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# Tehuacán-Cuicatlán Valley (Mexico) No 1534rev

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## Official name as proposed by the State Party

Tehuacán-Cuicatlán Valley: originary habitat of Mesoamerica

## Location

Zapotitlán–Cuicatlán, San Juan Raya and Purrón  
States of Puebla and Oaxaca  
Mexico

## Brief description

In the southernmost arid or semi-arid region in North America, the intricate mountain topography of the Tehuacán-Cuicatlán Valley shelters high-level forests and lower scrub landscapes characterised by tall tubular cacti. Its numerous small streams and aquifers, warm climate and floristic diversity appear to have been attractive to early semi-settled and later settled communities. Archaeological evidence located at twenty-two sites is said to reveal a process of technical evolution that reflects early plant domestication, and agriculture. Later, salt industry and pottery emerged in the region. A diversified water management system allowed to utilize mountain water resources and led to the development of an irrigation-based agriculture.

## Category of property

In terms of categories of cultural property set out in Article I of the 1972 World Heritage Convention, this is a serial nomination of 3 sites.

[Note: The property is nominated as a mixed cultural and natural site. IUCN will assess the natural significance, while ICOMOS assesses the cultural significance.]

## 1 Basic data

### Included in the Tentative List

11 December 2012 (category natural)

### International Assistance from the World Heritage Fund for preparing the Nomination

None

### Date received by the World Heritage Centre

27 January 2016

18 January 2018

## Background

This is an originally referred nomination (41 COM, Krakow, Poland). The World Heritage Committee adopted the following decision (41.COM 8B.9):

The World Heritage Committee,

- 1 Having examined Documents WHC/17/41.COM/8B, WHC/17/41.COM/INF.8B1 and WHC/17/41.COM/INF.8B2,
- 2 Refers the mixed nomination of Tehuacán-Cuicatlán Valley: originary habitat of Mesoamerica, Mexico, back to the State Party, in order to clarify:
  - a) In relation to cultural criteria, a revised approach focusing on the chronological development of the property, starting with the prehistorical sites, preclassical villages, classical cities, postclassical kingdoms, and early colonial settlements, based on irrigated agriculture; associated industries, techniques and practices; and aspects of ancestral religious expressions that emphasise the cultural dimension of the nominated property,
  - b) Regarding the natural criterion, clarify and clearly demonstrate that all natural attributes contributing to the potential Outstanding Universal Value are included within the serial components and boundaries of the nominated property within Tehuacán-Cuicatlán Biosphere Reserve;
- 3 Recommends that the State Party give additional consideration to the following:
  - a) Undertake an augmented comparative analysis of sites with evidence for irrigation within Mesoamerica to justify the complexity of the systems compared to others,
  - b) Consider including criterion (ix) in a revised nomination, in view of the global ecological significance of the region within which the nominated property is located,
  - c) Finalise the specific plan for the management and protection of the archaeological sites within the nominated property, and link it to the Tehuacán-Cuicatlán Biosphere Reserve Management Programme to cover the conservation aspects of archaeological sites in their natural context,
  - d) Provide evidence of institutional coordination for sustainable funding and appropriately skilled staff for holistic, integrated management of natural and cultural heritage values within the nominated property; and strengthen the overall human and financial resources for management of cultural assets within the Tehuacán-Cuicatlán Biosphere Reserve,
  - e) Develop a visitor management strategy for the nominated property that is based on a holistic approach;
- 4 Encourages the State Party to expedite its plans to update the Nature Tourism Strategy for the Tehuacán-Cuicatlán Biosphere Reserve (2010-2015) to improve visitor management strategies including defining carrying capacities; to identify suitable private-sector tourism partners; to define appropriate tourism infrastructure; and to build sustainable development capacities of local communities and other sectors to handle increasing tourism interest in the nominated property;
- 5 Also encourages the State Party to refine the governance structure of the nominated property to involve more effective participation of local communities in co-management and decision-making, and ensure the economic needs and sustainable development aspirations of these communities are appropriately addressed.

The State Party submitted a partially revised nomination dossier on 18 January 2018.

### **Consultations**

ICOMOS has consulted its International Scientific Committee on Archaeological Heritage Management and several independent experts.

### **Technical Evaluation Mission**

A joint ICOMOS-IUCN technical evaluation mission visited the property from 16 to 24 October 2016.

### **Additional information received by ICOMOS**

On 4 October 2016, ICOMOS sent a letter to the State Party requesting additional information regarding the maps, the description of the property, the authenticity and integrity, the comparative analysis, the state of conservation, the management plan and the tourism facilities. The State Party responded on 13 November 2016.

A joint ICOMOS-IUCN Interim Report was sent to the State Party on 20 December 2016. The State Party responded on 28 February 2017 with additional information about the early domestication of crops, the chronology of the individual archaeological elements, the technology of water supply and irrigation, the management of the archaeological sites, the long-term funding of the nominated property, the situation of staff in the nominated property and the development of a visitor management plan.

Following decision 41 COM 8B.9 in 2017 to refer the nomination back to the State Party, it submitted on 18 January 2018 a partially revised nomination dossier. This presents further clarifications and information regarding authenticity and integrity of the property, the comparative analysis, clarification of selected criteria, institutional coordination, management plan and tourism management.

### **Date of ICOMOS approval of this report**

14 March 2018

## **2 The property**

### **Description**

In the southeast of the State of Puebla and the north of the State of Oaxaca, lies the Tehuacán-Cuicatlán Valley belongs to the Mesoamerican region. The nominated property is composed of three component sites: Zapotitlán-Cuicatlán, San Juan Raya, and Purrón, within which the nomination indicates twenty-two main archaeological sites. The three components and the buffer zone are parts of the Tehuacán-Cuicatlán Biosphere Reserve (TCBR), which was protected in 1998 and is incorporated since 2012 in the UNESCO Man and Biosphere Programme (MaB).

It should be noted that by comparison with the text on natural aspects, the text on cultural aspects remains less detailed and much detailed knowledge on the archaeological sites and their exact extent and location remains missing. The management plan includes the need for 'Studies on settlements, archaeological charts, that enable a diachronic understanding of the cultural manners of settlements, on official maps to a significant scale, in order to identify the extension, coherence and unity of the cultural identity of the human groups inhabiting the area'. This appears to show that research on cultural aspects lags behind that on natural aspects to the point where the nomination for cultural criteria would continue to be considered somewhat premature until further documentation on the exact location, number and type of archaeological sites becomes available.

