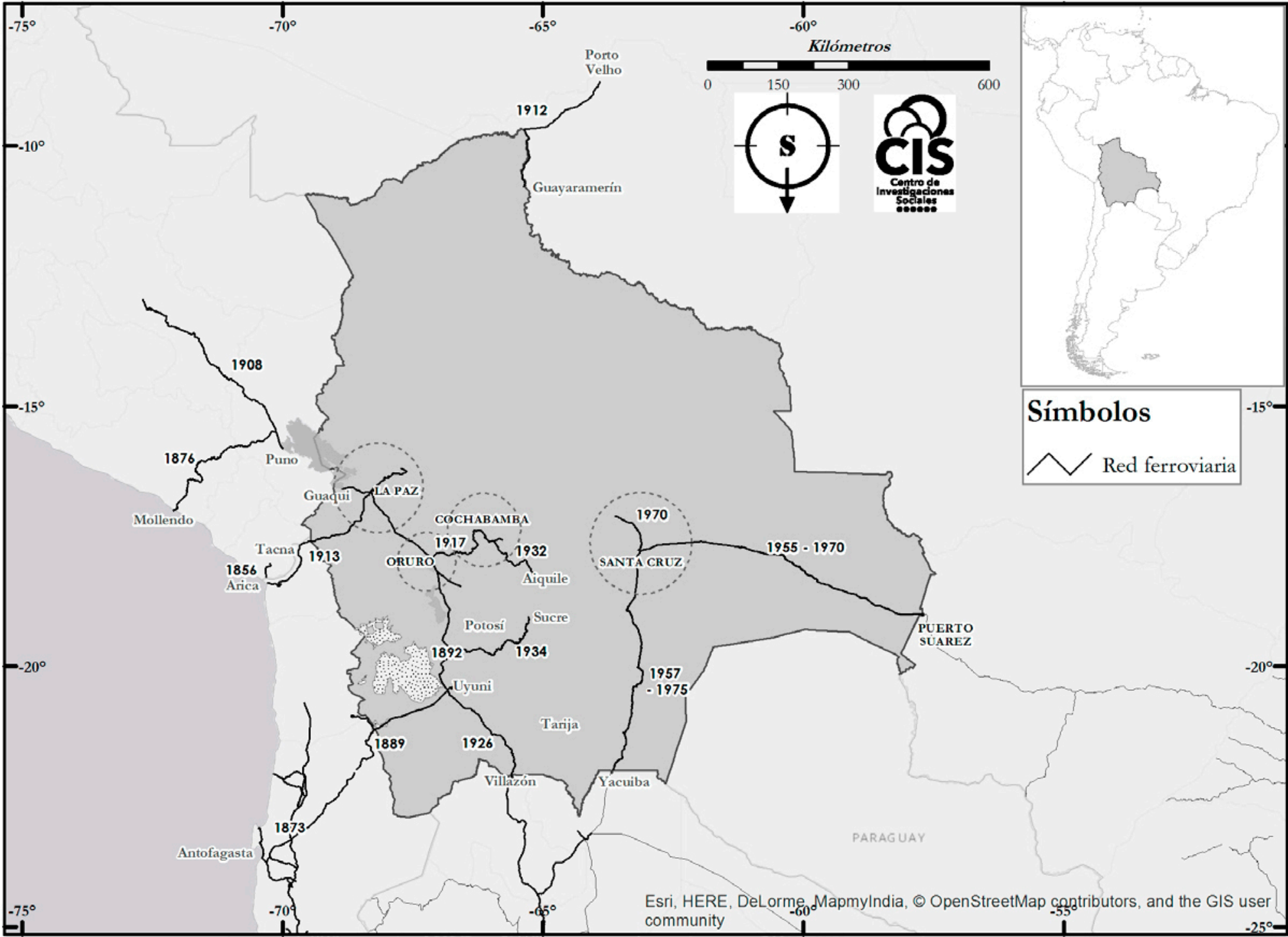
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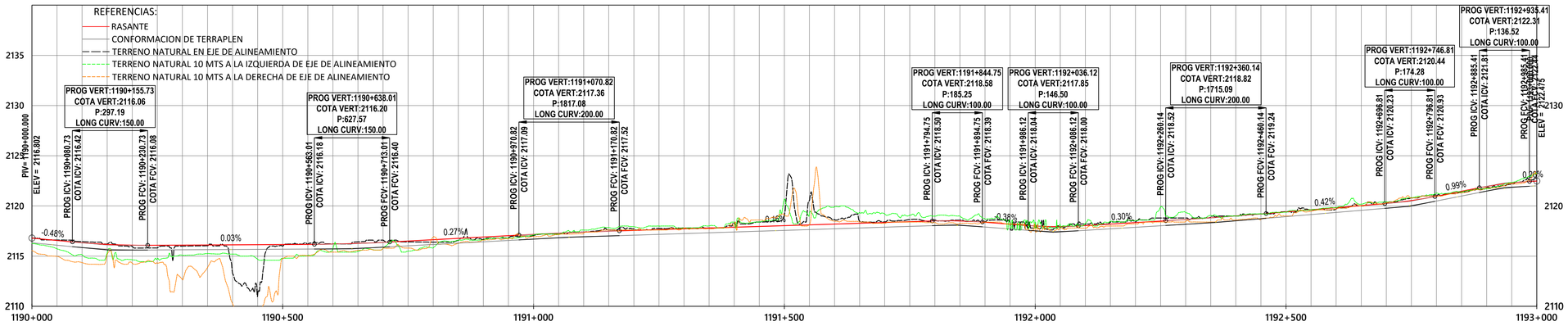
Historical archive of the Nation - 050_5



25. Red Ferroviaria existente entre Argentina, Chile, Bolivia, Perú, Paraguay y Brasil. En colores se marca la vinculación del Noroeste Argentino con Bolivia y Chile.
Fuente: Organización de los estados americanos.
Secretaría Ejecutiva para Asuntos Económicos y Sociales.
Departamento de Desarrollo Regional. "El Transporte en la Cuenca del Plata".
Secretaría General de la Organización de los Estados Americanos.
Washington, D.C., 1985 en la página web de la Organización de los estados americanos
http://www.oas.org/dsd/publications/Unit/oea18s/begin.htm#Contents


-75°
-70°
-65°
-60°
-55°
-25°
-10°
-15°
-20°
Kilómetros
0
150
300
600
S
CIS
Centro de Investigaciones Sociales
Porto Velho
1912
Guayaramerín
1908
1876
Puno
Guaqui
LA PAZ
Mollendo
COCHABAMBA
1917
1932
1970
1955 - 1970
Tacna
1913
ORURO
SANTA CRUZ
1856
Arica
Aiquile
Potosí
Sucre
PUERTO SUAREZ
1892
1934
1957 - 1975
Uyuni
Tarija
1889
1926
Villazón
Yacuiba
1873
Antofagasta
PARAGUAY
Símbolos
Red ferroviaria
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

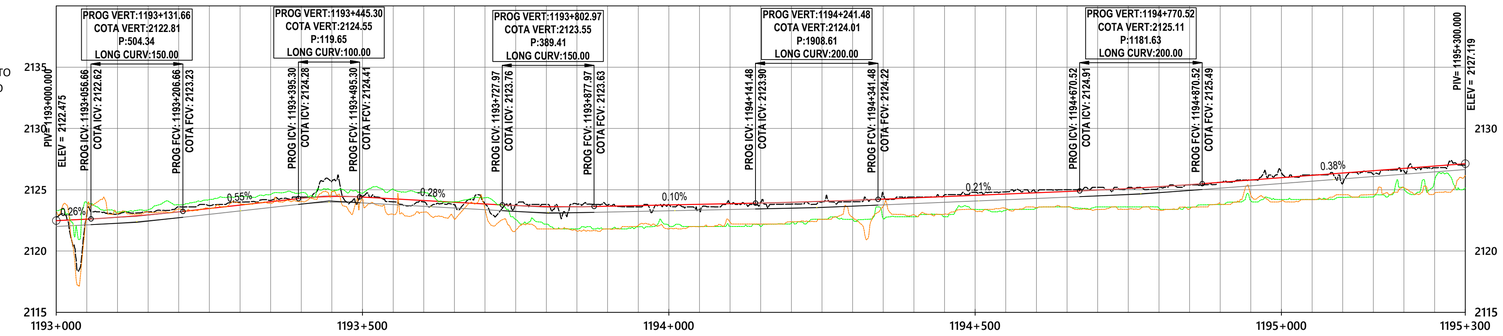
PERFIL LONGITUDINAL - F. C. Linea C - Progr. 1190+000 a 1193+000



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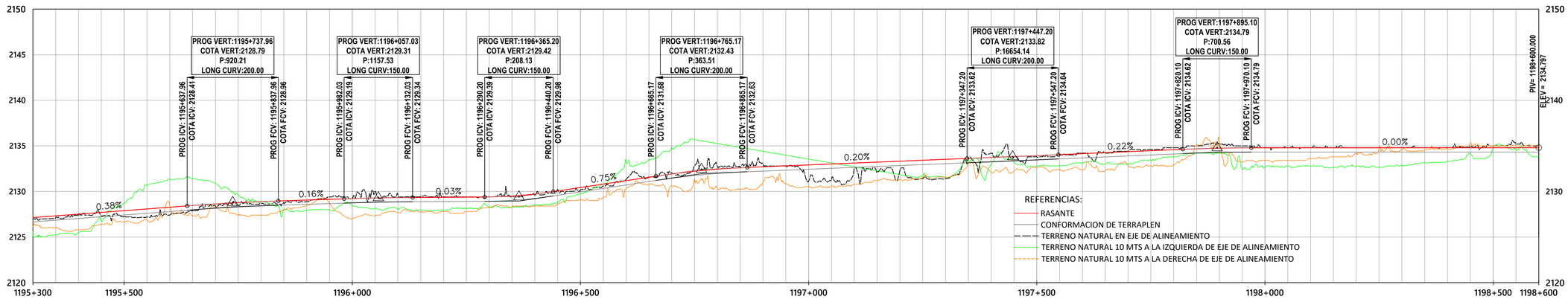
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REFERENCIAS:
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- CONFORMACION DE TERRAPLEN
- TERRENO NATURAL EN EJE DE ALINEAMIENTO
- TERRENO NATURAL 10 MTS A LA IZQUIERDA DE EJE DE ALINEAMIENTO
- TERRENO NATURAL 10 MTS A LA DERECHA DE EJE DE ALINEAMIENTO



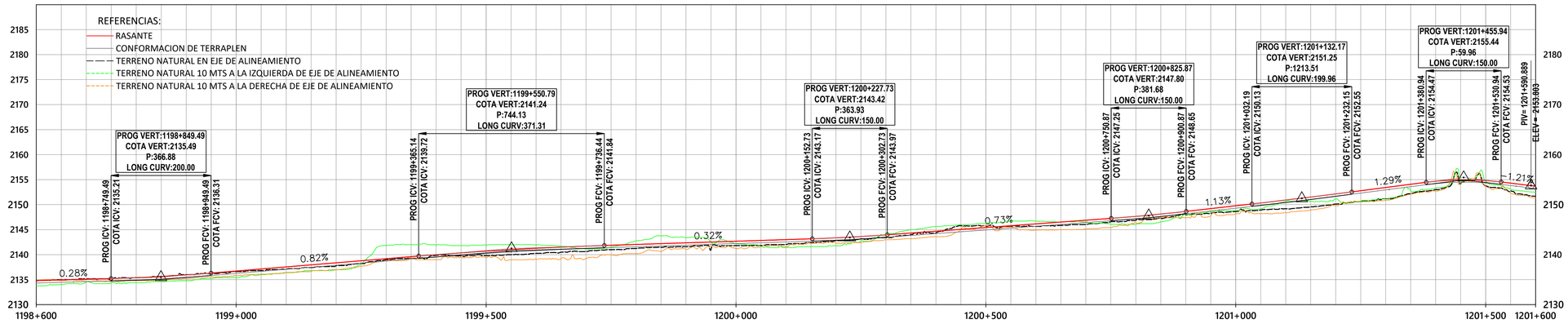
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PERFIL LONGITUDINAL - F. C. Linea "C" - Prog. 1195+300 a Prog. 1198+600



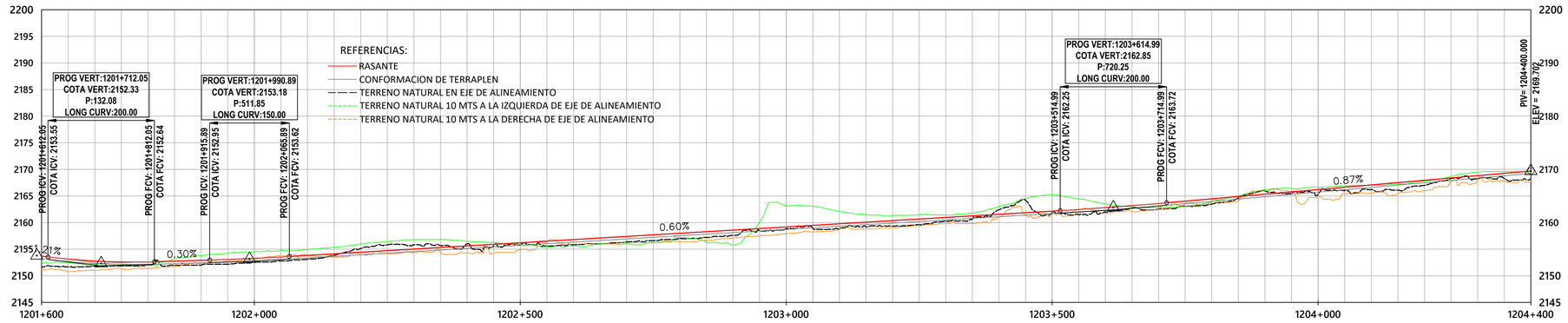
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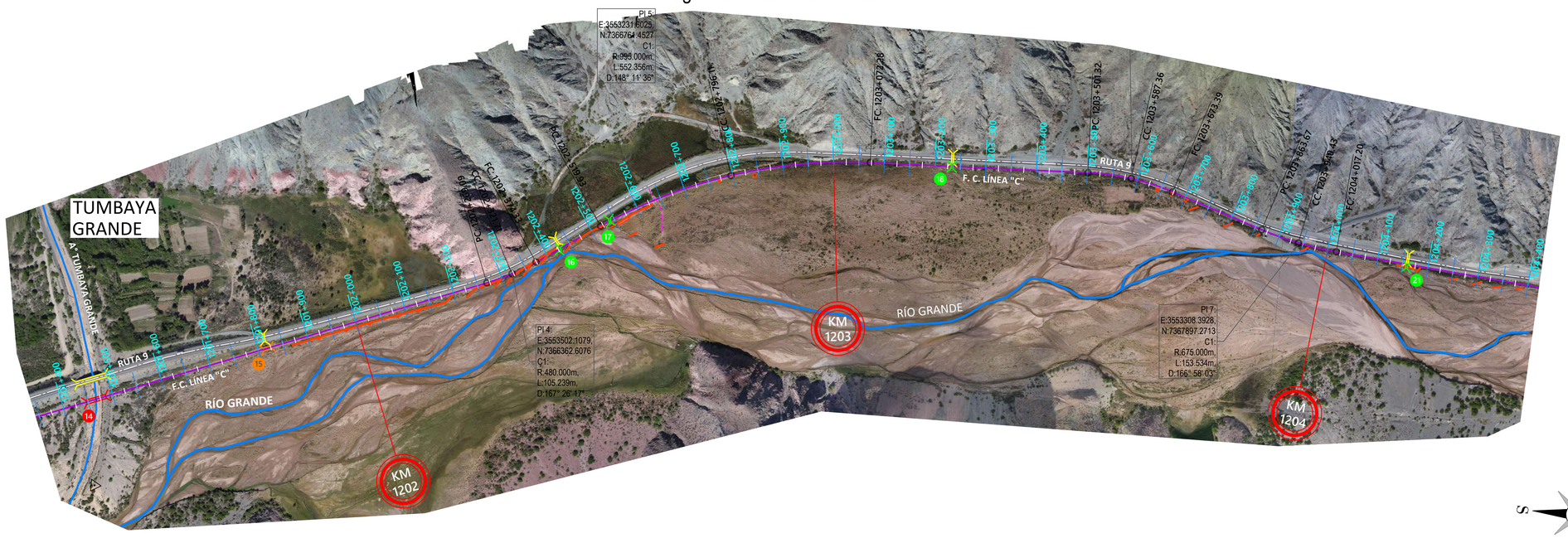
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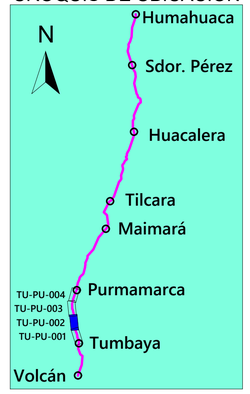


