

Signs

RECOMMENDATIONS & DESIGNS

PHASE 1



HIGHWAY & ROAD SIGNAGE
IN THE PROTECTED AREAS OF NICARAGUA



MINISTERIO DEL AMBIENTE Y LOS RECURSOS NATURALES
MARENA

SIGNS

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INTRODUCTION AND BACKGROUND

1.0

1.1 PURPOSE AND SCOPE OF PROJECT

This project evaluates the current roadside signage “existing situation” in the seven Nicaraguan protected areas participating in the MARENA/USAID Comanagement project (COMAP) (Table 1) and provides recommendations for improvements which will help MARENA, NGOs and local communities achieve their management objectives.

This project does not address signage needs for trails, interpretation or general visitor orientation and information needs inside the protected areas. Thus, this work is considered “Phase I” of the signage needs for these protected areas. Phase II of signage needs for these protected areas should consist of development of an individual “sign plan” for each of the seven comanaged protected areas.

Detailed sign designs are provided to help guide the development of recommended signs. The recommended sign designs are in accordance with Government of Nicaragua Ministry of Transportation signage guidelines for metal primary road signs and MARENA signage guidelines for wooden secondary road signs.

Table 1		NICARAGUA PROTECTED AREAS IN THE COMANAGEMENT PROJECT AND THEIR NGO COMANAGERS
	Protected Area	(NGO comanager)
1	Reserva Natural El Chocoyero - El Brujo	(NGO- CENADE)
2	Reserva Natural Isla Juan Venado	(NGO- FUNCOD)
3	Reserva Natural Estero Padre Ramos	(NGO- SELVA)
4	Reserva Natural Tisey-Estanzuela	(NGO- FIDER)
5	Reserva Natural Cerro Musún	(NGO- FUNDENIC)
6	Reserva Natural Volcán Cosigüina	(NGO- SELVA)
7	Reserva Natural Volcán Mombacho	(NGO- Fundación Cocibolca)



1.2 FIELDWORK AND TEAM

Field work for this project was undertaken from 25 May to 14 June 2003. The primary technical assistance team was comprised of Jerry Bauer, Jerry Wylie, Jorge Paniagua and Sandra Coria, all from USDA Forest Service International Institute of Tropical Forestry and/or Heritage Design Enterprise Team. Field assistance was provided by MARENA staff and NGO comanagement staff at each protected area.

All protected areas, except Reserva Natural Cerro Musún, were visited at least one time. Due to lack of time the team was not able to visit the Cerro Musún reserve, although they did meet with the protected area Director to discuss signage existing situation and future needs and they were able to use data collected by one team member from a March 2003 trip to this area. Some areas were visited two or three times to collect more detailed information. Primary and secondary roads areas were inspected to evaluate the current situation and to help formulate recommendations for signage needs.



EXISTING SITUATION

2.0

2.1 PRIMARY ROADSIDE SIGNS

Currently there are almost no roadside signs along primary routes providing directions to or information about protected areas. Only one or two cases were observed where such a sign existed and these existing signs did not meet Government of Nicaragua's Department of Transportation specifications. Existing signage at major intersections and critical areas along primary highways for each of the seven protected areas is shown in Maps 1-14.

2.2 SECONDARY ROADSIDE SIGNS

There is great variation in existing secondary roadside signage between protected areas (Figures 1 & 2). Some areas have many signs and some few to none. In most instances, the existing signage consist of "project promotional" signs rather than directional or informational signs for motorist and visitors. Existing signage at major intersections and critical areas along secondary roads for each of the seven protected areas is shown in Maps 1-14.