The largest, the Zapotitlán-Cuicatlán component, is mainly forest, with a small amount of cacti scrubland. It hosts thirteen of the twenty-two archaeological sites. Hosting five archaeological sites, the San Juan Raya component is mostly cacti scrubland. The Purrón component hosts four archaeological sites and is covered by tropical deciduous forest and desert rosette shrubland.

Running southeast to northeast along the Sierras de Juarez, de Zongolica and de Tecamachalco, the canyon of Tehuacán-Cuicatlán is a deep gorge surrounded by peaks more than 3,000 m high. Its geographical position, steep topography and intricate relief explain its special environment and variable climate, with hot dry winds and, in winter, occasional rainfall. Limestone rocks in the west causes rock infiltration, resulting in aquifers and filtration galleries, ideal for the development of irrigation.

The Tehuacán-Cuicatlán Valley is said to hold 624 archaeological sites that bear witness to the conversion of nomadic hunter-gatherers to a sedentary lifestyle based on opportunities of irrigation over a course of 12,000 years. The mutual management agreement of joint partners submitted with the additional information in 2018 even refers to 3,992 archaeological sites, archaeological zones and archaeological monuments zones within the natural protected areas. However, only 22 archaeological sites are presented in the nomination dossier.

These 22 sites can be split into three types, which reflect: the beginnings of agriculture, plant domestication and the development of human settlements; beliefs and rituals; beginnings of agriculture, plant domestication and the development of human settlements. One of the larger archaeological sites is the large rock shelter of *Cueva de Coxcatlán* in the component site of Purrón. This was excavated in the early 1960s and its remains dated from 6800 BCE to 1500 CE. In it were found early remains of maize cobs, avocado, amaranth, squash, and chilli.

The cave also supplied evidence to indicate that between 4300 to 350 BCE, so-called horticultural villages appeared, which provided food for larger groups of people than had previously been possible.

*Cuthá* or *Quiotepec* archaeological sites and Salinas Las Grandes located in the Zapotitlán-Cuicatlán component site reflect much later traces of political, religious and residential features, reflecting the lifestyle of the during the times the pottery and salt industry developed. Salt not only improved food, but also had a sacramental value.

#### Beliefs and rituals

Other cultural heritage sites in the property hold vestiges that throw light on the beliefs and traditions of the first settlers in the region, through cave paintings. *Puente Colosal* in the component site of Zapotitlán-Cuicatlán is a tunnel formed by rock erosion, along which paintings have been discovered. *Cueva de las Manitas* in also in the Zapotitlán-Cuicatlán component (1200-1550 CE) is another rock shelter, where cave art illustrates several motifs related to humans and animals.

The Valley is further said to contain one of the most diversified water management systems known on the American continent, with ten types of sites, including: wells, dams, canals, fields for rain-fed agriculture, fields for flood irrigation, fields on terraces, rock aqueducts, filtration galleries, and large square water catchment wells, most of them dating to between 800-700 BCE.

The *Purrón Dam Complex* is the largest water control site in Mesoamerica. It was built in four subsequent stages between 750 BCE and 200 CE and was in use for over nine hundred years.

Sites reflecting water irrigation processes also include the prehistoric canal of Santa María, the Xiquila Aqueduct and the San Marcos Necoxtla well, although few details are provided of these or of the other types of irrigation sites mentioned above.

In its revised nomination of 2018 the State Party structured the information on the 22 historic and archaeological sites according to the five main elements of water management and irrigation systems found in the areas: dams, galerías filtrantes (qanats), canal systems, salt industries and other ancient water management elements. Despite this new explanation provided, very little remains known about the site's physical evidence as well as its interconnectedness, which is not clearly documented in a way that allows an understanding of how they functioned.

#### History and development

The oldest relics of human presence in the region date back to 12,000 BCE. Evidence of the first habitation sites date to around 10,000 BCE. Between around 7800 and 3500 BCE, the nomadic settler groups introduced the domestication of maize, followed by that of beans, squash, chilli peppers, avocado and amaranth, began. Cotton textiles appeared more or less at the same time. Between 3500 and 2300 BCE, these innovations encouraged families to stay in sedentary settlements, where pottery was invented around 2000 BC. The new sedentary communities were organized in small villages

and served by a vast system of land and moreover water control, like the *Purrón Dam*.

During the Classic era (100 BCE - 700 CE) settlements expanded: places of worship occupied hilltops, houses spread over hillsides to cover larger areas. Structures related to privileged classes (such as pyramids, ball courts, plazas, large homes, decorated tombs) attest to control by a strong aristocracy. Farming was developed along ravines and hills on ingeniously irrigated terraces. Archaeologists estimate the population of the Tehuacán Valley in those days at 20,000 to 30,000 inhabitants. Northern Oaxaca belonged to the Mixtec culture, dominated by strongholds like Monte Albán, of which *Quiotepec* was an advanced defence post in the Valley, while southern Puebla was under the influence of Teotihuacán and Cholula.

When Monte Albán and Teotihuacán suddenly collapsed in the 8<sup>th</sup> century CE, the Post-Classic period began, which saw a much more stretched and dispersed power in the form of large manors. Due to its position, the Tehuacán-Cuicatlán Valley increased its attraction to neighbouring regions, where the Toltec empire flourished (950-1150 CE) and when Cholula took over in the 12<sup>th</sup> century as a symbol of legitimate power. During this time, the city of *Cuthá* flourished near the place where *Zapotitlán de Salinas* is currently located, on the route between Cholula and the Mixtec.

When the Spanish arrived in 1518, the Tehuacán-Cuicatlán Valley was under the control of the Triple Alliance (which gave birth to the Aztec Empire in 1428). The European conquest was biologically and politically brutal. The indigenous population was decimated in a few decades by the Old World pathogens. Ranching, grazing and lumbering quickly disturbed the landscape, removing forest cover, accelerating desertification and withering wildlife regimes. Big haciendas were established between 1630 and 1640, producing maize, wheat, barley, beans and chilli, breeding goats or specializing in livestock farming, like in the Oaxacan Mixtec. As these farms were spread out, the old irrigation channels were abandoned and filtration galleries used as an alternative to provide water to remote fields.