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COTA PROYECTO	2153.141	2152.773	2152.595	2152.606	2152.751	2152.903	2153.065	2153.274	2153.532	2153.827	2154.125	2154.423	2154.720	2155.018	2155.316	2155.613	2155.911	2156.209	2156.507	2156.804	2157.102	2157.400	2157.698	2157.995	2158.293	2158.591	2158.888	2159.186	2159.484	2159.782	2160.079	2160.377	2160.675	2160.972	2161.270	2161.568	2161.866	2162.163	2162.469	2162.809	2163.183	2163.592	2164.027	2164.463	2164.900	2165.336	2165.773	2166.210	2166.646	2167.083	2167.519	2167.956	2168.392	2168.829	2169.265	2169.702
TERR CONFORMACIÓN	2152.669	2152.301	2152.123	2152.134	2152.279	2152.431	2152.593	2152.802	2153.060	2153.355	2153.653	2153.951	2154.248	2154.546	2154.844	2155.141	2155.439	2155.737	2156.035	2156.332	2156.630	2156.928	2157.226	2157.523	2157.821	2158.119	2158.416	2158.714	2159.012	2159.310	2159.607	2159.905	2160.203	2160.500	2160.798	2161.096	2161.394	2161.691	2161.997	2162.337	2162.711	2163.120	2163.555	2163.991	2164.428	2164.864	2165.301	2165.738	2166.174	2166.611	2167.047	2167.484	2167.920	2168.357	2168.793		
COTA TERRENO NATURAL	2151.688	2151.823	2151.871	2152.000	2151.982	2152.016	2152.198	2152.565	2152.789	2153.110	2153.869	2155.129	2155.828	2155.844	2155.696	2156.002	2155.648	2155.803	2155.600	2155.822	2156.013	2156.400	2156.604	2157.068	2157.209	2157.603	2158.400	2158.862	2158.893	2158.858	2159.200	2159.335	2159.598	2160.272	2160.653	2162.431	2164.204	2161.859	2161.488	2162.025	2162.759	2162.513	2163.075	2163.476	2164.583	2165.968	2165.509	2165.333	2166.016	2166.197	2166.093	2167.000	2168.279	2168.191	2168.280	2168.195	
DIFERENCIA	0.981	0.478	0.252	0.134	0.298	0.415	0.395	0.237	0.271	0.245	−0.216	−1.178	−1.579	−1.298	−0.853	−0.861	−0.209		0.435	0.510	0.617	0.528	0.621	0.456	0.612	0.516	0.016		0.119	0.452	0.407	0.570	0.604	0.228	0.145	−1.335	−2.811		0.509	0.312	−0.048	0.606	0.479	0.516	−0.155	−1.104	−0.208	0.404	0.158	0.414	0.954	0.484	−0.359	0.165	0.514	1.035	

PLANIMETRÍA ZONA TUMBAYA - TUMBAYA GRANDE
Prog. 1201+600 a 1204+400



CROQUIS DE UBICACIÓN



REFERENCIAS:

- EJE VÍA DE FERROCARRIL LÍNEA C
- PASOS A NIVEL (CAMINOS SECUNDARIOS)
- COLECTOR CLOACAL
- FIBRA ÓPTICA
- CANAL DE DRENAJE PLUVIAL Y/O RIEGO
- RÍO GRANDE
- OBRAS DE DEFENSA EXISTENTES
- ALCANTARILLAS EXISTENTES
- ALCANTARILLAS A CONSTRUIR
- PUENTES EXISTENTES
- PUENTES A CONSTRUIR

REFERENCIA DE NÚMEROS

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(16)	ALCANTARILLA A CONSTRUIR PROG: 1202+434 ANCHO: 2,00Mts. ALTO: 1,10Mts.	(21)	ALCANTARILLA A CONSTRUIR PROG: 1204+169 ANCHO: 2,00Mts. ALTO: 1,10Mts.
(17)	ALCANTARILLA A CONSTRUIR PROG: 1202+555 ANCHO: 2,00Mts. ALTO: 1,10Mts.		

TREN JUJUY · LA QUIACA
Unidad Ejecutora Provincial

UNIDAD EJECUTORA PROVINCIAL
TREN JUJUY - LA QUIACA
1ra ETAPA: VOLCÁN (1191/200) - HUMAHUACA (1276/770) LÍNEA "C"

Gobierno de JUJUY
Unión, Paz y Trabajo

GOBIERNO DE LA PROVINCIA DE JUJUY

PLANIMETRÍA / PERFIL LONGITUDINAL
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SECCIÓN:
TUMBAYA (1198/525)
PURMAMARCA (1210/782)

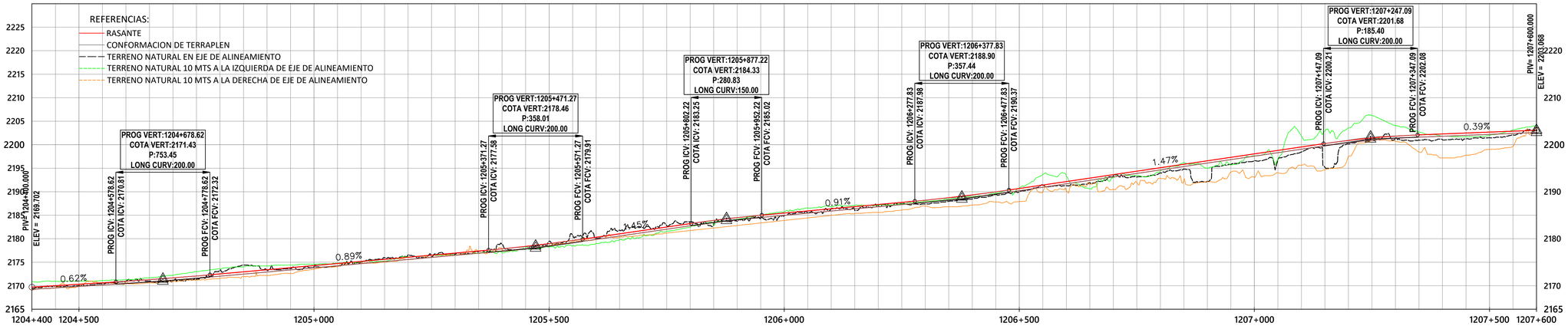
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(Tumbaya Gde. - Norte de Tumbaya Gde.)

FECHA: 13/08/18
FECHA: 16/08/18

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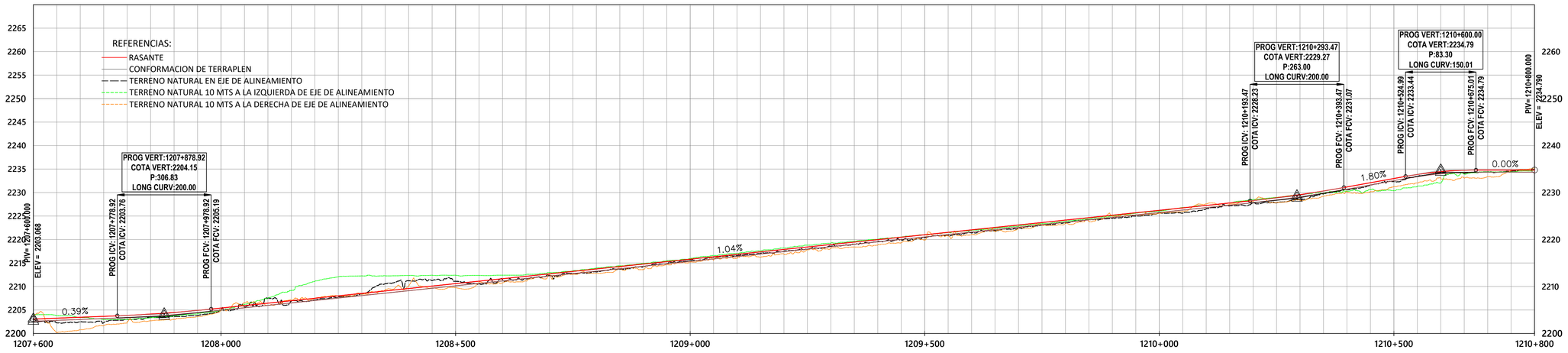
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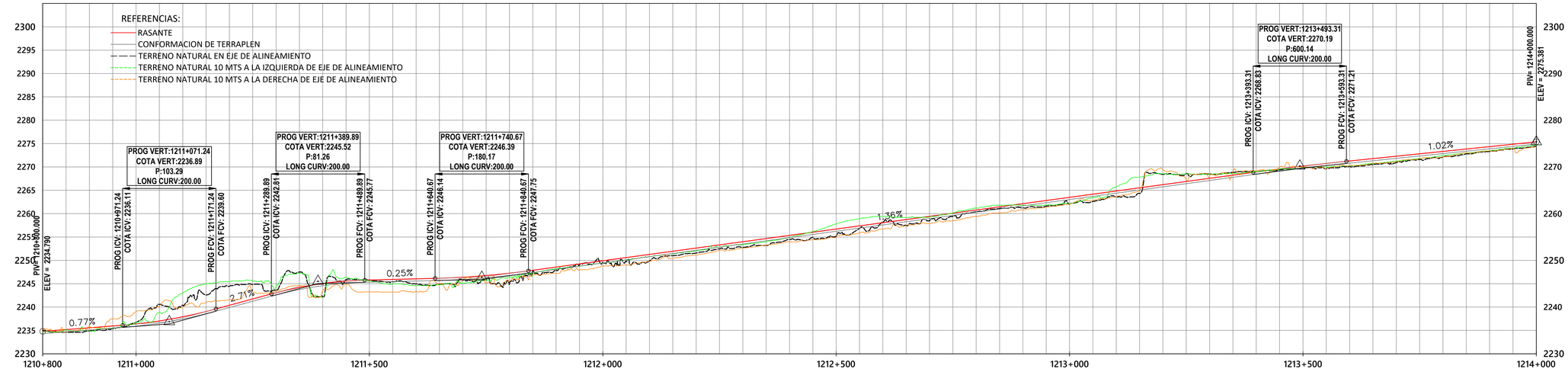
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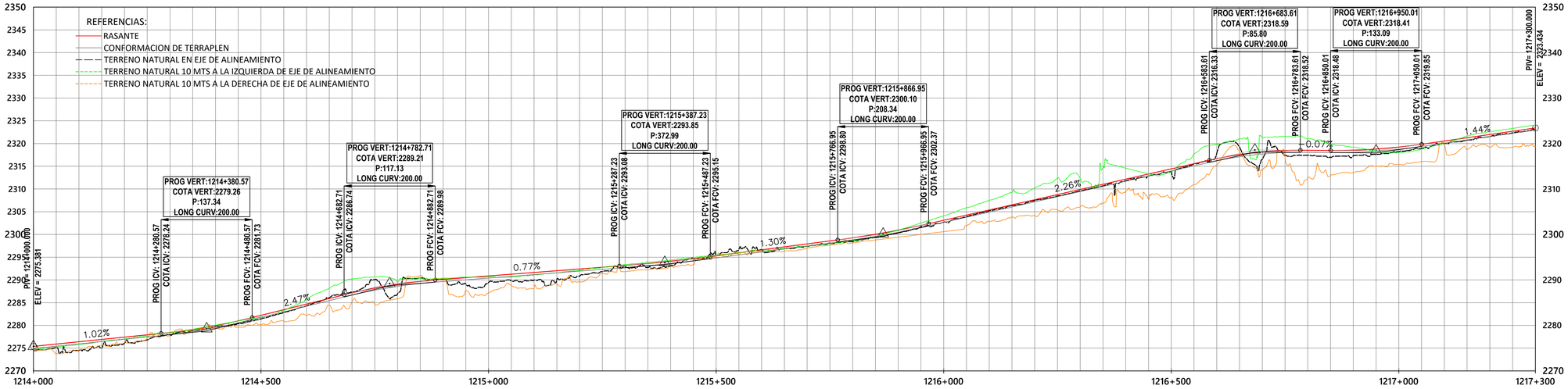
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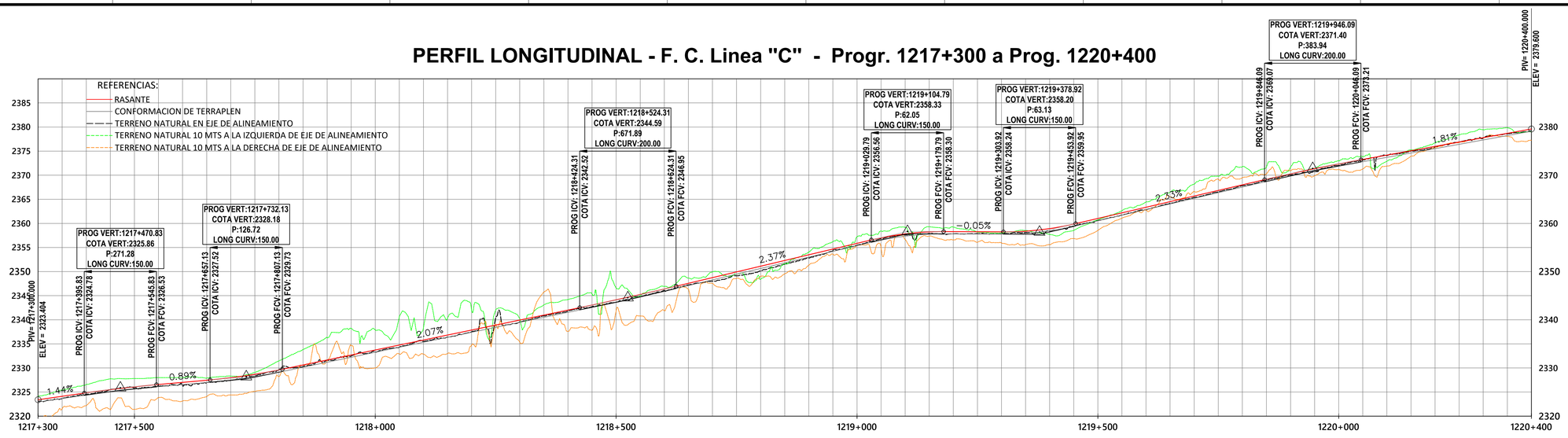
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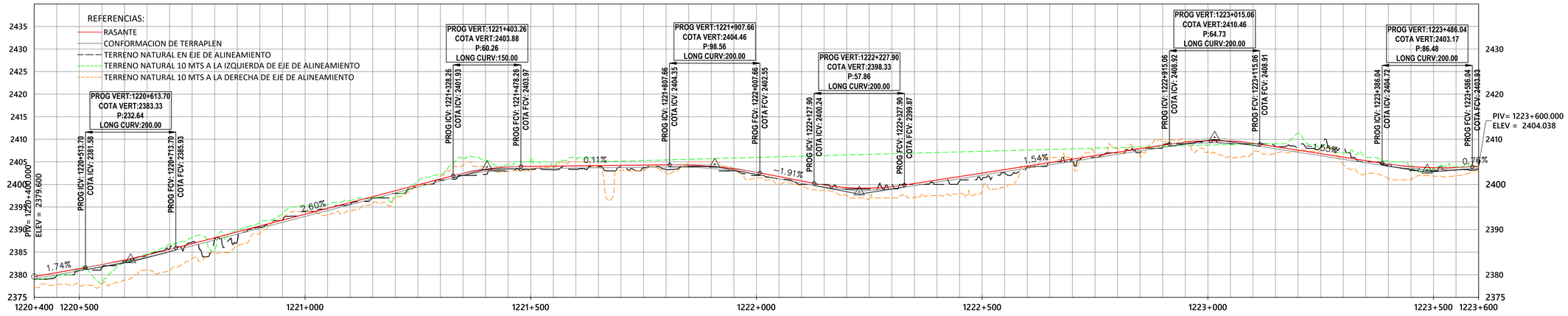
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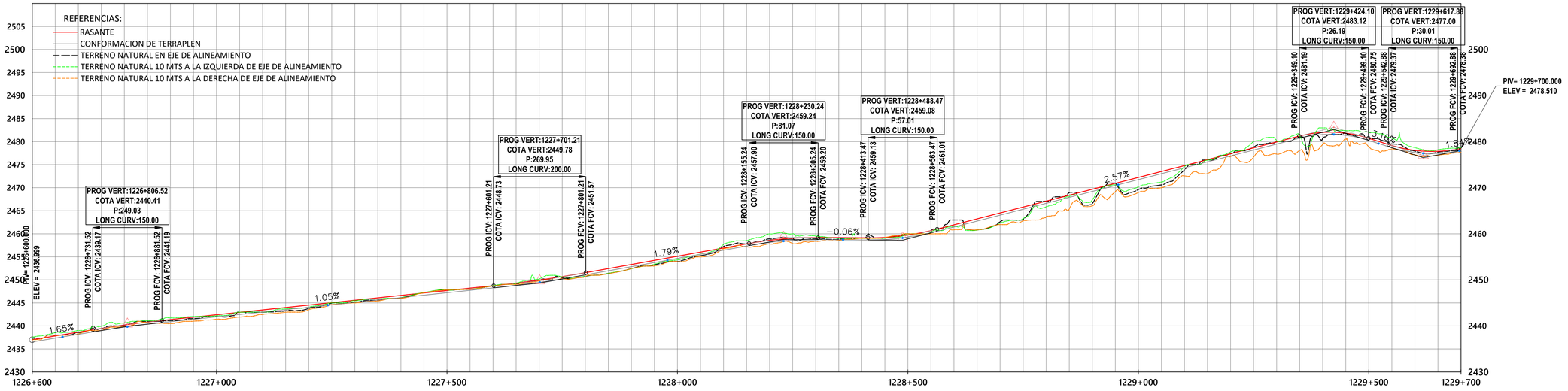
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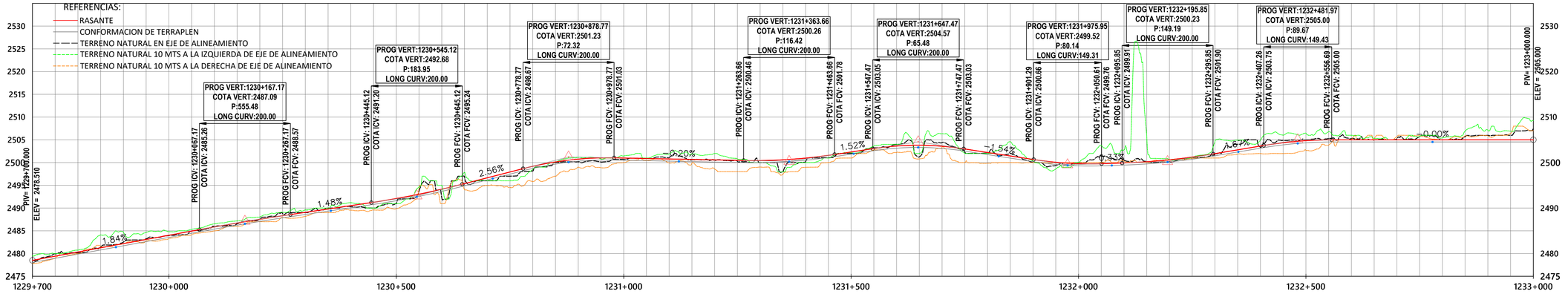
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PERFIL LONGITUDINAL - F. C. Linea C (12) - Progr. 1226+600 a 1229+700