Figure 1

Examples of current welcome signs at Natural Reserve entrances and visitor centers

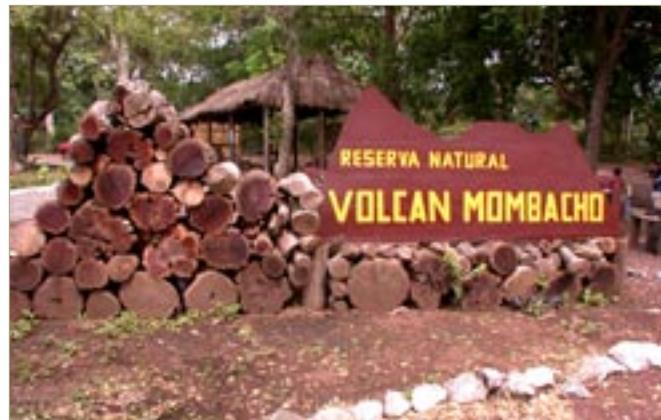


Figure 2

Examples of current directional signs at Natural Reserve





DISCUSSION OF SIGNAGE

3.0

3.1 WHAT MAKES A GOOD SIGN?

Effective directional or informational signs follow a set of simple guidelines. These include the following rules of thumb:

MATERIALS

- Use high-tech synthetic materials (plastic, metal) along highways and in highly developed settings.
- Use natural and unfinished materials and styles (wood, stone) in more rustic settings.

DESIGN

- Keep sign design simple and uncluttered
- Focus on primary message.
- Maintain empty space (“white space”), especially on margins.
- Limit the use of logos to signs at visitor centers or administrative headquarters.
- Keep logos small, similar size, and at the bottom of the sign.
- Use light colored letters on a dark background.
- Orient directional arrows so that they point away from the text.
- Place all directional arrows together on the same side of the sign.
- Be sure directional arrows are large enough to be visible from a distance.
- Place the most important information toward the top of the sign panel.
- Consider using special features of the protected area in the sign design (for example the shape of a volcano as an icon or the shape of the sign.)

TEXT

- Use as few, simple words as possible.
- Use an easy-to-read san serif font style (for example ARIAL BLACK or HELVITICA).
- Use capital letters in titles and in short, directional signs.
- Avoid all capital letters in long text.
- Provide adequate spacing between letters, words, and lines of text.
- Avoid using more than 2 different font styles in a small sign.
- Do not try to put all the information for a protected area in a single sign.
- Give readers only the information they need at a specific location.
- Adjust the size of letters to the viewing distance.
- Emphasize the most important information with the largest font size.

SITE SELECTION

- Place signs at intersections where the public could be confused or require specific information.
- Locate signs where they can be easily read by a moving vehicle or by visitors walking.
- Avoid placing signs where they interfere with natural processes or obstruct scenic views.
- Avoid placing signs where they create safety hazards.
- The faster the vehicle movement, the more the viewer is focused toward the center of the roadway (smaller cone of view) and the closer signs need to be to the road.
- Locate signs where they will not be obscured by other signs and obstacles.
- Avoid adding to a roadside sign clutter (“sign fiesta”).
- Signs placed high above the roadway may not be illuminated by vehicle headlights at night, and thus hard to read.

SIGN SUPPORTS AND ORIENTATION

- Support the sign panel at the proper viewing height (eye level).
- Raise sign panels above ground vegetation and other possible obstructions.
- Orient signs so they can be viewed from on-coming vehicle traffic.
- Construct sign supports strong enough to support the weight of the sign panels.