The Franciscans evangelised the cities of Tehuacán and Tecamachalco; the Dominicans built their main base in San Juan Bautista Coixtlahuaca. Both orders learnt the indigenous language and some friars collected traces of the local knowledge that they helped transmit to future generations. Thus, the first learned man to pay any interest to the region was a Jesuit, Francisco Javier Clavijero, born in Vera Cruz, who wrote a pioneering book about pre-Columbian Mexico after the members of his order were expelled from Spain and its colonies in 1767.

In 1803, a German scientist, Baron von Humboldt, visited New Spain and studied Cuicatlán's flora. So did several others afterwards up to the 20th century, such as Wilhelm Karwinski, Frederick D. Godman, Helia Bravo, and Dr Patricia Dávila.

In parallel, in the 1960s, the American archaeologists Richard MacNeish and Kent Flannery found the oldest remains of cultivated plants in both the Tehuacán Valley and Guilá Naquitz (Oaxaca). Their compatriots, Elsa Redmond and Charles Spencer, later expanded the evidence of human prehistory in Mesoamerica.

### 3 Justification for inscription, integrity and authenticity

#### Comparative analysis

The comparative analysis with other properties and sites is based on the theoretical frameworks provided by the 2010 UNESCO Human Evolution: Adaptation, dispersals and Social Developments (HEADS) programme and the ICOMOS analysis "The World Heritage List: Filling the Gaps, an Action Plan for the Future" (2005).

The previous nomination dossier submitted in 2016 already presented a global analysis of artificial irrigation systems that emerged amongst the world's first civilisations. Those comparisons lead to the conclusion that the context of Mesoamerica needs to be considered separately in terms of irrigation systems which developed independently before the Spanish imported knowledge on European, Arab and Asian irrigation systems.

At a regional level, however, only the three Peruvian sites of Pacatnamú, Guatca and Chan Chan were compared, which ICOMOS considered not very relevant because these were based on developed hierarchical societies which could manage large scale water management and irrigation systems, while the civilization of the Tehuacán-Cuicatlán Valley was based on a family-based kinship organization, which is what could be of potential exceptional value.

ICOMOS therefore noted that the comparative analysis presented by the State Party in its initial nomination was quite compartmentalised and no adequate comparisons for the overall landscape or irrigation networks was presented. For this reason, the World Heritage Committee in its decision 41.COM 8B.9 requested to undertake an augmented comparative analysis of sites with evidence for irrigation within Mesoamerica to justify the complexity of the systems compared to others.

In its nomination amendments presented in 2018, the State Party presented an augmented comparative analysis focused on water management and irrigation systems. The analysis includes sites from Mesoamerica, Arid-America and Peru, which are compared on the basis of temporal, ecological and development contexts in relation to eight water management elements: terraces, wells, raised fields, chultún (underground rain water deposits), reservoir and dikes, and aqueducts. Sites are furthermore divided and presented within four broader chronological time frames covering the pre-Hispanic period.

The State Party considers that, when focusing on the context of an arid lands in Mesoamerica, the Tehuacán-Cuicatlán Valley possesses the most diverse system of any of the pre-Columbian irrigation sites, because it includes the largest variety of elements: the *Purrón Dam* - the oldest and biggest in the Americas, the San Marcos Necoxtla well - the oldest ever found on the continent, plus a large amount of canals and an important set of water catchment wells, aqueducts, filtration galleries and salt mines, which cover several centuries and attest to the extensive history of the region.

ICOMOS considers that the comparative analysis remains to be compartmentalized due to the comparison of several characteristics of water management systems. What remains missing is the consideration of the relationship between these water management sites and the impact they had on the formation and transition of an early cultivation and settlement process in the Tehuacán-Cuicatlán Valley, by means of a comparison of other early settlement sites in Mesoamerica. Despite further information presented on the Central Valley of Oaxaca, inscribed in 2010 (Prehistoric caves of Yagul and Mitla in the Central Valley of Oaxaca, Mexico, criterion (iii)) which provides evidence on similar early settlement processes, this perspective remains largely unexplored.

While overall, the comparative analysis continues to demonstrate the importance of water management and irrigation systems within pre-Hispanic societies, it does not yet succeed to prove the exceptionality of the selected 22 sites in the Tehuacán-Cuicatlán Valley. In particular, also an analysis of different sites within the valley remains absent although it is obvious that far more than 22 sites are located within it and several alternative choices would be possible. It is therefore not justified in which way the property as a whole and in combination of the selected sites and elements could be said to be exceptional and to have no comparators at a regional and global level.

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ICOMOS considers that the comparative analysis has not yet justified, at this stage, a consideration of this property for inscription on the World Heritage List.

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#### Justification of Outstanding Universal Value

The nominated property is considered by the State Party to be of Outstanding Universal Value as a cultural property for the following reasons:

- The biodiversity and desert territory of the Tehuacán-Cuicatlán Valley gave rise to one of the longest and best documented cultural sequences in the Americas;
- Archaeological findings provide evidence of man's adaptation in response to a local environment, which extended over 12,000 years, giving rise to the cultural area of Mesoamerica;
- Tehuacán-Cuicatlán Valley provides evidence to the human advancement towards agriculturalist communities in illustrating one of the earliest

examples of plant domestication (9500 to 7000 BCE);

- The Valley-presents an exceptional example of a water management system made up of several elements, such as canals, wells, aqueducts and dams, which are the oldest on the continent and enabled the settlement of agriculture-based communities;
- Both innovations helped the salt industry and pottery to appear later, completing further societal advances in terms of technology and early extraction of natural resources;
- Interaction between man and nature, as well as continuity and cultural legacy, are reflected through the development of pictographic writing and the production of a number of illustrated manuscripts unparalleled on the continent.

ICOMOS considers that the archaeological sites in the Tehuacán-Cuicatlán Valley are likely to reflect aspects of the early evolution of man's relationship to this arid environment over a period of more than 10,000 years and illustrate the process from early plant domestication to primitive agriculture, via the development of irrigation. It also provides documentation to the later birth of early industries and processes of natural resource extraction.

However, it is unfortunate that so little is documented on the various features and many archaeological sites, which present these processes in the valley, while the selection of sites highlighted for this nomination presents merely selected peaks into a much larger and broader evidence existing. ICOMOS therefore considers that while the justification might likely be relevant at a theoretical level, the number of documented sites presented does not constitute the crucial mass required to underline and illustrate these very important historic phenomena.