PROGRESIVA	1226+650	1226+700	1226+750	1226+800	1226+850	1226+900	1226+950	1227+000	1227+050	1227+100	1227+150	1227+200	1227+250	1227+300	1227+350	1227+400	1227+450	1227+500	1227+550	1227+600	1227+650	1227+700	1227+750	1227+800	1227+850	1227+900	1227+950	1228+000	1228+050	1228+100	1228+150	1228+200	1228+250	1228+300	1228+350	1228+400	1228+450	1228+500	1228+550	1228+600	1228+650	1228+700	1228+750	1228+800	1228+850	1228+900	1228+950	1229+000	1229+050	1229+100	1229+150	1229+200	1229+250	1229+300	1229+350	1229+400	1229+450	1229+500	1229+550	1229+600	1229+650	1229+700
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PERFIL LONGITUDINAL - F. C. Linea C (2) - Progr. 1229+700 a 1233+000



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D. EXECUTIVE PROJECTS OF WORKS

D.1. COMPLEX OF WORKS PURMAMARCA RIVER BASIN AND LOCATIONS

D.1.1. PL4 - Fluvial Works in the Purmamarca River

The set of works included in this Project is linked to the existing defences along the route of the Purmamarca River in the section that runs next to the town of Purmamarca.

The longitudinal defence works are located on the right bank of the river, along the area under study. These works protect both the embankment of the new National Route 52, which runs along the river, as well as the urban areas, the productive sectors and the infrastructure located on the other side of the embankment.

The existing works are made up of gabions resting on stone mats, and in general, they have functioned adequately throughout the entire stretch. However, there are some specific sectors where maintenance, repair or replacement tasks are required, with the aim of the defence continuing to efficiently fulfil the purpose for which it was originally designed.

This work proposes the rehabilitation and readjustment of the longitudinal defence of gabions and mats along the right bank of the Purmamarca River, taking into account the hydraulic conditions that are presented for the design event, for which a recurrence of 100 was adopted. years. These parameters were obtained through the hydrological hydraulic modelling carried out, the summary of which is presented below. The detailed results of the modelling have been presented in Volume 2, as well as in the data files and results that are added to this work.

Right Bank Defences of the Purmamarca River

Given the important development of this linear work, it was considered to divide it according to its characteristics into four sections:

- (PUR-DL-07) Chalala Coquena Section: Gabions.
- (PUR-DL-08) Coquena Tumbaya Section: Gabions.
- (PUR-DL-09) Section Tumbaya Av. de los Gauchos: Gabions.
- (PUR-DL-10) Section of Av. de Los Gauchos La Hoyada Neighbourhood: Embankment.

Left Bank Defence of the Purmamarca River (PUR-DL-11)

The Sewage Treatment Plant for the town of Purmamarca is located on the left bank of the river, some 2,550 m downstream from the town. On the other hand, it is very close to a ravine, which during major rainfall events transports a large amount of sediment that deposits in the Purmamarca River bed, immediately upstream of the plant. Also, for extraordinary events, this ravine could overflow on its left bank, and thus generate significant damage to the plant facilities.

Consequently, to protect the facilities of the Sewage Treatment Plant in the town of Purmamarca, the construction and repair of Longitudinal Defence work on the left bank

of the Purmamarca river, in the area near itself, which allows channelling of the river in that sector.

The Longitudinal Defence works will be carried out with loose materials obtained from the river itself and gabions filled with stone. The crown heights were defined based on the results of the hydrological and hydraulic models for a 100-year recurrence event.

In the project plans and technical specifications, the dimensions, levels and work to be carried out can be observed.

D.1.2. PL4 - PL5 - Storm Drains in the City of Purmamarca

The objective of the works presented in this Bid Project is to create a storm drainage system for the town of Purmamarca, Jujuy province, which allows the evacuation of excess rainwater generated in the urban area of said town.

Based on a study of alternatives, it was concluded that the works to be executed will consist of two systems, the Central Collector and the Cuenca 08 Collector.

The Collector Centre contemplates different types of works, among them, we can mention:

- The execution of three canal streets:
    - One on Pantaleon Cruz street between Lavalle and Florida (PUR-CL-02), with a total length of approximately 60m, will consist of a 5.50m wide street with 2.00m sidewalks on each side. The street will have a transversal slope of 4.88% towards its axis, with a maximum height of the hydraulic section of 0.26m. When it is finished, it will form part of Canal Florida street.
    - One on Florida street between Paseo de Los Colorados and Gorriti street (PURCL-01), with a total length of approximately 450m. The first 140m will consist of a 5.50m wide street with 2.00m sidewalks on each side, a transversal slope of 4.88% towards its axis, with a maximum hydraulic section height of 0.26m. The remaining 310m will have a narrower section to make it compatible with the existing street, with a width of 4.00m and sidewalks of 1.00m; the transversal slope will be 5.00% towards the axis with a maximum height of 0.25m.
    - One on Gorriti Street between the Cemetery and Florida Street (PUR-CL-03), with a total length of approximately 230m, will consist of a 4.50m wide street with 1.00m sidewalks on each side. The street will have a transversal slope of 6.66% towards its axis, with a maximum height of the hydraulic section of 0.26m.
    - Canal Florida and Gorriti streets, at their lowest point, have a catchment system that allows collecting their water to a buried Main Collector (PUR-CN-02), which crosses San Martín street and the National Route N 52 discharging the surpluses directly towards the Purmamarca River.
- A system of canals and culverts on San Martín street between Santa Rosa and Gorriti streets that discharge to the latter street through the same Main Collector as the canal streets. The right ditch (PUR-CN-02- right ditch) will present a system of 0.60x0.80m rectangular channels combined with 0.60x0.60m culverts (a total of

6)) at the crossroads of the streets that enter Avenida San Martín, totalling approximately 505m of the pipeline. The left ditch (PUR-CN-02- left ditch) will consist of a 0.60x0.80m rectangular channel with a total length of approximately 505m. All these works will be executed in reinforced concrete.

- The Main Collector (PUR-CN-02), allows the evacuation of the aforementioned systems crossing San Martín Street and National Route 52, having its direct mouth in the Purmamarca River. This collector will consist of a circular duct of Ø=1100 mm, with a total length of approximately 56m.

On the other hand, the Cuenca 08 Collector (PR-CN-02a) allows the capture of surpluses from the Chapacal ravine (called Cuenca 08 in their layout) and conducts them towards the Purmamarca River.

This collector is made up of an excavated channel with a 1.00m base depth, 1.00m height and 1V:1.5H slopes that receive the surplus from the Chapacal ravine, skirting the path of Paseo de Los Colorados and crossing different sectors of private plots, where today there are natural channels. Said channel has a total length of approximately 730m and in the progressive 550m approximately it receives a small channel that discharges the surpluses of Basin 07, coming from the north face of Cerro de Los Siete Colores.

The canal discharges the excess into a 1.50x1.20m rectangular reinforced concrete conduit, about 170m long, whose layout coincides with the passage of private land located to the north of the city of Purmamarca. This conduit crosses San Martín street and National Route N 52 to discharge the surplus towards the Purmamarca River.

All the pipes were designed for flows produced by a 10-year recurrence storm, except for the Cuenca 08 Collector, which allows the evacuation of excess rainfall produced by 100-year recurrence storms.

The population that benefited from the execution of these works is 649 inhabitants (INDEC Census 2010) along a reorganized area of 82 hectares of stream basins and 32 hectares of the urban area of the city of Purmamarca, making a total of 114 reorganized hectares.

D.1.3. PL6 - Works in Las Quebradas de Coquena, Chalala and Tumbaya

This set corresponds to the channelling works of the Chalala, Coquena and Tumbaya ravines in their lower section, including the longitudinal defence works, the adequacy of the fords of Av. San Martín and the works destined to the control of petitions.

In the lower section of these ravines, there are urbanized areas as well as productive zones that are located on their banks. These urbanizations correspond to Chalala and Purmamarca, the latter of great tourist importance.

With time, the bed of the ravines has been rising higher, due to the important deposition of the solid volume that they transport and that, when reaching its last section, sediments as a consequence of the loss of energy in that sector. This implies that the water levels of the river increase over time, putting the population at risk of flooding in the event of eventual overflows during flood events.

At present, sediment cleaning works are carried out periodically to restore its channel, improving its runoff capacity for large flows. To reduce the frequency of channel cleaning, sediment traps have been implemented, which allow the material to settle in sectors where there are no damages, improving the functioning of channels and defences.

The channelling works that are proposed seek to improve drainage conditions and reduce the risks of flooding, respecting the natural layout of the existing courses.

Since the area has irrigation infrastructure, it is necessary to adapt the works to cross the irrigation canals that interfere with the defence works. These adaptations slightly affect the layout of the canals and incorporate works to cross the channels using inverted siphons, improving the current open-air ditches, which must be reconfigured after each flood.

D.1.3.1. Works in the Quebrada De Chalala

PUR-TS-01a Quebrada de Chalala Sediment Trap

At about 1140m upstream from Avenida San Martín, a Sediment Trap is proposed, which will be located transversally to the channel, and which will allow the reduction of the volumes of solids transported downstream, reducing the frequency with which it is necessary to adapt the channels. The location of the Sediment Trap is presented in the project plans with its corresponding coordinate table.

These types of works are easy to carry out and require a short period for the execution of the works. However, Sediment Traps require maintenance and rehabilitation after major flood events since, depending on the characteristics of the mud and debris flow, their capacity quickly decreases or they become clogged.

PUR-TS-01b Quebrada de Chalala Sediment Trap

In addition to TS-01a, a new TS-01b trap is located approximately 980 m upstream from Avenida San Martín.

PUR-EN-01 Channelling Quebrada de Chalala

To improve drainage conditions and minimize the risks of flooding in the area, a channelling of the final section of the Quebrada de Chalala is carried out with a length of 598m, respecting the natural layout of the existing course.

Although it is true that this ravine already has a defined channel and periodic maintenance works are carried out in it, this alternative foresees a redefinition of the bottom width, the bottom levels, the longitudinal slopes and the cross slopes, so that in such a way that it is capable of efficiently conducting the flows corresponding to the flood events of the contribution basin.

Its dimensions allow for conducting the flows corresponding to an event with a return period of 100 years. The materials removed from the pipeline will be deposited in areas specially conditioned for this purpose, avoiding repeating the current operation, which consists of depositing the material along the side of the pipeline in an irregular manner.