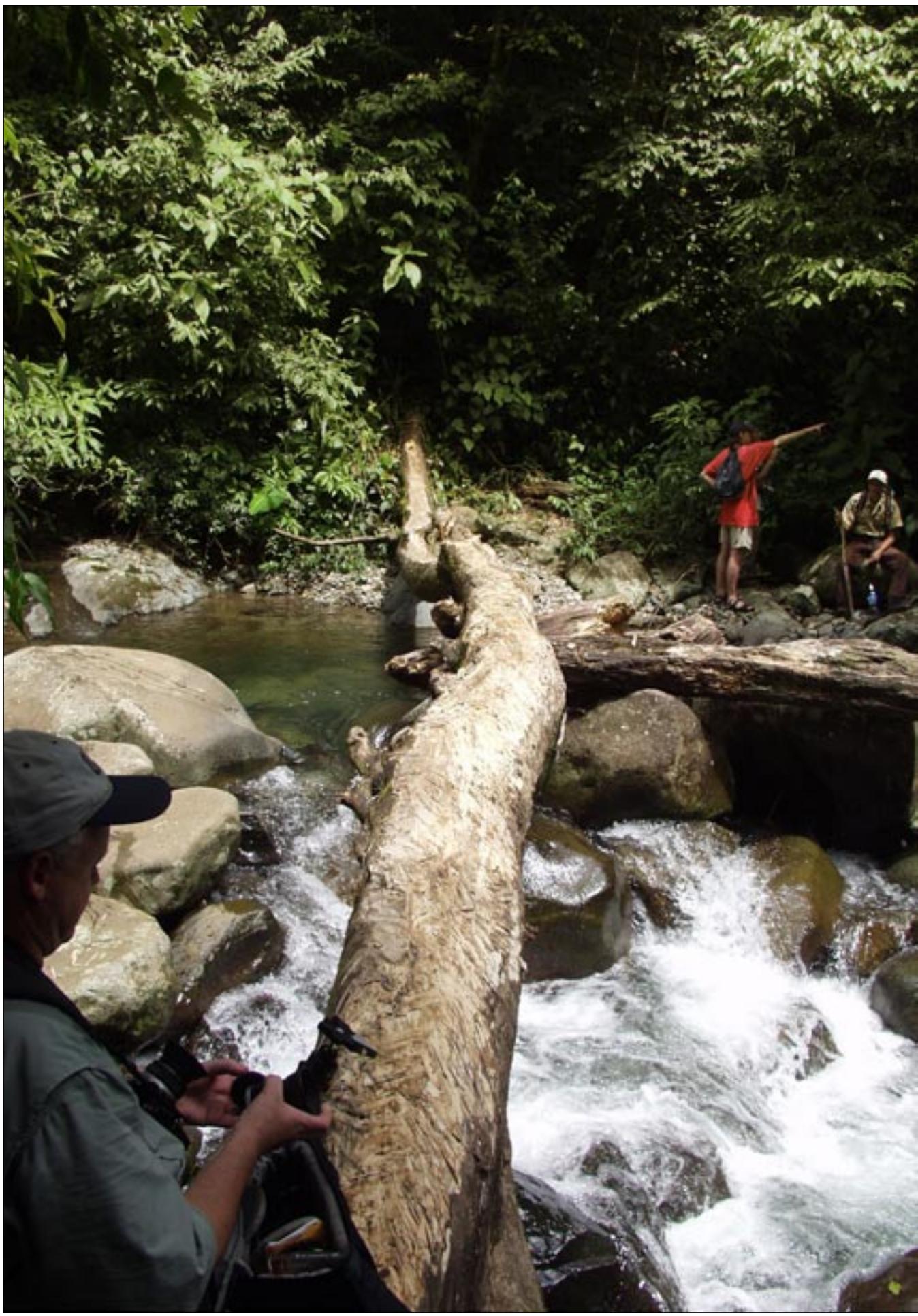
3.2 EXAMPLE OF SIGN DESIGN

Proper sign design is essential for the sign to be an effective communication tool. Each sign should only provide the needed information to the motorist or park visitor under a given situation, condition or location. Signs should be designed so that they are “safe”. They should not be a distraction, especially for the motorist who must take his eyes off the road in order to view and understand the sign message. Figure 3 shows a graphic example of a poorly designed sign and a well designed sign.



Figure 3
Example of good and bad sign design





RECOMMENDED ROADSIDE SIGNAGE TYPES FOR NICARAGUA'S PROTECTED AREAS

After the field reconnaissance and analysis of the existing situation, eight types of roadside sign types for protected areas are being recommended for use along primary and secondary roads. Together these signs represent a unified “family” or system of signs because of their uniformity of design and coordinated placement (Table 2).

Two types of metal signs are recommended -- those used along major highways, and those placed along city streets. **Highway approach signs** alert drivers to an upcoming intersection. These show the name of the protected area and an upcoming entrance (“la entrada a 300 metros”). Upon arriving at an intersection, visitors see a **directional sign** that indicates the park direction with an arrow and a distance in kilometers. **City signs** are similar, with a name and arrow, but not distances, and they are smaller (20”x 30”).

Local wooden signs are recommended outside of small towns and villages and within or approaching protected areas. This rustic style of sign is more appropriate to rural settings. They include two to four horizontal wooden panels mounted on two vertical wooden posts. **Directional signs** show the way to the protected area and, when appropriate, the visitor center or administrative headquarters. They include the name of the protected area, an arrow, and in some cases distance in kilometers (kilometers may be omitted after the first sign). Directional signs should be located at all key intersections where visitors could become confused.