Tehuacán-Cuicatlán Valley presents a complex system of early irrigation and agricultural development based on a network of wells, dams, canals, rock aqueducts, filtration galleries, and large water catchment wells, most of them dating back to between 800-700 BCE. Yet, few of these are described and documented in detail and it can be expected that further crucial evidence both inside and outside the current property boundaries adds to the historic process' understanding. ICOMOS therefore continues to recommend better definition and documentation of the property, in particular my mean of extensive cultural heritage focused surveys of the valley, both in and outside the boundaries, which seem defined predominantly in view of natural heritage characteristics.

Based on such an in-depth analysis and documentation, the attributes illustrating exceptional phenomena of early irrigation and settlement systems could be adequately defined and subsequently recognized in terms of their possible unique and exceptional contribution to the understanding of human history in Mesoamerica.

## **Integrity and authenticity**

### **Integrity**

The nominated serial property presents 22 sites out of potential 624 sites said to be contained in the valley. Several others are mentioned in the nomination dossier and additional information was provided on Apoala waterfalls, Tehuacán ruins, Teteles de Santo Nombre, and San Juan Bautista convent of Coixtlahuaca. Unfortunately, the identification and description of the property as well as the comparative analysis is not yet approached in a holistic enough understanding, which would present and consider the various features of irrigation management in their interrelation to the agricultural activities and early settlement structures they enabled. ICOMOS is convinced that far more than the named 22 sites contribute to this early development and that therefore the selection of sites presented cannot be said to be complete in the sense required by the qualifying condition of integrity.

It can be assumed that within the 22 sites presented insights into a number of key attributes are granted. Yet, they do not appear to be self-standing and the nomination has not yet clarified how these 22 sites can be seen as backing the complete narrative of the proposed Outstanding Universal Value in relation to earliest evidences of plant domestication, sophisticated water management systems, early settlements within their reach and the specificities in which these were characterized by the local interaction of early communities and their environment.

The State Party considers that, in such an isolated environment, most of the archaeological sites are free of damage and maintain their original characters, thanks to the level of protection in the Tehuacán-Cuicatlán Biosphere Reserve.

In the additional information provided by the State Party in the first evaluation cycle of 2016, it reported no major damage or serious deterioration had been recorded. However, the Strategic Management Plan for the Cultural Sites within the mixed nominated property Tehuacán-Cuicatlán Valley, originary habitat of Mesoamerica indicates a number of challenges in terms of their state of preservation, which are aimed to be addressed. These include various issues, such as illegal stone extraction, vegetation growth and deforestation, pressure from agricultural and pastoral activities, looting and unauthorized excavations, graffiti and vandalism, water and wind erosion, non-monitored cleansing and material degradation, lack of maintenance activities and issues with waste disposal.

Moreover, six of the 22 sites proposed appear not currently listed in the national registry of the National Institute of Anthropology and History (INAH), and hence do not yet enjoy legal protection under the provision of frameworks focused on cultural heritage concerns.

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ICOMOS considers that in terms of the variety of archaeological and archaeo-botanical evidence of early plant cultivation, irrigation and settlement processes in the Tehuacán-Cuicatlán Valley, the 22 sites presented and documented in the nomination cannot be said to provide a complete representation of the cultural heritage evidence the valley has to offer. Therefore ICOMOS considers that integrity is not demonstrated at this stage.

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#### Authenticity

In the view of the State Party, the property meets the qualifying condition of authenticity in relation to its archaeological relics as witnesses of the long history of the ancient inhabitants of the area, dating back to the origin of Mesoamerican civilization and its continuity until present times. The State Party further argues that authenticity is strengthened by secluded communities, which have managed to survive with largely ancestral-based indigenous economies and documented in illustrated manuscripts, pictographic writing and early accounts written by the colonial powers, which form a body of literature and evidence that sheds light on the way principalities and empires were governed and shaped the Tehuacán-Cuicatlán Valley.

ICOMOS considers that, while the presence of indigenous traditional communities indeed is an asset to the conditions of authenticity in lack of a clear definition of attributes, which in sum convey the early evidences on plant cultivation, irrigation and early settled communities within and beyond the 22 sites documented in the nomination, it remains difficult to judge authenticity as could be conveyed by the overall property or the individual serial components.

In relation to the 22 documents sites, the State Party provided information on their respective authenticity at the request of ICOMOS in October 2016, which allows for adequate judgement of their condition.

Despite some issues raised in the state of conservation of each of these 22 sites and the normal ravages of time over several centuries or millennia, the authenticity of the individual sites does not appear to have been compromised.

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ICOMOS considers that the authenticity of the whole series and the serial components has not been demonstrated but that the authenticity of the individual archaeological sites appears satisfactory.

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In conclusion, ICOMOS considers that the conditions of integrity and authenticity for the whole series have not been fully justified; and that the condition of the known individual archaeological sites, which in sum do not yet demonstrate integrity, are satisfactory in terms of authenticity, although some remain extremely vulnerable.

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#### Criteria under which inscription is proposed

The property is nominated on the basis of cultural criteria (iii), (iv) and (vi), and on natural criterion (x).

Criterion (iii): *bear a unique or at least exceptional testimony to a cultural tradition or to a civilisation, which is living or which has disappeared;*

This criterion is justified by the State Party on the grounds that the Otomanguean linguistic tradition arose around 6000 BC in the Tehuacán-Cuicatlán Valley and that the people who came from this tradition formed complex and technologically advanced societies. The languages emerging from this linguistic tradition are still used by two million speakers today and are the most ancient and diversified linguistic group in America. The State Party further highlighted a link between this language and the biodiversity of the valley which is said to have derived from local diversification and from the incursion of new cultures that sought to conquer the region (mainly the Mixtec and Nahuatl).

ICOMOS considers that the Otomanguean linguistic tradition is certainly an interesting phenomenon, and linked to the linguistic fragmentation and diversity in Mesoamerica. However, criterion (iii) usually recognizes the testimony of cultural traditions or civilizations as different dimensions and attainments of evolved human societies. A linguistic tradition might be a foundation or connecting element of such societies but is rarely manifested in physical remains recognized under the World Heritage Convention.

Criterion (iii), however, could potentially be demonstrated in relation to the early evidence of settled communities in Mesoamerica and the testimony of their cultivation and irrigation as well as settlement structures, which evidences this level of human development. Unfortunately, not enough documentation or information is provided in the nomination dossier to illustrate what attributes could be considered an outstanding or exceptional testimony of these early societies.