The material will be disposed of in such a way that it does not harm the normal runoff of the waters, favouring in turn maintaining sectors that are located out of the reach of the waters in times of floods.

PUR-DL-01-02 Longitudinal defences Quebrada de Chalala

The periodic cleaning operations of the main course of the Quebrada de Chalala have generated lateral embankments that act as a defence against flooding. Likewise, they have made it possible to establish the position of the main channel, contributing to its stabilization and providing protection for the surrounding areas, corresponding to urban sectors and productive regions.

A re-dimensioning of the existing embankments is proposed, both on the right bank and the left bank, depending on the expected flood flows, according to the hydraulic hydrological studies carried out within the framework of this Plan.

The Longitudinal Defence works include the improvement, profiling and systematization of the existing defence embankments. Thus, the crown heights were defined to have a minimum setback of 1 m for a design recurrence of 100 years.

PUR-VV-01 Vado Vial in Avda. San Martín and Quebrada de Chalala

Until the construction of the new section of National Route 52, traffic circulated along Av. San Martín crossing Purmamarca. At present, it continues to provide service, although practically restricted to internal circulation.

The crossing of the ravine was resolved through the provision of a ford, which continues to be maintained as part of having an alternative exit from Purmamarca to the west, as well as allowing an exit to Chalala towards National Route 9 without having to Vada cross the city.

This work consists of resizing the existing ford, for which an adaptation to the canalization and defence works of the ravine is required, making the geometry of the ford compatible with that of the embankments to prevent water from entering the area's urban and productive This adaptation requires an extension of the length of the ford, to adjust to the regulatory slopes established by the road agencies for the transit of vehicles and trucks. The design flow to be adopted for the readjustment of the road ford will be that corresponding to the canalization and defence works, established in a return period of 100 years.

The proposed work consists of the construction of a ford with concrete pavement in its central section, which connects with Av. San Martín continues with the existing asphalt pavement.

PUR-SF-01 Siphon in Quebrada de Chalala Irrigation Channel

Currently, the Chalala Irrigation Canal crosses the Quebrada de Chalala at a level, upstream of Av. San Martín, interacting with the channel. Consequently, this channel is disabled during flood events in the creek and must be rebuilt after each extraordinary event.

The purpose of this work is to allow its operation independently of the existence of runoff from the ravine. On the other hand, the presence of the canal without this work would become a way for water to enter during floods, causing flooding in the surrounding urban sectors.

PUR-SF-02 Siphon in Quebrada de Chalala Irrigation Channel

In the same way as the previous one, there is an irrigation canal that crosses the Quebrada de Chalala next to the new Route No. 52 (upstream), for which reason its operation is also compromised during the floods of the main course of the same, having to carry out its reconstruction frequently.

The solution proposed is similar, through the construction of an inverted siphon as a crossing work.

D.1.3.2. Works in the Quebrada De Coquena

(PUR-TS-02) Sediment Trap 02 Quebrada de Coquena

Approximately 1,550 m upstream from Avenida San Martín, there is a Sediment Trap located transversally to the course, whose purpose is to retain the solids transported by the mud flow and thus minimize downstream damage.

The work consists of maintaining this trap since after flood events its volume is reduced as a result of the accumulation of rocks and sediment. Although the present project is proposed to restore the original dimensions, later it will require frequent maintenance tasks, associated with important events, with high sediment transport.

(PUR-TS-03) Sediment Trap 03 Quebrada de Coquena

Some 780 m upstream from Avenida San Martín there is a second Sediment Trap whose capacity has been clogged and therefore no longer has sufficient capacity to retain solids.

The work consists of the rehabilitation and maintenance of this Sediment Trap so that it is capable of retaining the solids transported by the mudflows of the Quebrada de Coquena, thus minimizing the risk to the existing infrastructure and population downstream.

(PUR-EN-02) Channelling Quebrada de Coquena

A channelling was projected in the final section of the main course of the Quebrada de Coquena, respecting the natural trace of runoff, to improve conduction for large flows and minimize possible overflows.

This work proposes a redefinition of the geometry of the main course of the ravine, bottom width, bottom heights, longitudinal slopes and cross slopes, to improve its conduction capacity for extraordinary flood events in the contribution basin and minimize the risk of flooding in the surrounding areas.

The channelling length is 578 meters. With a dimensioning that is capable of efficiently evacuating the design flows corresponding to a return period of 100 years. The materials

coming from the cleaning and conditioning of the canalization will be deposited outside the crossing area, in sectors where they do not interfere with the normal runoff of water.

(PUR-DL-03-04) Longitudinal Defences Quebrada de Coquena

As in the Quebrada de Chalala, the Quebrada de Coquena currently has containment embankments, which allow the stabilization of the course of the channel and the protection of neighbouring areas, where urban infrastructure is installed, as well as production areas.

This work proposes a resizing and adaptation of the existing embankments, both on the right bank and the left bank, depending on the expected flood flows.

They include the improvement, profiling and systematization of the defence barriers. The crown heights were defined based on the hydrological flows associated with 100 years of recurrence.

(PUR-VV-02) Vado Vial in Avda. San Martín and Quebrada de Coquena

As in the Quebrada de Chalala, the existing road ford has been resized, which implies lower amounts and work terms. The new road ford will be widened, so that both its entrance and exit are compatible with the defence embankments on both banks of the Quebrada de Coquena, and in turn respect the regulatory slopes established by the road agencies for the transit of vehicles and trucks. This adaptation of the road ford respects the design flow used to define the channelling and defence embankments, which are 100 years old.

(PUR-SF-03) Siphon in Quebrada de Coquena Irrigation Canal

The Chalala Coquena Irrigation Canal also crosses the Quebrada Coquena, so it cannot function when there are significant runoffs through the main course of the creek, and the pertinent reconstruction tasks must be carried out after flood events.

The proposed work for the crossing of the irrigation channel through Coquena Creek will be through an inverted siphon, in such a way that its permanent operation is guaranteed, even during extraordinary rainfall events.

D.1.3.3. Works in the Quebrada De Tumbaya

(PUR-EN-03) Channelling Quebrada de Tumbaya

The Quebrada de Tumbaya has a significant supply basin that generates significant surface runoff during extraordinary rainfall events. The floods drag a large number of stones and sediments, existing in the zone in numerous product areas and infrastructure that are threatened during these circumstances.

To improve the drainage conditions of the Quebrada de Tumbaya and minimize the risks of flooding in the surrounding area, a channelling is carried out, respecting the natural layout of the existing course.

As in the Quebradas de Chalala and Coquena, the bottom width, bottom levels, longitudinal slopes and slopes of the channel are redefined, in such a way that it can

conduct the flows corresponding to 100-year flood events. of recurrence of the important supply basin.

The channelling length is 300 meters.

The material coming from the cleaning will be disposed of in nearby sectors, out of the reach of the water, without interfering with the natural runoff conditions.

(PUR-DL-05-06) Longitudinal Defences Quebrada de Tumbaya

In a similar way to the ravines described above, the Tumbaya Ravine also currently has some containment embankments, which prevent overflows and provide protection to the surrounding productive areas and their associated infrastructure.

This work resizes the existing embankments, both on the right bank and the left bank, depending on the expected flood flows.

The following Illustration shows the location of the proposed Longitudinal Defences, located downstream of the Camino de Los Colorados.

The Longitudinal Defence works include the improvement, profiling and systematization of the existing defence embankments, including the protection of both the right and left banks. The crown heights were redefined based on the design of hydrological flows for a recurrence of 100 years.

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D. EXECUTIVE PROJECTS OF WORKS

D.1. SET OF WORKS FOR THE HUASAMAYO AND TILCARA RIVER BASIN

D.1.1. Fluvial works on the Huasamayo River

This set of interventions corresponds to the channelling works of the Huasamayo River in its lower section, including the longitudinal defence works, the adaptation of the Belgrano Avenue ford and the systematization of the fills to be carried out with the material left over from the excavations.

In the lower section of the Huasamayo River, from a few meters upstream of the Pucará access bridge downstream, there are important urbanized areas as well as productive zones located on its banks.

On the right bank, the zone corresponds to the ejido of the city of Tilcara, with important urban infrastructure. Likewise, the Tilcara Urban Environmental Strategic Plan Work - Basic Infrastructure and Equipment, soon to be executed, proposes the paving of Avda. Huasamayo, located on the banks of the homonymous river, anticipates strong urbanization in the area. On the other hand, on the left bank of the river, there is an area of productive farms and their associated infrastructure.

Over time, the bed of the Huasamayo River has been rising, due to the important deposition of the solid volume that it transports and when it reaches its last section, sediments as a consequence of the loss of energy in that sector. This implies that the water levels of the river increase over time, putting the population at risk of flooding in the event of eventual overflows during flood events.

The new works to be carried out in this project include the following:

Channelling of the Huasamayo River Lower Section (TIL-EN-01):

At present, sediment cleaning works are carried out periodically that allow the river to be channelled in such a way as to restore its course, improving its runoff capacity for large flows.

The work proposes a channelling of the final section of the Huasamayo River, from the metal bridge to its mouth in the Grande River, to improve drainage conditions and reduce flood risks, respecting the natural trace of the existing course, following the dimensions, heights, slopes, slopes and other characteristics indicated in Plans and Specifications.

Thus, a redefinition of the bottom width, the hearth levels, longitudinal slopes and the transversal slopes was proposed, in such a way that it was capable of conducting the flows corresponding to the flood events of the contribution basin, for a recurrence 100-year design. The channelling length foreseen in this stage is about 1030 meters.

Huasamayo River Longitudinal Defenses (TIL-DL-01 02)

Currently, the excavated material from the river is placed on the sides, as containment embankments, both on the right bank and on the left bank, which allows stabilizing the position of the channel and the protection of the neighbouring areas of the river.

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A resizing of these existing embankments on both banks was proposed, based on the maximum levels obtained through hydrological-hydraulic modelling.

The proposed Longitudinal Defense works included the improvement, profiling and systematization of the defence barriers. They have a length of 1030 m on both banks. Likewise, the crown height of both embankments was defined for a recurrence of 100 years.

has transported the river through time and that have been deposited at the entrance to the Rio Grande.

This existing configuration causes clogging and impairs the discharge of the Huasamayo River, and may even generate an obstruction to the runoff of the Grande River itself, which due to the backwater effect causes large-scale damage upstream to the Huasamayo inlet.

Consequently, a Landfill Systematization was proposed in the mouth area, both of the Huasamayo riverbed, as well as its entrance to the Grande river, proceeding to the extraction, removal and profiling of the existing soils.

The Systematization of Landfills proposed will improve the runoff capacity of the Huasamayo River, helping to preserve its dimensions, slopes and stability of the embankments and, on the other hand, preventing clogging in the Rio Grande, avoiding over-elevations of the levels upstream. The non-structural measure is called with the name of the works and is presented in Volume 4 of this report.

(1686-INF-001-PIMAYS HyP-T4-V25-Guidelines for the Systematization of Fluvial Sediment Fills -V01.pdf), a series of recommendations are given to consider not only for current works but also for subsequent ones that will be part of tasks for periodic removal of the sedimented material in the present section of the river.

Huasamayo River - Lower Section - Belgrano Street Ford (TIL-VV-01)

To get to one of the region's tourist attractions, the Pucará de Tilcara, you must access it from the city of Tilcara, crossing it and crossing the Huasamayo River. There are two possible routes, the main and most consolidated is the one for which you must cross the centre of the city and cross the river by the metallic bridge (former railway bridge) with only one hand. The other access is through the continuation of Belgrano street to the south almost parallel to the Río Grande and downstream of the railway bridge. With this second access, the crossing of the Huasamayo River is done through a ford that cuts the defence embankments. Both accesses are made by unpaved streets. Thus, it is proposed to prioritize access through the option for the new ford since it avoids entering and crossing the city of Tilcara, especially for buses and heavy transport.

A ford with concrete paving has been designed that respects the geometry imposed in the channelling and the longitudinal defences of the lower section of the Huasamayo River.

The proposed work is based on the elevations of the entrance and exit to the ford, in such a way that they are compatible with the levels of the defence embankments. It will

also be necessary to extend the length of the ford, to adjust to the slopes recommended by the road agencies for the transit of vehicles and trucks.

The design flow adopted for the readjustment of the road ford was that corresponded to a 100-year return period.

During the flood events of the Husamayo River, access to the Pucará must be made through the existing bridge.

D.1.2. Storm Drains in the City of Tilcara - Downtown Sector

The objective of the works presented in this Bid Project is to create a storm drainage system for the town of Tilcara, province of Jujuy, which allows the evacuation of excess rainfall generated in the urban area of said town.

From a study of alternatives, it was concluded that the greatest affectations that occur in the urban area are associated with the runoff that comes down from the ravines that contribute to Sorpresa, Jujuy, Lavalle and San Martín streets and that they continue mainly along Alverro street, leading the surplus to the Matadero neighbourhood.

The objective of the works of this group is to complement the effect since after having controlled the sediments contributed in the different ravines through the works of transversal gabion defences, the ones foreseen here adequately systematize the runoff in the new canal streets for later when these do not have sufficient evacuation capacity to give access to a system of pluvial conduits that discharge them into the Río Grande.

These works solve the sectors of greater and more frequent affectations of the City.

The Alverro Collector contemplates different types of works, among them, we can mention:

- The execution of three canal streets:
  - One on Jujuy street between Progreso and Alverro (TIL-CL-01), with a total length of approximately 355m. The first 260m will consist of a 4.10m wide street with 1.00m sidewalks on each side, a transversal slope of 4.88% towards its axis, with a maximum hydraulic section height of 0.25m. The remaining 95m will have a wider section to make it compatible with the existing street, with a width of 4.60m and sidewalks of 1.20m; the transversal slope will be 4.88% towards the axis with a maximum height of 0.26m.
  - One on Belgrano street between Ejército Argentino and Alverro streets (TIL-CL-02), with a total length of approximately 285m, will consist of a 4.60m wide street with 1.20m sidewalks on each side. The street will have a transversal slope of 4.88% towards its axis, with a maximum height of a hydraulic section of 0.26m.
  - One on Lavalle street between H. Irigoyen and Alverro (TIL-CL-03), with a total length of approximately 415m, will consist of a 4.60m wide street with 1.20m sidewalks on each side. The street will have a transversal slope of 4.88% towards its axis, with a maximum height of a hydraulic section of 0.26m.
  - All canal streets maintain the longitudinal slope of the existing street and will be executed with a cobblestone typical of the traditional urban landscape. Also, at

their lowest point, they have a catchment system that allows them to collect their water towards the beginning of the Alverro Collector (TIL-CO-01) buried, which conducts excess rainfall towards the Rio Grande.