Welcome signs can be placed at the legal or psychological entrance to the protected area. If there is no such key location, the welcome sign can be used in front of the visitor center or administrative headquarters. The top panel of this sign will have “BIENVENIDOS” (welcome) and the second panel will show the name under “RESERVA NATURAL” (Natural Reserve). Welcome signs at park entrances can also show the direction and distance to the visitor center, whereas signs at visitor centers may have logos on the third panel.

Small wooden signs can be used to identify **names of communities** and **parking areas**.

Kiosks are the last category of roadside signage. From 2 to 6 different panels can be included, and the kiosks can be roofed or unroofed. Individual panels can include basic visitor information -- such as maps, visiting hours, prices and regulations – as well as more detailed interpretive messages. This is a flexible system; any number of panels and kinds of information can be presented in a kiosk depending on the needs and opportunities within each protected area. Panels can be printed on inexpensive vinyl or on more durable materials. Prices range from US\$35 in the vinyl to US\$400-500 for a 24” x 36” durable panel. The vinyl can last a year and the external-grade durable plastic panels are guaranteed up to 20 years. Their life can be extended if they are in a protected location.



Table 2 FAMILY OF SIGNS FOR ROADSIDE SIGNAGE IN NICARAGUA'S PROTECTED AREAS

Highway Signs	
1	Approach (name & distance in meters, arrow)
2	Directional (name & distance in kilometers, arrow)
Local Park Signs	
3	Welcome (portal or visitor center)
4	Directional (name & distance in kilometers, arrow)
City Signs	
5	Name and arrow
Small Miscellaneous Signs	
6	Community Name
7	Parking
Kiosk	
8	Panels (2-6 possible)
•	Park Information (hours, prices, regulations, etc.)
•	Protected Area orientation map
•	Things to do in the protected area
•	SINAP map
•	Interpretive Panel
•	Notices (blank panel for regulations)



SIGN SPECIFICATIONS

5.0

Sign specifications are made following the Government of Nicaragua's Ministry of Transportation for metal primary highway signs and MARENA's internal regulations for wooden secondary road and inside protected area signs. Refer to the References Cited section of this report if further detail on specifications is desired.

5.1 HIGHWAY SIGNS

Metal Highway Approach Signs

Figure 4 shows the sign specifications for metal highway approach signs.

Metal Highway Directional

Figure 5 shows the sign specifications for metal highway directional signs.

5.2 LOCAL PARK SIGNS

Welcome

Figure 6 shows the sign specifications for wood welcome signs.

Directional

Figure 7 shows the sign specifications for wood directional signs.

5.3 CITY SIGNS

Metal City Directional Signs

Figure 8 shows the sign specifications for metal city directional signs.

5.4 SMALL MISCELLANEOUS SIGNS

Community Name

Figure 9 shows the sign specifications for wood community name signs.

Parking

Figure 10 shows the sign specifications for wood parking signs.

5.5 KIOSK

Panels

Figure 11 shows the sign specifications for kiosk panels.

Figure 4. Metal highway approach sign specifications.



Dimensiones	ancho	largo
A Panel 1	262.6 cm	x 91 cm
B Panel 2	151.6 cm	x 91 cm

Fuentes

FuturT Demi	75%
C 765 pts	18 cm de altura
D 574 pts	14 cm de altura
E 710 pts	16 cm de altura
F 525 pts	12 cm de altura
G Flechas	25 cm x 25 cm

Colores

Letras blancas reflectivas sobre café
Café equivalente a Pantone 39-1 C

Figure 5. Metal highway directional sign specifications.



Dimensiones	ancho	largo
A Panel 1	262.6 cm	x 91 cm
B Panel 2	151.6 cm	x 91 cm

Fuentes

FuturT Demi	75%
C 765 pts	18 cm de altura
D 574 pts	14 cm de altura
E 710 pts	16 cm de altura
F 525 pts	12 cm de altura
G Flechas	25 cm x 25 cm

Colores

Letras blancas reflectivas sobre café
Café equivalente a Pantone 39-1 C

Figure 6A. Wood protected area welcome sign specifications.