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ICOMOS considers that this criterion has not been justified at this stage.

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Criterion (iv): *be an outstanding example of a type of building, architectural or technological ensemble or landscape, which illustrates a significant stage in human history;*

This criterion was initially justified by the State Party on the grounds that the Tehuacán-Cuicatlán Valley is the inner core of Mesoamerica, a cradle of civilisation, in which early interaction between man and nature appeared since around 10,000 BCE.

What appears to differentiate parts of the Tehuacán-Cuicatlán Valley from other valleys in Mesoamerica are the extensive and early remains of irrigation systems that helped support the development of agriculture and settled communities. ICOMOS considered therefore that water

management sites (including wells, dams, canals, fields for rain-fed agriculture, fields for flood irrigation, fields on terraces, rock aqueducts, filtration galleries, large square water catchment wells) could potentially illustrate an exceptionally early typology of a Mesoamerican precolonial water management system, which acted as the precondition for plant cultivation and community settlements.

In the additional information submitted on 18 January 2018, the State Party provided further information on selected sites, which illustrate features of a water management system as well as broader analyses of water irrigation networks in some parts of the property. These materials indicate the strong potential of the theme. Yet, what is presented in terms of documented cultural heritage sites, remains too isolated to represent an irrigation system typology. Water management typologies in the Tehuacán-Cuicatlán Valley were explored since very early times and were characterized by their modest technological solutions and extensive scale.

Unfortunately, however, the isolated 22 presented historic and archaeological sites belong to five different water management and irrigation systems and components and cannot be said to represent the typology of a network: They illustrate dams, canal systems, *galería filtrantes* also referred as *qanat*, salt industries and other water control elements (wells, check dams and aqueducts). They can neither present a complete collection of all different water management solutions nor provide the completeness of an extensive irrigation network. Further research and documentation may provide the potential to identify physical features, which support the application of this criterion.

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ICOMOS considers that this criterion has not been justified.

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Criterion (vi): *be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance;*

This criterion is justified by the State Party on the grounds that the Tehuacán-Cuicatlán Valley is directly associated with a series of pictorial documents of great historic, iconographic and aesthetic universal value that represent the ritual and political life of the pre-Hispanic world. These aspects were depicted in codices, paintings and manuscripts that were passed on as a communication tradition even after the Conquest of the New World. The State Party considers that there is no other region on the continent that has produced a similar collection of manuscripts.

ICOMOS continues to consider that the illustrated manuscripts of the Tehuacán-Cuicatlán Valley provide highly valuable documentation of the later development of the Valley but provide little assistance to the understanding of the early plant domestication and settlement processes, which could be considered

exceptional if based on ample physical evidence. It has therefore not been illustrated how the ideas embedded in the respective manuscripts could be considered of outstanding universal significance, as well as directly or tangibly associated with the property.

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ICOMOS considers that this criterion has not been justified.

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ICOMOS considers that the serial approach has not yet been justified and that the selection of component sites requires further documentation and justification in relation to their facilitation of early plant cultivation and settlement processes on the basis of water irrigation systems.

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In conclusion, ICOMOS considers that the nominated property does not meet any of the proposed criteria and does not demonstrate authenticity or integrity for the series proposed.

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#### 4 Factors affecting the property

No significant urban or infrastructure development is expected within the property's boundaries. A few rural communities of usually less than 100 inhabitants live within the property but cannot be said to negatively affect the cultural heritage sites. A higher risk exists to archaeological sites in the buffer zone or near populated areas, as there are reported instances of looting, for example, at several archaeological sites. There are also traces of vandalism and graffiti at various other historical places. Finally, wildfire is a big threat, caused by poachers who clear paths and even roads for their own purposes.

The number of visitors to the property as a whole is unknown but visitor numbers are available for a few sites, which are well known and accessible. The Zapotitlán salt works attract for example 12,000 visitors per annum. There is a certain influx of visitors at Easter, when many pilgrims pass-through the property on their way to Oaxaca or the sanctuary of the Juquila Virgin in Ixcatlán. However, in total the tourism pressure is currently low in particular in some areas, which are very difficult to access.

Several environmental pressures affect the property and caves have been damaged by bat excrements. Many of the archaeological sites have been affected by wind and water erosion and more general weather impacts, in particular heavy, sporadic rainfall. These are at times heavy and require to be addressed to prevent serious damages in the future. Some archaeological sites currently situated in the buffer zone (in the State of Oaxaca), are even threatened by landslides, which could destroy platforms and affect the sites' integrity. In the *Purrón Dam Complex*, large sections of the walls have been affected by vegetation growth.

According to the National Centre for the Prevention of Disasters (CENAPRED), Tehuacán-Cuicatlán Valley is an earthquake-prone area-seismic index: 5).

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ICOMOS considers that the main threats to the property are wind and water erosion, landslides and anthropogenic threats, such as vandalism and looting.

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## 5 Protection, conservation and management

### Boundaries of the nominated property and buffer zone

The property is made up of 3 components parts in which 22 historical or archaeological sites are presented and described. It is assumed that further cultural heritage sites are located in these components, however little or no information was made available about these. The *Zapotitlán-Cuicatlán* component is in the States of Puebla and Oaxaca, and measures 136,587.52 hectares; the *San Juan Raya* component of 6,106.84 hectares and the *Purrón* component of 2,561.04 hectares are located exclusively in the State of Puebla. The total area of the nominated property is 145,255.20 hectares. The three serial components are surrounded by one shared-buffer zone of 344,931.68 hectares. ICOMOS notes a discrepancy between the property and buffer zone sizes provided in the text and those quoted in tabular form of the additional information document. ICOMOS therefore recommends that the size of the nominated area and buffer zone is clarified and reconfirmed in relation to the maps provided.

It seems that the boundaries were defined predominantly based on natural heritage features and existing protection schemes.

Some of the 22 described cultural heritage sites are located in close proximity to the outer boundaries of the serial components, in particular in the northern section of the property. It appears likely, that further sites located outside the property boundaries could contribute to the evidence of early water irrigation, plant cultivation and settlement activities and that redefined boundaries could integrate further cultural heritage evidence to support this theme. ICOMOS recommends therefore that the above requested documentation of cultural heritage resources expands into the buffer zone areas in at least the northern components of the property.