- The main collector, called the Alverro Collector, receives the surplus from the canal streets and the urban surplus from the different downtown neighbourhoods through drains along its route, conducting the rainfall surplus to the Rio Grande. This collector, with a total length of approximately 900m, is made up of different sections:
  - The beginning of this collector (TIL-CO-01) is at the intersection of Jujuy and Alverro streets, where it receives the rainfall surplus from Jujuy canal street (TIL-CL-01) and Alverro street itself. It will be materialized through a precast circular duct of Ø=800mm, with a longitudinal slope of 45.5‰ heading north under Alverro street, along about 120m until reaching Belgrano street. At this point, the surplus from Belgrano canal street (TIL-CL-02) enters and the collector changes its longitudinal slope to 35.0%0 along about 85 m where it reaches Lavalle street where the third canal street enters (TIL-CL-03). From there, the collector follows its route on Alverro street but changes its section to a rectangular reinforced concrete conduit with a hydraulic section of 1.20x1.00m until it reaches San Martín street at about 136m. This new section presents a break in the slope in the San Francisco Passage going from one of 35.0‰ to one of 20.0‰
  - At the intersection of Alverro and San Martín streets, the collector takes the direction of the latter with the name of TIL-CO-06, changing its section to a rectangular one of 1.50mx1.50m. The collector maintains a 20.0‰ slope for about 60m, from where it changes to a 10.0‰ slope that it maintains for about 205m when it reaches the intersection with Bolivar street. At this last point, the collector takes Bolivar street for approximately 45m until the intersection with Medardo Pantoja street.
  - By taking Medardo Pantoja street, the conduit changes its section to a rectangular one of 2.00x1.20m and reduces its slope to 2.0‰. The name of this new section is TIL-CO-07, it is approximately 260m long and is the last section of the Alverro collector. The layout of this last section runs along the entire length of Medardo Pantoja street until it reaches Avenida Costanera where it resumes a few meters to the north, where it turns again towards the Río Grande for its final discharge.

The Alverro collector is added to two small collectors located in the Pueblo Nuevo neighbourhood, which allows the excess to be drained directly into the Rio Grande. These two collectors are called the Benedetti Collector and the Belgrano Collector.

The Benedetti collector (TIL-CO-11) starts at the intersection of the Belgrano and Benedetti streets and ends at the intersection of Avenida Costanera and Benedetti where the mouth towards the Rio Grande is located. It has a circular duct of Ø=800mm along its entire length and a total length of approximately 190m. The slope of this collector varies throughout its entire route, concluding with a minimum slope of 15.0‰. Added to this collector is a small trapezoidal channel with a base depth of 0.50m, a

height of 0.50m and 1V:1.5H slopes of about 100m in length that channels the excess rainfall from the mouth to the Río Grande.

The other small collector, called Belgrano (TIL-CO-12), starts at the intersection of Belgrano and Castañeda streets heading south on Belgrano street, until the intersection with Avenida Costanera. It has an approximate length of 215m, a circular section of Ø=800mm and a minimum slope of 10.0‰.

All pipes were designed for flows produced by a 10-year recurrence storm.

The population that benefited from the execution of these works is 4,121 inhabitants (INDEC Census 2010) along a reorganized area of 140 hectares of stream basins and 108 hectares of the urban area of the city of Tilcara, making a total of 248 reorganized hectares.

D.1.3. Protection Works of the City of Tilcara Stage 1 - Basins 10 and 11 5

The works presented in this Project correspond to the first stage of a broad set of interventions, which is concentrated in the streams called Q010 and Q011 basins, which discharge into Jujuy and Lavalle streets respectively.

The works package is completed with the solids retention work TIL-DR-01, located in the stream that drains through Jujuy street (C010).

D.1.3.1. Drain Control Works

Drain control is understood as the set of actions aimed at stopping the growth and, over time, filling in and restoring gullies present in a ravine or narrow and depressed sectors. Thus, a gully is replaced by an area in which the very low runoff from them flows in a more controlled manner. A single isolated retention work is not by itself a gully control measure if it is fed by others that come from upstream on which no action is taken.

Of the basic principles of gully control, the application referred to the stabilization of the Drain through a set of retention works has been considered. The primary objective is not to retain the water, but rather to slow it down so that the sediment is deposited before the water passes over the top of the retention work and over time fill in the drain and restores the conditions prior to its materialization. The drain does not necessarily have to be completely filled in, but it stops growing in size and can then be considered "controlled".

One of the primary aspects to be resolved is the separation between retention works and the basic rule establishes doing so to try to approach a situation in which the maximum water level behind a work reaches the foot of the previous retention work located immediately upstream, it is then a matter of ensuring that there is no section of the drain in which the water is not retained to reduce its speed. Although this situation is ideal from a theoretical point of view, it must be completed over time for budgetary reasons. Thus, the proposal of works to be executed corresponds to the first stage, which must be sustained over time with the execution of the other works in a reasonable period of time.

These sets of interventions have been defined through typical works made up of stone-filled gabions, which have been named CC-1 to CC-6, each one defined based on the topographic and hydraulic conditions of each proposed location.

For basins with surfaces smaller than 10 ha and where the flows generated for recurring storms of 10 years are less than 0.50 m3/sec, two types of works called "drain control" were defined, one of them built with two gabions one next to the other called WORK TYPE CC-1, and another called WORK TYPE CC-2, for sectors where the ravines are deeper, which is made up of four gabions that are formed in two rows completing a height 2m and four meters wide.

D.1.3.2. Gabion Transversal Defense Works

These consist of low-rise works that are arranged across the entire width of the ravines and are intended to modify the slope of the courses in order to reduce the sediment transport capacity, as well as increase the short times of concentration of the basins in which they are implanted, reducing the peaks of floods and, consequently, protecting the populated sectors downstream.

Works similar to those projected here have been carried out over the years in several of the streams that generate the greatest inconvenience and have worked correctly.

The abundant existence of stone material in all the riverbeds and streams of the basins, especially suitable for the construction of gabion structures, the construction facilities and the knowledge of methodologies and processes for their execution make them works of interest that are proposed for other streams that do not yet have this type of construction.

Following the current uses and customs and the achieved efficiency of these works, two other types of works similar to those used in the case are proposed for those streams with areas greater than 10 ha, and with flows greater than 0.50 m3/s of "drain control", but now with larger dimensions and sew called for the Plan as "Gabion Cross Defense Works".

The work called "WORK TYPE CC-3", has a height of 3 meters and is made up of 3 rows of gabions, completing 10m wide at the base, and up to 30 meters wide at the crest, since they have been computed to achieve closure, being able to place on both sides a closing line of gabions made up of five of them on each side. In the central span, the central gabion has not been placed so that this sector functions as a spillway, allowing flows of up to 1m3/sec to be dispensed with loads of the order of 0.50 m in height.

In the central sector of the work and under the crest of the discharge sector and on both sides of it, a second gabion line has been arranged which will be arranged downstream of the work in order to give it greater stability. To prevent erosion downstream of it, in the central sector there are 3 mats 2.00 m wide by 6.00 m long and 0.23 m high. A geotextile will be placed under the entire work in order to prevent the washing of the fine material from the support.

The work called "WORK TYPE CC-4", is also 3 meters high and is made up of 3 rows of gabions, completing 12 m wide at the base and up to 30 meters wide at the crest, since

they have been computed In order to achieve closure, a gabion closure line made up of five on each side can be placed on both sides. In the central span, the two central gabions have not been placed so that they function as a spillway, allowing flows of up to 2 m3/s to be delivered with loads of the order of 0.50 m in height.

In the central sector of the work and under the crest of the discharge sector and on both sides of it, the second line of gabions has also been arranged, as in the previous work, which will be arranged downstream of the work in order to give it greater stability. . To prevent erosion downstream of it, in the central sector there are 4 mats 2.00 m wide by 6.00 m long and 0.23 m high. A geotextile will be placed under the entire work in order to prevent the washing of the fine material from the support.

It should be noted that knowing the increase in hydraulic depths that occur in the case of runoffs with a high sediment load, generous rematches have been adopted in all cases, of the order or higher than the value of the hydraulic depth calculated in the "clear water" condition. ".

There are different ways of acting on the implementation and operation of these works, one possibility is inclined towards the removal of deposited sediments to leave the storage vessels "clean" to evaluate future floods and transport of sediments; The second option is to continue building fine sediment retention dams as far as constructively possible, in order to try to control and retain as much sediment as possible in the upper basin. Due to the complexity of the execution of some of the works and the difficulty of removing materials, it is understood that some of them cannot be maintained and they must be robust enough so that the modification of the channel profile does not destabilize them, while that others, in particular those where there are houses or neighbouring constructions, which cannot be increased, must be maintained so that the accumulation of materials does not generate risks to said houses.

The case has been presented that in many of the ravines there is a significant number of built works such as the case of the one that discharges into Jujuy street, for which the location of the new works has been adjusted to the separation of the currently built works. and to the sections where there are currently no works. The pre-identified locations for the works will be adequate according to the best location on the ground that can be found with the detailed engineering evaluations of the work.

In all cases, the standard work, as the basin is smaller in surface, the flow conditions the selection of the same and the work will be of lesser hierarchy; then, as they are located in the highest sectors of the different arms of the ravines and in the highest sections, the so-called CC-04 to CC-01 types will be placed.

The denomination used of transversal gabion defence, in this case, corresponds to the grouping of all those works of the same typology but given that the surface of the basins is larger, they impose the construction of larger works than those that are built in the case of the Gully control works.

Although the PIMAyS contemplates carrying out works in several of the streams, in the first stage only those corresponding to the streams of the C010 and C011 basins will be partially executed, which are summarized in the following Table, and the detailed

location of each one of them can be seen in the respective plans, requiring an adjustment at the time of carrying out the Detail Engineering.

Tabla D-1 – Obras a Ejecutar – Control de Cárcavas y Defensas Transversales de Gaviones

Obras Tipo	Quebrada Cuenca C010	Quebrada Cuenca C011	Total
CC-1	10	-	10
CC-2	10	4	14
CC-3	5	5	10
CC-4	1	-	1

D.1.3.3. Solids Retention Dam TIL-DR-01

Many of the solids retention works mentioned in the previous point have been built upstream of the city of Tilcara, mainly in the basins corresponding to Jujuy Street and Belgrano Street. These works are made up of gabions and were projected in order to retain large particles from mudflows, reducing the solid flow transported by the streams and thus minimizing the risk to the population and the infrastructure of the city of Tilcara.

Similarly, in order to prevent the entry of solid materials during extraordinary flood events in the supply water basin that enters Jujuy street, the construction of a solids retention dam is proposed, in the same place where there is a defence already built, which currently has its storage capacity filled.

Regarding the typology, this work does not differ from those already described in the previous point. The reason why it has been considered in a particular way lies in its total length. In addition to the difference in costs, this work has an important effect due to its greater capacity to retain the solid material carried by the current, which functionally stands out from the others. The greatest solids retention capacity is achieved by adding to its length the characteristics of the upstream section, with longitudinal slopes that are not so pronounced, which allows for a significant retention volume depending on the moderate height.

which requires.

On the other hand, the C010 basin is one of the basins with the greatest contribution of water and sediments, which have affected Tilcara in recent years, as it drains through Calle Jujuy, generating problems in the downtown area of the city.

The Dock consists of a gabion closure of 138 m in length and variable height between 1 and 3 m. The typology adopted for the work is called Type CC-6, similar to those described in the previous point.

It is 3 m high and consists of 3 rows of gabions, with the necessary length to achieve the desired closure. The general disposition is the one that can be seen in the corresponding Project Plan. The total length of the work is 138 m. The L-shaped plan allows controlling the contributions of the two streams that converge there in a single work.

This work will not have dischargers and the only passing work will be the surface spillway, which was arranged on the right bank. It consists of the removal of the upper

gabion in the discharge width, established at 12 m to be able to deliver a flow of up to 10 m3/s with a hydraulic head of the order of 0.50 m, with which there is sufficient revenge.

Downstream of the discharge sector, 8 mats 2 m wide, 6 m long and 23 cm thick were placed, occupying 2 m on each side and intended to control erosion downstream of the discharge sector. Under all the work a geotextile will be placed in order to avoid the washing of the fines from the support material.

To allow water access to the spillway area, a trapezoidal union channel 5 m wide and 1 m deep has been made. Its length is 40 m.

ANEXX 5

This document is the result of the work carried out by the Quebrada de Humahuaca Research and Management team formed for the call for the "Heritage Place Lab Pilot Phase" of the ICCROM World Heritage Leadership Program.
It is a chapter of the book of the Leadership Program that it intends to publish, which is in the editing process, so it cannot be considered a final document nor can it be disclosed or published.
It is attached for the sole purpose of giving greater clarity to the actions taken to ensure the conservation and management of the world heritage property included in the management process described..[1]

Chapter 11. Impacts of tourism and landscape change

Quebrada de Humahuaca, Argentina Practice-led research agenda

Research-Practice Team

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I. Background

1. Brief description of the World Heritage property

Quebrada de Humahuaca is a narrow arid valley in the province of Jujuy, in northern Argentina. It has an asymmetrical profile forming a natural corridor North-South of approximately 155 kms. long, where the Rio Grande runs, flanked to the West and North by the *Puna* plateau (with an average height of 3,800 masl), to the East by the sub-Andean mountains and to the South by the temperate valleys. It constitutes a representative example of the South-Andean valleys with an exceptional system of routes that articulate North-South and East-West directions in physical, economical, social and cultural terms. Quebrada de Humahuaca bears testimony of human presence over a period of 10,000 years, thus housing a diversified rich cultural heritage, which includes both tangible and

[1] https://www.iccrom.org/es/node/2893

intangible components (Almirón, Bertoncello and Troncoso, 2006). Most of its current 32,000 inhabitants reside in towns and villages, such as Volcán, Tumbaya, Tilcara and Humahuaca, while the rest of the population occupy smaller villages and dispersed rural areas. The main economic activities are agriculture, pastoralism, tourism and a few extractive industries,



Figure 1. UNESCO,World Heritage Coordination, Quebrada de Humahuaca Provincial Management Unit (2022) ‘The province of Jujuy in Argentina’. San Salvador de Jujuy: Unidad de Gestión y Administración de Quebrada de Humahuaca.

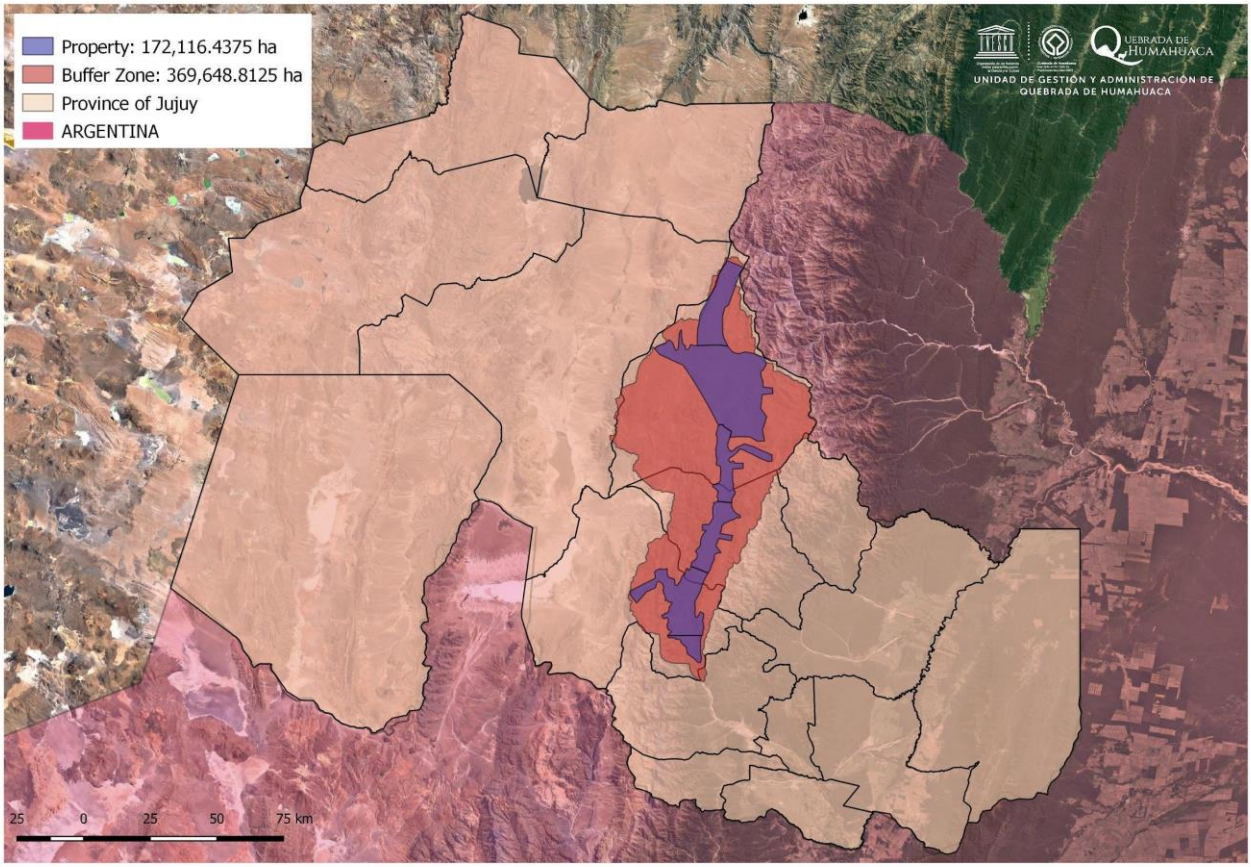


Figure 2. UNESCO,World Heritage Coordination, Quebrada de Humahuaca Provincial Management Unit (2022) ‘Quebrada de Humahuaca in Jujuy’. San Salvador de Jujuy: Unidad de Gestión y Administración de Quebrada de Humahuaca.