The buffer zone aims at ensuring that the immediate settings of the property, including its archaeological sites are stable. ICOMOS considers however, that the adequacy of the buffer zone relates to the appropriateness of the property boundaries, which need to be confirmed following further cultural heritage surveys. In order to make such judgement, it would assist to provide more detailed and diversified maps that clearly identify the exact extension of each archaeological site

and the buffer zone area around it, which will contribute to the protection of these cultural attributes.

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ICOMOS considers that further cultural heritage sites contributing to the potential exceptional significance of the property are located in the buffer zone and that a judgement about the adequacy of boundaries and buffer zones relies on additional surveys and documentation to be provided.

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### Ownership

The ownership of the Tehuacán-Cuicatlán Valley falls into two different categories: private property and social property. Most of the land tenure is social property (*ejidos* and agrarian communities represent 98.5%, (143,053.34 ha). Private property equals 1.5% only, which corresponds to 2,201.85 ha. In Mexico, the two existing types of social properties – *ejidos* and communities – have a specific legal status: they cannot be subject to private appropriation until the land has been separated from the *ejido* or agrarian regime (which the 1992 New Agrarian Law made possible, acknowledging a long established fact). *Ejidos* are agrarian communities made up of at least 20 members who are granted the land they need for subsistence by presidential executive order. The *ejido* land can be divided into 3 different types: human settlement land; common use land; and parcels, which are allocated amongst the members.

### Protection

The Mexican Federal Law of Monuments and Archaeological, Artistic and Historical Zones (May 1972, extended and modified until January 2015) protects the cultural items belonging to the nominated property. Under the terms of this Law, they are “property of the Nation, inalienable and imprescriptible”, and a federal agency – the National Institute of Anthropology and History (INAH) – is entrusted with their protection. However, ICOMOS notes that 6 described cultural heritage sites (*11W Huerta de Xiquila*, *12W Acueducto de Xiquila*, *14 W Manantial de Santa Cruz*, *16W Tilapa 1*, *17W Tilapa 2*, and *20F Santa María Ixcatlán*) of the 22 proposed sites are currently not listed in the national registry of INAH, which suggests that their protection status in cultural heritage terms is not yet at the highest national level.

The Tehuacán-Cuicatlán Valley is fully included within the boundaries of the Tehuacán-Cuicatlán Biosphere Reserve (TCBR) in accordance with the Mexican General Law of Ecological Balance and Environmental Protection (January 1988, extended and modified until May 2016). This gives it the highest level of legal protection in natural heritage contexts. Yet, this Law also gives protection to the “natural environment of zones, monuments, and archaeological, historical and artistic vestiges” that are relevant to national and indigenous identities.

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ICOMOS considers that the legal protection in place is appropriate in natural heritage terms, but that 6 out of 22 archaeological sites do not yet enjoy highest national protection in cultural heritage terms.

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## Conservation

Most of the historical studies are dispersed, sometimes old (excavation reports on Mesoamerican sites), and several researched by official and academic institutions exist, such as Richard S. MacNeish's of the Peabody Museum, who led the main archaeological campaign within the "Archaeological-Botanic Project of Tehuacán" and published its results in 5 volumes between 1964 and 1972. Its purpose being to understand the transition from hunter-gatherers to agricultural societies, it focused on ceramics, chronology and irrigation, through a series of excavations. This model project paved the way for further research on archive material and excavations in pre-Hispanic Zapotitlán (in particular salt mines), studies on ceramics in different locations (recently Los Reyes Metzontla), and on water control systems and Mesoamerican agricultural techniques in Tehuacán (in particular the *Purrón Dam Complex* in 2015).

In the State Party's condition assessment, one site is considered "exceptional": *Manantial de Santa Cruz* (spring and series of canals); another one is "excellent": *Cuevas de las Manitas* (rock shelter), where the paintings are in good condition, albeit there are traces of soot and bats. Fourteen sites judged in "good" condition: *Aldea Preclásica, El Tetele Salinas las Grandes, Cuthá, Aldea Preclásica 2, Xiquila Aqueduct, Tilapa 1, and Tilapa 2*. However, damage or threats were identified in 6 of those "good" sites. In *Pueblo Mixteco* the slope has caused the emergence of a stream of water, which passes across the centre of the habitat structure. *Cerro la Yerba* has been altered by lotting and in *Huerta de Xiquila* the irrigation canals have collapsed in some places, due to landslides. Despite consolidation works in *Quiotepec* much of this site is still threatened by landslides; *Purrón Dam Complex*, there are graffiti and signs of looting as are in *Peña Colorada*.

The remaining 6 sites are considered in "fair" condition. In *Loma Tochenga* tombs have been looted, in *Tochigaa* pyramidal base has been partially destroyed, in *Cerro Castillo Rinconada* looters have dug into and ruined some structures. *Cueva de Coxcatlán* visitors have left signs of their presence and an inadequately added layer of concrete needs to be removed. In *Puente Colosal* crystallization on the walls obliterated parts of the pre-Hispanic paintings and in *Santa María Ixcatlán* archaeological remains have been reduced as a result of looting.

Few conservation works were undertaken in the past, which contributes to the authenticity of most sites described. However, it is also clear that consolidation is urgently needed to prevent further losses, landslides or collapses at some of the archaeological sites. The Management Plan presented addresses conservation predominantly based on natural heritage concerns, referring to restoration, by means of the recovery of areas with any degree of environmental degradation. In ICOMOS' view further focus on conservation activities for cultural heritage remains necessary and a cultural heritage conservation and maintenance plan should be

integrated within the overall management plan. Envisaged conservation measures should be included with clear information on methodologies, timeframe of intervention and resources allocated. ICOMOS recommends to continue involving local communities in conservation efforts to enable increased capacity to maintain cultural heritage through community guardianship models.

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Overall, the state of conservation of the presented archaeological sites is good to fair but they remain vulnerable and a programmed overall conservation approach is needed and should be integrated as a conservation and maintenance strategy within the management plan.

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## Management

Management structures and processes, including traditional management processes

Three key partner institutions collaborate in the administration of the property, the Secretariat of Environment and Natural Resources (SEMARNAT), the National Commission for Protected Natural Areas (CONANP) and the National Institute of Anthropology and History (INAH). The day-to-day management of the property however is driven by natural heritage management concerns and agencies, as INAH does not seem to have systematic presence within the property, where merely a few staff members are present at certain times. The Tehuacán-Cuicatlán Biosphere Reserve (TCBR) Office coordinates the site supervision and maintenance and is assisted by six sub-regional councils which supervise specific reserve territories. An Advisory Council is composed of representatives of each sub-council and responsible for the Annual Operative Plan. PROFEPA and INAH co-manage so-called local Surveillance Committees which are composed of community members.

Policy framework: management plans and arrangements, including visitor management and presentation

A strategic management plan was prepared by a team of SEMARNAT and CONANP specialists in 2016 and updated in 2017. It has been submitted in Spanish language with a brief summary of key arrangements in English language. The management plan divides the property into seven management subzones, with different degrees of protection. The majority of the property belongs to "subzone 1 for preservation" (133 781 ha) where no activity is allowed, while most cultural heritage resources are located in areas designated as "sustainable use for ecosystems". Revised every five years, the Plan is organised in six sub-chapters (protection, management, restoration, knowledge, culture, and administration), depending on the natural zoning and its main purpose is to conserve the biodiversity and the ecosystems, restore areas degraded by man or nature, foster scientific and

technical research, promote the participation of inhabitants and provide financial resources.

Despite some formally established coordination with INAH and a little more prominence of cultural heritage concerns in the latest revised version of the plan, cultural heritage is not treated as equal as for Natural heritage. However, a specific Plan for the Management and Protection of the archaeological resources joined this management plan under preparation of supervision of the Operation of Sites Office (*Dirección de Operación de Sitios*) of the National Archaeology Coordination (*Coordinación Nacional de Arqueología*). ICOMOS notes that the document presents a series of overarching activities and directives but no details on how or when these will be implemented. It therefore reads more as a detailed analysis of the cultural heritage sites, providing details as to their layout and condition n previously presented, but not a management plan. The lack of adequate documentation beyond these descriptions is not addressed in the management plan in which further surveys or research does not feature prominently.

In terms of staff capacities, the TCBR Management Plan includes regular participation in training courses (on conservation, forest fires, environment regulation, nature tourism, GIS, site signage, restoring cave paintings), run by Mexico City Universities, INAH and others. In turn, the Reserve technicians train members of the Local Surveillance Committee. At present, the department of the Protected Natural Area (PNA) in the TCBR employs 15 staff: among them, 2 field technicians are in charge of forest fires and disease, and of endangered species; a third technician is specialised in goat livestock management; a co-ordinator works in co-operation with the Global Environmental Fund of the United Nations; 2 staff supervise education and communication activities; an executive staff member processes the PNA administration; 6 park rangers perform the Reserve surveillance. INAH employs ten staff in its Oaxaca and Puebla centres: two directors, five archaeologists, two museum specialists, and one guard supported by the committees of rangers organised within the communities.

At present, ICOMOS has not been provided with a clear understanding of the presence and involvement of cultural heritage professionals at the site. The personnel concerned with cultural heritage appears to be far too few to deal with the immensity of cultural heritage resources in the Tehuacán-Cuicatlán Valley and will not facilitate adequate supervision, not to speak of implementation of management activities in such a large area. Although reinforcement is envisaged in the future, this staffing level makes it impossible to adequately survey and monitor the property.

The cultural heritage management plan for the proposed property presents visitor infrastructures available at the property. The management plan does not provide a future strategy for visitors, which is outlined in its counterpart plan for natural heritage resources and exclusively driven by focus on these. According to the TCBR tourism

strategy developed by CONANP, signposts guide visitors to a few historical places.

In response to ICOMOS' previous concern related to possible threats associated with tourism within the archaeological sites, generic information on the intention to consider physical, real and effective carrying capacities to the property was provided in the additional information. However, no further information is provided as to how and when the shall occur and what responses it might generate.

The TCBR Management Plan covers aspects of ordinary risk preparedness (water resources, forest fires, vandalism, surveillance of archaeological sites, biodiversity protection). Together with the Mexican National Civil Protection System (SINAPROC), CENAPRED helps cope with exceptional hazards (floods, cyclones and landslides) and prepares risk maps, assessments and guidelines.

#### Involvement of the local communities

Local communities are strongly involved in the surveillance and maintenance of the archaeological sites throughout the property, under the monitoring of CONANP and INAH. The strategic management plan foresees to further include the communities in the conservation, management and protection of the historic and archaeological remains. Community representatives do a remarkable job, but their capacity and recognition should be strengthened in order to cope with the seriousness of threats. Local communities take part in decision-making for the governance of the Tehuacán-Cuicatlán Biosphere Reserve and in the regional councils that operate in this area, to which they can present their experience and opinions.

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ICOMOS considers that the management system continues to lack focus on cultural heritage components and that current staffing levels are inadequate to respond to the immense challenge of documenting and monitoring the cultural heritage in the Tehuacán-Cuicatlán Valley.

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## 6 Monitoring

A partnership of civil service organisations (CONANP, CONABIO, CONAFOR) monitor the biodiversity of the Valley, in cooperation with the TCBR Office. The State Party has identified 9 key indicators to survey the archaeological sites. INAH will collect data and analyse these, with the support of CONANP and of the National Institute of Statistics and Geography (INEGI).

While the indicators refer to a number of external factors, such as erosion, illegal excavation, traditional use and visitation, the state of physical decay and degradation of the cultural heritage resources might have to be given further emphasis. At present, staff capacities are hardly sufficient to carry out meaningful monitoring exercises at a regular basis and ICOMOS recommends strengthening

the presence of cultural heritage professionals in the Tehuacán-Cuicatlán Valley.

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ICOMOS considers that the monitoring measures for the cultural heritage components could be reinforced by means of considering aspects of decay and degradation at more frequent intervals based on strengthened staff levels within the property and to combine monitoring and survey efforts in the buffer zone.

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## 7 Conclusions

Although what has been nominated are three large areas of landscape within the Tehuacán-Cuicatlán Valley, the serial nomination is not put forward as a cultural landscape but rather as an ensemble of 22 archaeological sites that pinpoint certain stages in the evolution of the Valley. These stages include evidence of early plant domestication, horticultural villages, irrigated agriculture, evidence for salt extraction and the development of pottery. The evidence is thus spread across the landscape with few clear inter-relationships between the sites. Although some sites were excavated and recorded in the 1960s, many other sites await more detailed investigation, as acknowledged by the State Party. Furthermore, the 22 sites are only the tip of the iceberg as overall over 600 sites are known to exist.