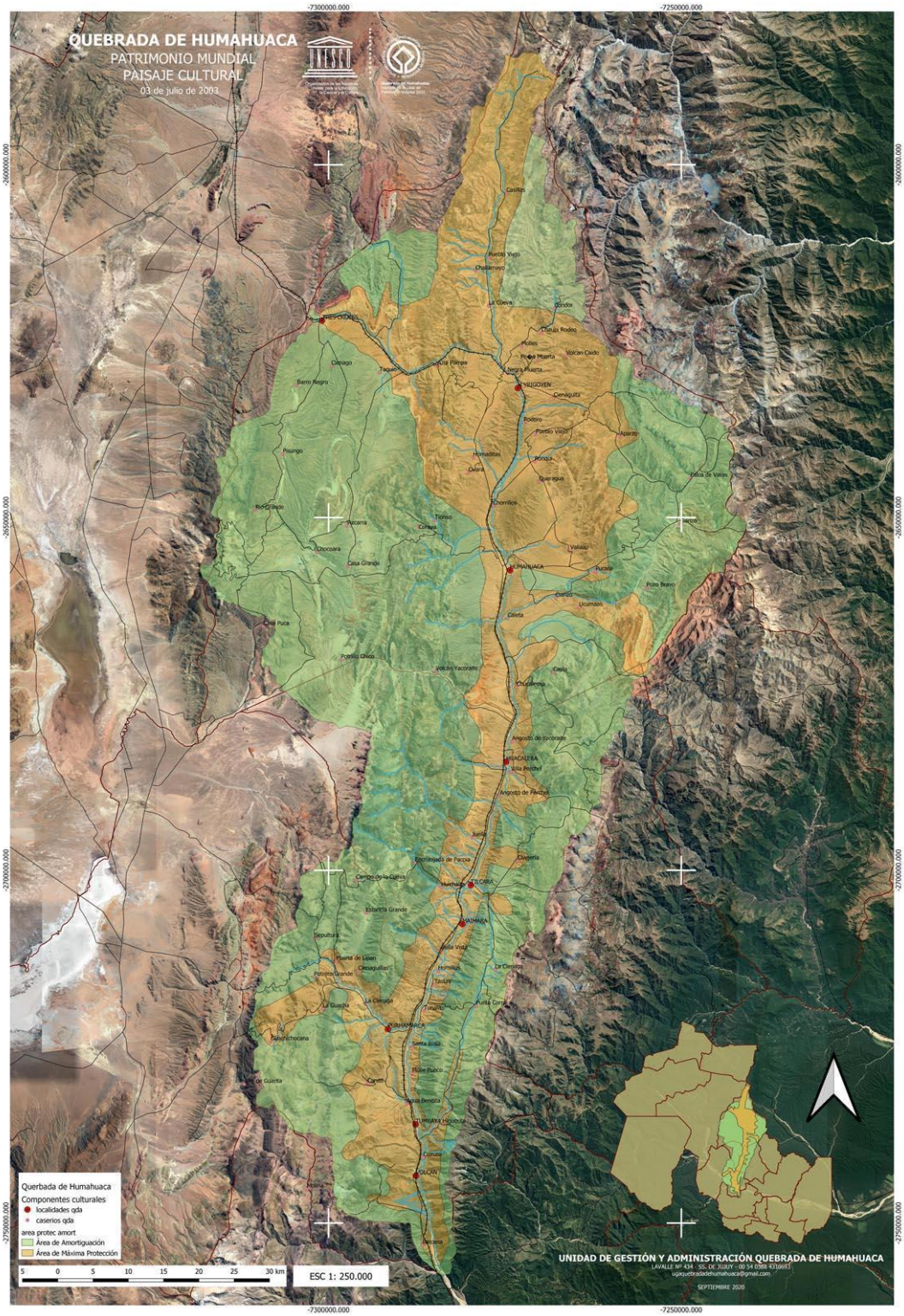


Figure 3. UNESCO,World Heritage Coordination, Quebrada de Humahuaca Provincial Management Unit (2022) ‘Quebrada de Humahuaca, Patrimonio Mundial, Paisaje Cultural’. San Salvador de Jujuy: Unidad de Gestión y Administración de Quebrada de Humahuaca.

Quebrada de Humahuaca was inscribed on the World Heritage List in 2003 as a cultural landscape under criteria (ii), (iv) and (v). Its Outstanding Universal Value is based on the role played by this

valley as a communication route between the Northern Andean region (present Bolivia) and the Southern valleys that lead to the Argentinian plains (*pampas*) during the last 10.000 years of human occupation in the region. The interaction between humans and nature over such a long period is reflected in the shaping of the landscape, especially by agricultural practices, the presence of archaeological sites that testify to different periods of human occupation and in towns and villages established during and after the Spanish colonization of the area. All these layers of significance compose an outstanding cultural landscape (Cruz *et al.*, 2005; Belli and Slavutsky, 2009; Benedetti, 2010; Province of Jujuy, 2002; Solís and Vilte, 2008).



Figure 4. Reinaga, W. (2020) *Tumbaya - Naturaleza (1)* [Photograph].

Besides its international significance, the property has also been recognised as an important heritage place at national and provincial levels. The first national heritage declarations date from the 1940s, when several religious buildings from the Spanish colonial period were designated as National Historic Monuments, in the framework of National Law 12665 on Historic Monuments, on the grounds of their historic and artistic values. In 1975, some of the colonial towns and villages, such as Purmamarca and the historic area of Humahuaca were designated National Historic Places, in the framework of the above-mentioned Law, as a recognition of their historic, urban and

architectural values. All the archaeological sites are also protected at national and/or provincial levels (National Law 25743 and provincial Law 3866/82), and four of them were designated National Monuments in 2000 (National Decree 1012/2000). Since 2002, the Quebrada de Humahuaca[2] has been declared at the provincial level as a protected landscape (Provincial Law 5206).



Figure 5. Reinaga, W. (2021) *Uquía* [Photograph].

[2] Quebrada de Humahuaca is a unit in Heritage Administration, but from a political point of view the territory included nine Municipalities in 2002 and currently eleven.



Figure 6. Reinaga, W. (2019) ***Terrazas de cultivo - Coctaca*** (Cultivation platforms in Coctaca). [Photograph].



Figure 7. Pasin, S. (2021) ***Fiesta de la Pachamama - Hornillos*** *(*Pachamama -Mother Earth-) festivity in Hornillos. [Photograph].

The numerous settlements in Quebrada de Humahuaca account for the interactions between human beings and their environments over 10,000 years, generating a series of landscape units. This complexity illustrates a significant period of human history, enriched by cultural manifestations characterized by population mobility (García and Madía, 2005; González y Hernández Llosa, 2008; Menacho et al, 2011; Eklund, 2012).



Figure 8. Reinaga, W. (2020) *Tumbaya - Naturaleza (2)* [Photograph].



Figure 9. Reinaga, W. (2020) ***Maimará -Cultura - Iglesia Posta de Hornillos*** [Photograph].

The popular culture in Quebrada de Humahuaca is exceptional: the spatial concentration, in a 155 km corridor, of unique cultural practices, the numerous traditional cultural ways intertwined with the contemporary society's practices are expressed in music like "el carnavalito" (Civilla Orellana, 2018), oral narrative (Cruz *et al.*, 2005; Menacho *et al.*, 2011; Espósito, 2012; Montenegro and Aparicio, 2017; Mancini, 2019), religiosity like *ermitas* (large paintings made with seeds and flowers by families that represent the stations of the Via Crucis during the Easter period) or processions ("*misachicos*", "Punta Corral", etc.) among others, and crafts like textiles made by llama and vicuna wool or pottery, demonstrating a fruitful intercultural relationship between the Andean and Spanish cultures, establishing strong group cohesion and reinforcing social networks (Pelegrin and Forgione, 2018; Ochoa and Otero, 2020; Saiquita, 2020). The current population, which includes a wide range of cultural groups (indigenous communities, creole communities, new migrants), practices a set of traditions and customs that merge the survival of ancient Indigenous cultures, which underwent transformations from their contact with the Spanish colonists, and the modern world. Beliefs and rites (Bergesio, 2010), religious and secular festivals (Lopez, Acevedo and Mancini, 2010; Lambaré,

Vignale and Pochettino, 2015), music, cuisine (Álvarez and Sammartino, 2009; Troncoso and Arzeno, 2019), crafts, construction styles and techniques, agricultural technologies and other Indigenous and traditional knowledge, constitute a living cultural heritage unique to Quebrada de Humahuaca.



Figure 10. Reinaga, W. (2020) *Maimará - Gatronomía* [Photograph].



Figure 11. Boschi, L. (2002) *Música* [Photograph].



Figure 12. Boschi, L. (2002) *Puesto* [Photograph].

2. Main management issues

During the Heritage Place Lab, the team identified several factors that affect the property, which are the basis of issues that require adequate treatment in order to enhance the place's management. The most noticeable issues identified by the research-practice team are the following:

- **Lack of a shared understanding of the heritage values of Quebrada de Humahuaca and lack of coordination between heritage managers**

In order to explain the place's management structure, it becomes necessary to clarify that Argentina is a federal country made up of 24 provinces, each of them having their own Constitution and specific powers not assigned to the federal government. In the case of natural or cultural places protected at the national level, it is stated that the relevant national authorities act in concurrence with the corresponding provincial and local governments. At the same time, the provinces are divided into local political units, with different designations according to each province, whose specific competences are established by provincial laws, usually named Organic Laws on Municipalities.

Quebrada de Humahuaca Management Unit, under the Secretariat of Culture of the provincial government, is the main responsible body for the management of the site. It acts as a liaison for the nine local commissions, where the communities related to the nine municipalities (political local units) that integrate the whole territory are represented. The management structure includes the interaction among provincial governmental agencies related to specific aspects of the place, among them the ministries of Culture and Tourism, Environment, Infrastructure, Public Services, Land and Housing, Education, Human Development, Economic Development and Production, Security and Civil Defense. The roles of these ministries in the place's management structure are defined by the provincial laws that establish their competencies, while the provincial Law that regulates the functioning of local governments (Law 4466 on Municipalities) establishes their specific competencies. This management structure is clearly documented through transparent and accessible legal instruments, among them the specific laws related to each ministry and Law 5206 and Decrees 789/2004 and 3095/2021 on the establishment of the provincial World Heritage Coordination.

Although the management and governance structures are clear in principle, in practice there are conflicts arising from the lack of articulation between the actors involved in the management of the heritage place, particularly at the local governments level. At the same time, there is a lack of legal and institutional instruments necessary to grant power to the managers to administer the property. Furthermore, it has been noted by the Research-Practice Team that there is no clear and shared understanding of the heritage place's Outstanding Universal Value among all the actors involved in the property's management (Bertoncello and Troncoso, 2003; Almirón, Bertoncello and Troncoso, 2006; Bidaseca, Borghini and Salleras, 2010; Macchiaroli, 2015; Bach *et al.*, 2022).

Therefore, it would be necessary to establish adequate coordination between the Management Unit, under the provincial government, and the local governments, based on a shared understanding of the heritage values of Quebrada de Humahuaca, reinforcing and strengthening the active participation of local communities and promoting the inclusion of young people, as future managers, in the decision-making processes (José and Pasin, 2005; Vilte, Borja and Sanz, 2010; Paterlini de Koch and Ferrari, 2011).

- **Significant growth of tourism activities and lack of sustainable tourism planning**

Due to the increase of tourism in Quebrada de Humahuaca following its inscription on the World Heritage List, negative factors affecting the heritage place have been identified, as well as the lack of capacity of the local governments and communities to undertake this activity. A lack of planning for sustainable and responsible tourism based on the heritage place's Outstanding Universal Value is evident. Tourism has become an active agent in the territorial transformations of Quebrada de Humahuaca, causing positive impacts from an economic point of view, but also negative impacts from environmental and social perspectives.

- **Land use change, habitat (housing) transformations and unplanned urban development.**

As stated at the beginning of this section, Argentina has a federal political organization, where provincial and local governments have exclusive rights, among them, to regulate land uses and land exploitation. Construction permits are the exclusive responsibility of local governments; in Quebrada de Humahuaca, these regulations are not always in line with the heritage management principles established by the provincial government in management instruments oriented to balance development and the preservation of natural and cultural values. At the same time, the architectural and stylistic features of new constructions are not always in line with the features that determine the identity of the historic towns and villages of the valley.

The pressures caused by development in Quebrada de Humahuaca have generated changes in the territory. Unplanned urban growth is taking place on the outskirts of towns and villages, resulting in changes in the urban landscape at the edge of those urban settlements (Potocko, 2013). In some cases, agricultural land has been transformed into areas for urban expansion. Some of these processes are linked to the development of tourism, especially through the construction of accommodation infrastructure and other facilities (Almirón, Bertoncello and Troncoso, 2006; Troncoso and Arzeno, 2019). Through the study of maps and aerial views corresponding to different periods, it is possible to verify the urban expansion of towns and villages, the changes in the appearance of landscapes and urban settlements, the reduction of cultivated areas and the new accommodation ensembles (Vecslir et al., 2011)

All these management issues are interrelated. The lack of a shared understanding of the heritage place's outstanding universal value and other national or local values, the inadequate articulation amongst actors involved in the management and the lack of appropriate legal instruments to control and regulate the construction, urban expansion and changes in the uses of land are impacting on the cultural landscape and its values.

II. Research Agenda

1. Introduction

In the framework of the ICCROM-IUCN World Heritage Leadership Heritage Place Lab, the Management Unit, the government of the province of Jujuy, and the Universities of Buenos Aires and La Plata are collaborating on building a new research agenda for Quebrada de Humahuaca. Up to now, research interest has been guided by academic priorities, and the Management Unit of Quebrada de Humahuaca, in spite of many interactions with researchers, has been lacking information about the academic institutions' research priorities. The association between site management and researchers in the Research-Practice Team has allowed for building a more accurate proposal reorganizing research priorities to address specific management issues. These priorities derive directly from the main issues identified and commented on in the section above and have been prioritised according to the needs expressed by the practice team to improve the place's management.