The idea that an ensemble of a small number of sites can be seen as exceptional within Mesoamerica for their reflection of the particular way societies developed has not been substantiated in the details provided or through comparisons with other sites.

What does begin to emerge, however, is the possibility that the Tehuacán-Cuicatlán Valley can be differentiated through evidence for the emergence of irrigation. A complex water management system is suggested with ten types of sites, including: wells, dams, canals, fields for rain-fed agriculture, fields for flood irrigation, fields on terraces, rock aqueducts, filtration galleries, and large square water catchment wells, most of them dating to between 800-700 BC.

But although details are provided of some of the larger of these sites, such as the Purrón Dam Complex, the Santa María canal and the Xiquila aqueduct, no clear picture emerges of the overall system or of the smaller elements such as catchment wells, or different types of agricultural fields, nor is evidence presented to suggest how widespread across the landscape these features were. Perhaps some of the remaining 600 sites reflect these details and can augment the evidence.

ICOMOS considers that if this particular element of the Tehuacán-Cuicatlán Valley could be presented in much greater detail and via a landscape approach, it might provide the basis for the Valley or parts of the Valley to be seen as an outstanding reflection of the emergence of irrigation-based agriculture in Mesoamerica. What would

be needed is an overview of what sites are known in the Valley as a context for maps, descriptive plans, and discussion of the overall irrigation system and how and when it functioned, and more detailed comparisons within the geo-cultural Mesoamerican area.

## 8 Recommendations

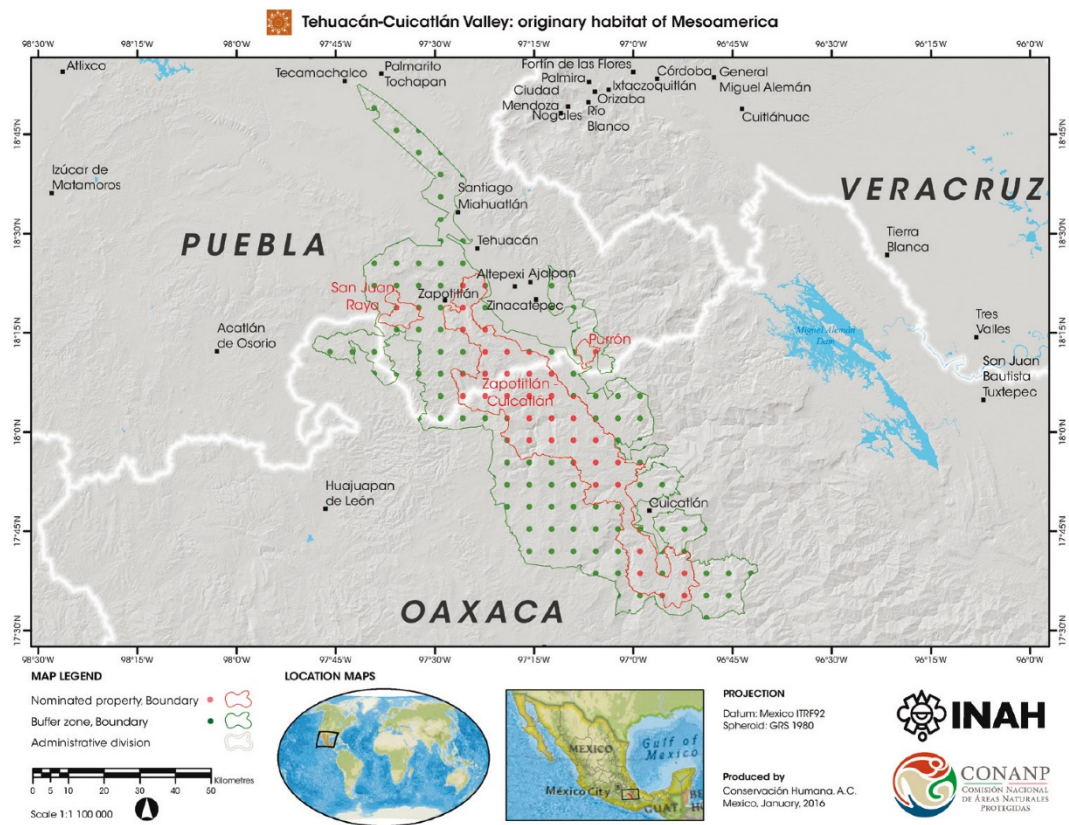
ICOMOS recommends that the World Heritage Committee adopts the following draft decision, noting that this will be harmonised as appropriate with the recommendations of IUCN regarding its evaluation of this mixed site nomination under the natural criteria and included in the working document WHC/18/42.COM/8B.

### Recommendations with respect to inscription

ICOMOS recommends that the examination of the nomination of the Tehuacán-Cuicatlán Valley: originary habitat of Mesoamerica, Mexico, to the World Heritage List in relation to cultural criteria, be **deferred** in order to allow the State Party with the advice of ICOMOS and the World Heritage Centre, if requested, to:

- a) Consider a revised nomination, in revised boundaries, based on a broader selection of cultural heritage evidence which is focused on the early horticultural community settlement processes in Mesoamerica, as well as the intricate and complex water irrigation systems which facilitated these processes;
- b) Undertake further surveys, research and documentation of cultural heritage sites in the Tehuacán-Cuicatlán Valley, including in areas currently located outside the property boundaries, related to irrigation systems and settlements these enabled in the context of an overall assessment of the several thousand known sites in the valley;
- c) Complete the legal protection of the relevant cultural heritage resources to be recognized at highest levels appropriate, including the full recognition at national level of the sites presently proposed;
- d) Further detail the envisaged implementation of management, research and monitoring activities for cultural heritage within the strategic management plan, integrating also conservation and maintenance as well as visitor management provisions, and ensure that this plan is formally adopted by cultural heritage authorities at the national level;
- e) Strengthen the overall human and financial resources for management of cultural assets within the Tehuacán-Cuicatlán Valley,

ICOMOS considers that any revised nomination would need to be considered by an expert mission to the site.



Map showing the revised boundaries of the nominated property



Cueva de Coxcatlán



View over Tehuacán-Cuicatlán Valley