2. Research priorities

Research Priority 1: Tourism impacts on the cultural landscape of Quebrada de Humahuaca

Before the inscription on the World Heritage List, Quebrada de Humahuaca was an important national tourism destination; one of the impacts of the inscription was a significant increase in the number of visitors. This has generated cumulative impacts, such as an increase in investments in infrastructure, particularly that related to visitors' accommodation, as well as in new products and services. Impacts on the environmental, social and economic spheres are, for instance, land uses change, urban sprawl and changes in the ways of life and social practices of traditional communities (Bertoncello and Troncoso, 2003; Almirón, Bertoncello and Troncoso, 2006; Troncoso, 2010; Troncoso and Arzeno, 2019). A lack of precise information about these impacts, which can later be used for planning management processes, is thus needed. Due to the multidimensional nature of tourism, research on this topic requires the participation of professionals from different disciplines, such as tourism, territorial and urban planning, heritage, archaeology, economics and anthropology.

The research problem is to identify and measure the impacts of tourism on Quebrada de Humahuaca. Some questions that arise from the identification of the problem are the following:

- In relation to environmental aspects: What kind of impacts are produced by visits and by the construction of tourist infrastructure in the natural and built environment? What changes in land use occur? What are the impacts derived from the generation of waste, pollution, and potential excesses in the number of visitors that could mean environmental damage, changes and loss of natural resources? (Bergesio, 2010; de los Ángeles Carlos, 2017; Ferrari and Bruna, 2021).

- In relation to economic aspects: How to identify and quantify the investments made in infrastructure and tourism equipment, both from the public and private sectors? Where do the investors come from? What is the average spend by visitors and in what items is it verified? How are the benefits obtained by the tourist activity distributed? How do the local communities benefit? (Rodríguez, 2009; Salleras, 2011; Ferrari, 2012).

- In relation to social aspects: Which is the reaction of local communities to the increase in visitors? Which is the impact on traditional ways of life and social practices? What is the degree of acceptance of the residents regarding the expectations of the visitors, job and training opportunities for local communities? (Álvarez and Sammartino, 2009; Mancini, 2016; Ochoa and Otero, 2020).

- In relation to demand: What is the number and origin of visitors? What are their motivations for the visit? Has the World Heritage site status had any influence on the choice of destination? What types of attractions are most requested? What are the degrees of satisfaction with the visitor experience? Are the values of the heritage site adequately interpreted? What are the impacts on the heritage values of the property and on the attributes that convey those values?

To answer these questions, both quantitative and qualitative methodological approaches should be used. Among the information required to address this research priority, it becomes necessary to collect statistical data, including the number of visitors per year, the number and location of tourism facilities (hotels, bungalows, restaurants, shops), number and types of investments related to tourism per year, from both local and external investors, the origin of the investors, expenses average per visitor per day, etc.

Environmental and social impacts of tourism will require observation and be registered in situ, complemented with interviews to local informants, among them representatives of the local communities and indigenous groups.

Research Priority 2: Governance arrangements and communication of OUV and other values

Based on the Heritage Place Lab, the work carried out to date included the preparation of a map of actors directly or indirectly linked to the management of Quebrada de Humahuaca and their roles, while identifying various types of factors with real or potential impacts on the place. At the institutional level, one aspect that emerged as a result of the exercise done with the toolkit is that, although there is a clearly stipulated management system, under the provincial government, there is insufficient shared vision and coordination with other governmental agencies, especially considering that it is a large and complex site and that, in concurrence with the provincial government, there are powers of the national and local agencies. During the Heritage Place Lab process, the role played by local governments was particularly discussed, since, considering the current regulatory framework, they have exclusive powers in some issues, such as the regulation of land uses and permits for new constructions. The issues identified by the practice team include the fact that the values for which Quebrada de Humahuaca was inscribed on the World Heritage List are not sufficiently known and shared by all the actors related to the property's management. The way in which local communities participate in the governance of the site and their knowledge of international values was also discussed, along with the existence of values arising from those communities that may not be taken into account by governmental agencies.

Taking into account the aforementioned, the Research-Practice Team agreed that governance is a priority research topic, in order to guarantee the right of communities to live in a healthy environment and to reach the balance between the preservation of the site's values and the attributes that convey them, considering the current requirements to ensure an adequate quality of life. Based on this research problem, the questions that arise are the following:

1. How can institutional strengthening be achieved through a deeper relationship and a good articulation between the different governmental levels?

2. To what extent is the OUV recognised and shared by all managers and stakeholders? Are other types of values being recognised?

3. Are these values being recognised by rightsholders (i.e. local communities)? What are the attributes recognised by local communities considering that they are the conveyors of the different values of the site?

4. What tools can be used for better communication of the values to the different actors involved in the management and for a more adequate articulation between political and technical teams?

5. How to engage local communities in the use of those tools for better communication?

The general objective of this research topic is to improve the management of the site through a democratic and inclusive governance arrangement, with a vision shared by all actors involved. Once the problem has been identified, it is considered that research on this topic requires the participation of professionals from different disciplines, such as municipal law, economics, state management, anthropology, territorial and urban planning, heritage, archaeology, communication, education (Stegmeijer et al., 2021, p. 217).

Research Priority 3: Land use change in Quebrada de Humahuaca

As a result of population growth, which demands housing solutions and new equipment and services, coupled with tourist development, pressures on land availability and land use change are threatening the integrity of Quebrada de Humahuaca cultural landscape (Braticevic, 2018). Some studies differentiate, in the period 1936-2004, the growth of the main tourism enclaves (Purmamarca, Tilcara, Maimará and Humahuaca), the growth due to internal migrations (in Humahuaca and Maimará), stagnant towns from the point of view of their urban growth (Uquía and Volcán), as well as large subdivisions of the land carried out in the last two decades (2 de Abril, Sumay Pacha and Chalala) (Vecslir et al., 2013).

Due to its geological and geomorphological characteristics, there is a scarcity of suitable and safe land in Quebrada de Humahuaca, both for agricultural activities and for urban development. Thus, in addition to the value raised by tourism, the land is a high-value commodity. Impacts on the urban landscape and skyline of some villages and towns, particularly in those where tourism activities have been developed, are identified as caused by the increase in the development of facilities dedicated to the reception, accommodation, and attention of visitors.

It has also been noticed that some climatic events, such as heavy rains or strong winds, have become more recurrent and intense, which is apparently an impact of climate change. This situation requires that systematic studies on the impacts of climate change be carried out, in order to define and implement measures oriented to risk prevention and mitigation.

Regarding agricultural areas, some changes have occurred in the traditional agricultural systems and types of crops, such as the presence of vineyards and the production of wine, which although a common type of development in colonial times, remained in disuse until recently, when this type of product and its derivatives have significantly increased their valuation, not only economically but also typologically (boutique wines).

Demographic changes (positive natural growth in most localities and immigration) that have occurred in the region, and that seem to continue over time (which will be validated with the 2022 national

census on population and housing), anticipate a future increase in the above-mentioned pressures. This highlights the need for collecting accurate data to assess and manage acceptable changes in the cultural landscape while preserving its natural and cultural values.

Based on this, the following research questions were identified:

1. What have been the changes produced in the cultural landscape since its inscription on the World Heritage List? Have the heritage values and use of the land been transformed? Have these changes been measured? Has the inscription as World Heritage accelerated this process?

2. What would be the acceptable level of change that allows the heritage values of the cultural landscape to be authentically preserved? How should the change take place and how should this process be handled without negatively impacting the OUV?

3. To what extent do land use changes alter the natural values of the site, and endangers the conservation of the natural resources? What indicators are being used today to allow control over this process?

4. Are the attributes of the landscape units correctly identified? How do the local regulations value these components, and ensure their transmission with authenticity?

5. How is urban sprawl endangering the heritage values of the Quebrada de Humahuaca cultural landscape?

6. How do local migrations alter the identity of the cultural landscape? Do these transformations make a contribution to the site, or are they a factor of degradation?

7. What measures are being implemented through land use, or are necessary to be contemplated to face climate change?

The lack of articulation between different areas of government, regulations, and conservation objectives in regard to the OUV is recognised as having an impact on territorial planning and land use. There is a dissociation between the land use regulations of the different localities, the recognition of an evolving landscape of heritage value and the conservation of its OUV. Therefore, the study of local regulations is needed to identify their impact on the different attributes of the World Heritage property.

The objective of this research priority is to contribute to the elaboration of guidelines for local regulations, based on the identification of landscape units within the whole cultural landscape as heritage, to enhance articulation among different governmental levels in the decision-making processes related to the management of the World Heritage property, and to ensure an appropriate

evolution of the cultural landscape preserving its outstanding universal value and the attributes that convey it.

/III. Inputs needed and expected outputs

The Research-Practice Team has identified potential projects, partnerships and events that stem from this process and that could support the achievement of the proposed research agenda. As for funding, the practice group, under the Secretary of Culture of the Province of Jujuy, counts on a budget that allows it to carry out the activities foreseen in the research agenda. Extra budgetary funds can eventually be requested. The research team, under Buenos Aires and La Plata Universities, have the possibility of funds for activities to be carried out in their research centres. Funds to carry out field activities must be requested in the framework of specific calls from the universities.

Some potential projects are:

- Elaboration of a database to keep systematized information;
- Elaboration of indicators for tourism activities (accommodation, transportation, pernoctation ratio);
- Construction of a permanent visitors monitoring system;
- Guidelines for land use change regulations;
- Elaboration of a landscape impact monitoring system; and
- Elaboration of a system for registering landscape units.

Strategic partnerships include the consideration of the following actors:

- Secretary of Culture of the Province of Jujuy
- Secretary of Tourism of the Province of Jujuy
- Tourism Observatory of the Secretary of Tourism of the Province of Jujuy
- Secretary of Territorial Planning and Housing
- Ministry of Environment and Climate Change
- Secretary of Municipal Affairs
- Hoteliers Chamber of Quebrada de Humahuaca
- Chamber of Tourism Agencies of Jujuy
- Association of Tourism Guides
- Local Site Commissions
- National University of Jujuy
- Experts from different national universities who worked on the heritage place

Some of the planned events to develop the research agenda are:

- Participatory information workshops with local communities and Indigenous groups;

- Participatory workshops with local and Indigenous communities to build up strategies and methodologies and for the incorporation of inputs and local knowledge;
- Participatory workshops using the EoH 2.0 Toolkit, for both assessing the effectiveness of the management system but also as a methodological system for the construction of a participatory management system;
- Participatory workshops to present and validate outputs from the research priorities identified;
- Presentation of the collaborative work methodology of the Heritage Place Lab, in congresses and/or events to promote collaborative work between researchers and managers and cover more lines of research necessary for the conservation of the OUV of Quebrada de Humahuaca.

The practice group is planning a regional workshop, to be held in October 2022, with the participation of national experts in the disciplinary fields included in the research agenda.

V. Desired outcomes

Since the research priorities are interconnected and imply a significant amount of work to collect and interpret information, the Research-Practice Team has agreed to start with research priority 1 on the impacts of tourism because it is one of the main issues to study in order to improve the management of the heritage place.

At the same time, after completing the EOH 2.0 worksheets of Tool 1 on values and attributes, Tool 2 on factors affecting the place and Tool 4 on the map of actors for the entire heritage place, the team has considered that it would be difficult and too long to work with the entire site, considering its extension and complexity. The team has therefore agreed to come back to the initial proposal of testing the research methodology in a pilot case study, the town of Tilcara and its surroundings. The selection of this case responds to the fact that Tilcara is, together with Humahuaca, one of the two largest towns within the place, concentrating much of the tourism infrastructure, and, for that reason, one of the most impacted by tourism activities. The outcomes of this pilot project will be useful to extend the research to other sectors of the heritage place and to reach general conclusions on the impact of tourism, which will be used to improve the management instruments and mechanisms.

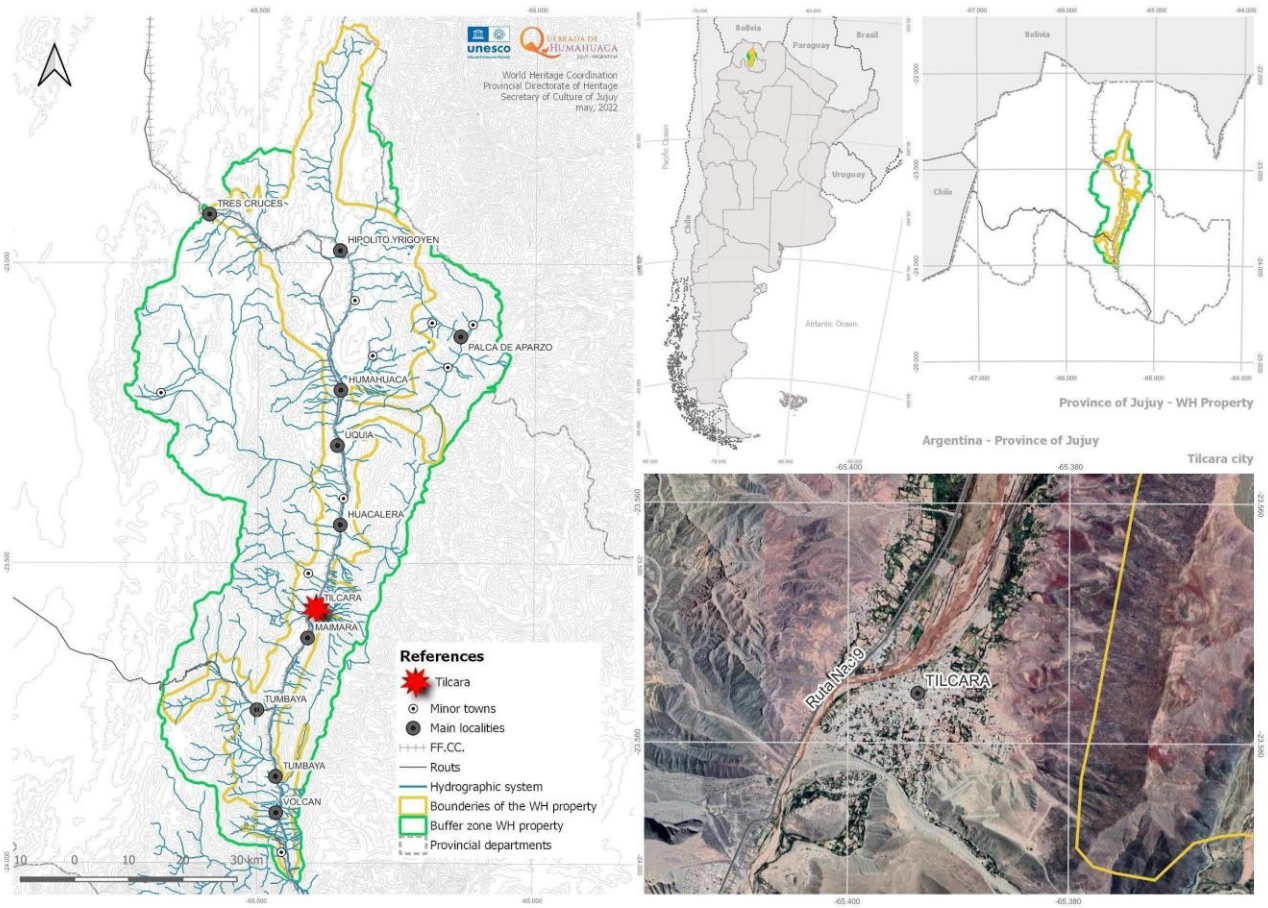


Figure 13. UNESCO,World Heritage Coordination, Quebrada de Humahuaca Provincial Management Unit (2022) 'Tilcara. Location'. San Salvador de Jujuy: Unidad de Gestión y Administración de Quebrada de Humahuaca.



Figure 14. Conti, A.L. (2007) *Tilcara. City View* [Photograph].

The fundamental questions that support this research priority have been presented in the Research Agenda above. To develop the research activities, the team has agreed that a combination of quantitative and qualitative methodological approaches becomes necessary. The team estimates a span of eighteen months to develop the agenda corresponding mainly to research priority 1 (impact of tourism), but, considering the interrelation among the three priorities, the proposed work plan is also oriented to advance on the other two. The activities to be carried out and the estimated time required for each of them are the following:

1.- Constitution of the research team with an invitation to other professionals and collaborators to join the team. The incorporation of sociologists, anthropologists, urban planners, and legal experts will be essential. Estimated time: one month.

2.- Elaboration and agreement on a transdisciplinary methodology to develop the research programme. Conformation of subgroups according to the topics to be researched. Estimated time: two months.

3.- Identification and selection of scientific literature related to the impact of tourism in the heritage place with a collection of specific norms and plans related to tourism, management and governance problems, land use survey, collection of specific norms and plans related to the land uses in Tilcara, framed in the local territory. Estimated time: 4 months.

4.- Interviews with selected actors (provincial and local governments, tourism agencies, investors, urban planners, developers, etc.) on the basis of designed questionnaires to organize the interviews. Estimated time: 3 months.

5.- Design of questionnaires and surveys for interviews with representatives of local populations, visitors and tourists. Identification of topics to be included and pilot tests to eventually amend the forms. Estimated time: 2 months.

6.- Workshops with local communities based on questionnaires and surveys, complemented by surveys to visitors and tourists. Estimated time: 5 months.

7.- Interpretation of the collected information identifying types and degrees of impacts at environmental, social and economic levels. Estimated time: 4 months.

8.- Elaboration of conclusions and recommendations to deal with tourism impacts, governance issues and land use. Estimated time: 3 months. Once the conclusions and recommendations are agreed by the Research-Practice Team, it is foreseen to disseminate among relevant authorities and local communities.

In the table below, the columns indicate months and the rows the activities as announced above.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1																		
2																		
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The research-practice team considers that the results of this research agenda will contribute to improve the management of the heritage place through the provision of accurate information on the situation of the site and of approaches and methods to deal with factors with impact on the site. The team expects to disseminate the final report among relevant actors related to the site's management, and to make it public as well so that the outcomes can be used not only by managers but also by scholars and researchers. Since the property's management plan is in process of updating, the team will propose that these research agendas be included within the document, in the section corresponding to strategies and programmes.

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ANEXX 6

TRAINING PROGRAM FOR GUARDS OF SITES OF GEOLOGICAL, PALEONTOLOGICAL AND ARCHAEOLOGICAL VALUE

STAGE 1 – TRES CRUCES

Introduction

The Technical Team of the World Heritage Coordination, within the framework of the informative meetings held since the end of 2013 for the formation of the Local Site Commissions (CLS) and the Monitoring of Archaeological Sites of La Quebrada, received various claims about the situation presented by the sites that are continually visited by tourists.

The people who reside in the vicinity of them and who act as current custodians, accuse the need to protect them from various acts of vandalism such as graffiti, extraction of rock fragments with petroglyphs and structures (walls) to be used as seats and bonfires, a deposit of waste in enclosures and bonfires inside rocky shelters with cave paintings. Given these facts found by the custodians, the need to be officially recognized by the Secretary of Culture, at that time, as "Guides/Guards of Archaeological Sites" was raised in order to guarantee greater effectiveness in protection and avoid inconvenience with visitors; because these sometimes do not recognize the work of local people.

Therefore, the training proposal has as its central objective, on the one hand, to develop preventive conservation actions and capacity building for local communities within the framework of the management process, and on the other, to respond to the demand of communities and families. that demand greater control over the impacts that occur in the areas where the patrimonial attributes are located, forming a body of guides/custodians authorized to carry out their tasks in the specific value sites.

Thus, this program contemplates activities related to impact mitigation, social management, community organization, and site clearance for public use.

For the development of the program, planning is produced in stages to ensure specific training for each of the sites detected and pre-selected jointly between the communities, the requesting municipal governments and the World Heritage Coordination.

In this first stage, the sites in the area of influence of the town of Tres Cruces, Department of Humahuaca were contemplated as the area of application.

Receivers

Custodians, current members of the communities and identified by the Municipal Commission of Tres Cruces (Azul Pampa Aboriginal Community, Herrera-Cari family inheritors of the lands where Inca Cueva is located; Hornaditas Aboriginal Community, Lamas family residing near Sapagua "Site el Pintado"; Municipal Commission of Tres Cruces, Méndez family, Rueda, Liquín owners near the sites of Pucara de Tres Cruces, Cueva del Indio and Puente del Diablo).

Objectives

- Provide theoretical elements to the guides/guards that promote the importance of preserving the circulation, habitation and landscape spaces of the ancient inhabitants of the region.
- Guarantee the preservation of archaeological sites by making visits with a local guide.
- Contribute to the creation, development and implementation of new tourist products and activities that raise awareness of the respectful use of cultural, natural and intangible heritage.

Work modality

It is planned to develop the training program from a total of 16 meetings or full days. During the meetings, different work modalities will be combined, including theoretical classes, practical work in the classroom and field trips.
The Theoretical session will be divided into 4 (four) modules, and the Practical session will be carried out with a field trip.

- *Theoretical class:* will be in charge of the UGAQH technical team, specialists in archaeology, geology and tourism. Its purpose is to know the basic concepts necessary for the training of specialist guards in the indicated archaeological sites.
- *Practical work in the classroom*: these are exercises designed from bibliographic material and guide questionnaires. This has the purpose of promoting the analysis and discussion of the different topics covered in the course, as well as helping the creation of script designs for each of the sites in question.
- *Outings to the field*: these are outings to archaeological sites, places of geological interest and sites-enabled for tourism, in order to exemplify the topics covered in the course and serve as practice for future guides/site rangers.

MODULE 1: HERITAGE; ARCHAEOLOGICAL AND NATURAL HERITAGE

This module is designed to learn about the characteristics of the archaeological and natural heritage of the Humahuaca ravine. In addition to providing elements for the preservation of heritage and its relationship with tourism. (Duration: 4 encounters)

Contents

1) Concept of heritage, cultural and natural aspects of it. UNESCO, the declaration of the ravine as a World Heritage Site and current regulations for the protection of the Quebrada de Humahuaca and archaeological sites.

2) The natural heritage of the Quebrada de Humahuaca. The geological history of the Quebrada. Geological and geomorphological characteristics of the area where the archaeological sites are located. Paleontological heritage and its importance in conservation and protection.

3) Characteristics of the archaeological record and the reconstruction of the past from material remains. The occupational history of the Quebrada de Humahuaca from the Hunter

Gatherers to the arrival of the Spanish (9000 BC-1535 AD)". The conservation and protection of the archaeological heritage, the impact of tourism.

4) Synthesis of the sites of Inca Cueva, Sapagua, Cueva del Indio, and Pucara de Tres Cruces. Social and economic processes that influenced the ancient inhabitants of the Quebrada de Humahuaca. Pictorial styles, themes and representations. Inca domain wall structures.

5) Outings to the field (2): visit sites of geological and natural interest (Puente del Diablo), visit Sapagua "El Pintado".

MODULE 2: INTANGIBLE HERITAGE AND LOCAL VISION

The main axis of it consists of relating culture, identity and the past. It is intended to incorporate local categories used to characterize the landscape, nature and human resources. Also taking into account the perception of history and changes over time of the local population. (Duration: 3 encounters)

Contents:

1) Community Perception, Culture/Identity categories.

2) Local vision of the past: The ancients and the "antigales"[1]. The notion of time and the vision of changes. Oral history and stories about the past.

3) Collection of stories and stories. Socialization of information in the workshop.

MÓDULO 3: ELABORACIÓN DE GUIADOS/ SOCIALIZACIÓN Y EVALUACIÓN

Se prevé la elaboración de guiados personalizados que integren o articulen los diversos aspectos teóricos de la capacitación con las diferentes visiones del pasado regional (arqueología, geología, visión local). (Duración: 4 encuentros)

1) Diseño de modelos de guiados para los sitios: los alumnos divididos en 4 grupos elaborarán en el aula los guiados que incluirán dramatizaciones de diferentes situaciones que pudieran presentarse. (**grupo 1**- Sapagua, **grupo 2** -Inca Cueva, **grupo 3**- Puente del Diablo y Pucara de Tres Cruces, **grupo 4** -Cueva del Indio).

2) Prácticas de guiado: se prevé la visita de dos sitios (a definir con alumnos) con el fin de poner a prueba las propuestas y servir de práctica.

3) Evaluación individual de los contenidos teóricos.

MODULE 3: PREPARATION OF GUIDELINES / SOCIALIZATION AND EVALUATION

[1] Antigal is an argentinism used by the locals to describe those places where there are remains of the ancients. The data has served archaeologists many times to find ruins and fossil remains, mainly in northern Argentina.

The elaboration of personalized guides that integrate or articulate the various theoretical aspects of the training with the different visions of the regional past (archaeology, geology, and local vision) is foreseen. (Duration: 4 encounters)

1) Design of guide models for the sites: the students divided into 4 groups will elaborate on the guides in the classroom that will include dramatizations of different situations that could arise. (group 1- Sapagua, group 2 -Inca Cueva, group 3- Puente del Diablo and Pucara de Tres Cruces, group 4 -Cueva del Indio).

2) Guided practices: the visit of two sites (to be defined with students) is planned to test the proposals and serve as practice.

3) Individual evaluation of the theoretical contents.

MODULE 4: TOURISM AND HERITAGE

It is intended to reflect on tourism and its relationship with the current notion of cultural heritage. To this end, professionals from the area will be convened to present general concepts of tourism. This first look will allow us to inform ourselves about the subject and will help in the discussion of specific problems. (Duration: 4 encounters)

Contents

1) Tourism: concept and characteristics. Conditions for Tourism. Tourists' concept and characteristics. Sustainable tourism.

2) Analysis of local tourist resources, the potential of the project, and social impact. The tour guide, professional ethics, and the role of the guide in the preservation of heritage.

3) First Aid in places of height. General knowledge in risk situations. In charge of Tech. Gisela Danielo (Superior Technician in medical emergencies and AIDER urban rescue instructor)

4) Guided visit to Pucara de Tilcara.

5) Final exposition of the designs of guided proposals elaborated in groups (group 1- Sapagua, group 2 -Inca Cueva, group 3- Puente del Diablo and Pucara de Tres Cruces, group 4 -Cueva del Indio).

   a) Delivery of certification that will enable those approved to work as guards.

SCHEDULE OF ACTIVITIES

Tema/ Encuentro Nº	STAGE 1				STAGE 2				STAGE 3			STAGE 4			
	1	2	3	4	5	6	7	8	9	10	11	12	14	15	16
heritage, concepts	■														
Geology, Conservation		■													
regional archaeology			■												
Archaeological sites				■											
Field trip					■										
Intangible heritage. / local vision						■									

Collection and Socialization															
Elaboration and practical guide															
Evaluation															
Tourism and Heritage															
Tourism															
first aid															
Guided visit															
Guided Exhibition and Certification															
TRAINING HEADQUARTERS	TRES CRUCES														

NECESSARY RESOURCES:

- Materials: Printing of 11 (eleven) informative brochures.
- Projector for exhibition.
- For the day of Theoretical, Breakfast and Lunch will be needed 14 people (Students and technicians).
- Vehicle for the transfer of the technical team and specialists to the town of Tres Cruces.
- Vehicle for the transfer of 14 people to the town of Tres Cruces and the Hornaditas-Sitio Sapagua area (Department of Humahuaca). Field trip.
- Vehicle and/or fuel vouchers for the transfer of students from Tres Cruces-Tilcara, Tilcara-Tres Cruces. Field trip.
- Printing of 14 (fourteen) A4 size certificates.
- Printing of 11 (eleven) credentials "Archaeological Site Guard" with recognition of the Secretary of Culture of the province.

HUMAN RESOURCES:

- Specialist in Geology of the Quebrada de Humahuaca: Geol. Natalia Solis (2)
- Specialist in Tourism and Rural Tourism.
- Quebrada de Humahuaca technical team: Lic. José Luis Tolaba and Lic. Raque E. García.
- First Aid Specialist: Tecn. Gisela Danielo. SAME

LIST OF PARTICIPANTS:

Nº	SURNAME	NAME	ASSOCIATED SITE	PLACE OF RESIDENCE	DNI	
1	CARI	Victor Sergio	Inca Cueva	Inca Cueva	31.081.973	ETAPA 1
2	HERRERA	Claudia Elizabeth		Inca Cueva	34.887.213	
3	HUMANA	Hernan Constantino		Humahuaca	44.351.447	
4	MAMANÍ	Sergio Arturo	Puente del Diablo Pucara de Tres Cruces	Tres Cruces	29.059.670	
5	MENDOZA	Santos		Tres Cruces	11.223.062	
6	ANACHURI	Anibal Eduardo		Tres Cruces	31.399.298	
7	GUANUCO	Beatriz		Tres Cruces	29.875.076	
8	CARDOZO	Ceferino		Tres Cruces	16.244.982	
9	APARICIO	Edgardo Wilfredo		Tres Cruces	23.899.055	
10	MENDEZ	Romina Daniela		Tres Cruces	33.455.183	

11	LIQUÍN	Mabel Margarita	Cueva del Indio	Tres Cruces	27.164.388	
12	MARTINEZ	Fabián Eduardo		Tres Cruces	24.855.384	
13	DOMINGUEZ	Mauro Rodrigo		Tres Cruces	33.236.597	
14	CHUYCHUY	Yamil Leonel		Tres Cruces	38.748.401	
15	GUANUCO	Claudia Estela		Tres Cruces	23.434.664	

EVALUATION PROCESS:

The Program has planned an evaluation process that will consider as requirements for its approval to have seventy per cent (70%) attendance, participation in field trips, delivery of practical work and approval of the final exam.

Participants who comply with said evaluation process will receive the certification and qualifying card of "Guards" in relation to the associated sites previously identified for each one.

PHOTOGRAPHIC RECORD OF THE FORMATION PROCESS OF STAGE 1



Participants in the first stage of training (Tres Cruces)



Regional Archeology Module





Guided visit (Puente de Diablo)



First aid Module



Graduated participants - First Guardians of sites of Geological, Paleontological and Archaeological Value (Tres Cruces)

Act of delivery of credentials and certificates (September 12, 2022)

JOURNALIST ARTICLE ON THE DELIVERY OF CREDENTIALS TO THE FIRST GUARDS OF SITES OF GEOLOGICAL, PALEONTOLOGICAL AND ARCHAEOLOGICAL VALUE.

https://prensa.jujuy.gob.ar/patrimonio/fueron-avalados-los-primeros-guardas-sitios-patrimoniales-n108513

https://jujuyahora.com/2022/09/15/tres-cruces-fueron-avalados-los-primeros-guardas-de-sitios-patrimoniales/

https://diariohoy.net/interes-general/jujuy-forma-guardas-para-sus-yacimientos-170861