Type 1



Medidas

		ancho	largo	grosor
A	Panel 1	18"	x	72" x 2"
B	Panel 2	12"	x	72" x 2"
C	Panel 3	8"	x	72" x 2"

Fuentes

D	FuturT Demi	620 pts	75%
E	FuturT Demi	420 pts	75%
F	FuturT Demi	380 pts	100%
G	FuturT Demi	380 pts	75%

H Flechas 10"x8"

I Entre tablón 2"

J Logos 9" de Altura

Colores

Letras amarillo caterpillar sobre café oscuro

Amarillo caterpillar equivalente a Pantone 18-3 c

Café oscuro equivalente a Pantone 497 m

Figure 6B. Wood protected area welcome sign specifications.

Type 2



Medidas

A Panel 1

ancho

largo

grosor

B Panel 2

18" x

72" x

2"

C Panel 3

12" x

72" x

2"

D Flechas

8" x 2"

E Entre tablón

2"

F Logos

9" de Altura

Fuentes

D FuturT Demi

620 pts

75%

E FuturT Demi

420 pts

75%

F FuturT Demi

380 pts

100%

G FuturT Demi

380 pts

75%

Colores

Letras amarillo caterpillar sobre café oscuro

Amarillo caterpillar equivalente a Pantone 18-3 c

Café oscuro equivalente a Pantone 497 m

Figure 6C. Wood protected area welcome sign specifications. Type 3



Medidas				Fuentes		
	ancho	largo	grosor			
A Panel 1	18"	x	72" x	2"	D FuturT Demi	620 pts 75%
B Panel 2	12"	x	72" x	2"	E FuturT Demi	420 pts 75%
C Panel 3	8"	x	72" x	2"	F FuturT Demi	380 pts 100%
				G FuturT Demi	380 pts	75%
H Flechas	10"x8"					
I Entre tablón	2"					
J Logos	9" de Altura					

Colores

Letras amarillo caterpillar sobre café oscuro
Amarillo caterpillar equivalente a Pantone 18-3 c
Café oscuro equivalente a Pantone 497 m

Figure 7A. Wood protected area directional sign specifications.

Type 1



Medidas	ancho	largo	grosor	Fuentes		
A Panel 1	18" x	72" x	2"	D FuturT Demi	620 pts	75%
B Panel 2	12" x	72" x	2"	E FuturT Demi	420 pts	75%
C Panel 3	8" x	72" x	2"	F FuturT Demi	380 pts	100%
G				G FuturT Demi	380 pts	75%
H Flechas	10"x8"					
I Entre tablón	2"					
J Logos	9" de Altura					

Colores

Letras amarillo caterpillar sobre café oscuro
Amarillo caterpillar equivalente a Pantone 18-3 c
Café oscuro equivalente a Pantone 497 m

Figure 7B. Wood protected area directional sign specifications.

Type 2



Medidas	ancho	largo	grosor
A Panel 1	18" x	72" x	2"
B Panel 2	12" x	72" x	2"
C Panel 3	8" x	72" x	2"
H Flechas	10"x8"		
I Entre tablón	2"		
J Logos	9" de Altura		

Fuentes			
D FuturT Demi	620 pts	75%	
E FuturT Demi	420 pts	75%	
F FuturT Demi	380 pts	100%	
G FuturT Demi	380 pts	75%	

Colores

Letras amarillo caterpillar sobre café oscuro
Amarillo caterpillar equivalente a Pantone 18-3 c
Café oscuro equivalente a Pantone 497 m

Figure 7C. Wood protected area directional sign specifications.

Type 3



Medidas

		ancho	largo	grosor
A	Panel 1	18"	x	72" x 2"
B	Panel 2	12"	x	72" x 2"
C	Panel 3	8"	x	72" x 2"
H	Flechas	10"x8"		
I	Entre tablón	2"		
J	Logos	9" de Altura		

Fuentes

D	FuturT Demi	620 pts	75%
E	FuturT Demi	420 pts	75%
F	FuturT Demi	380 pts	100%
G	FuturT Demi	380 pts	75%

Colores

Letras amarillo caterpillar sobre café oscuro
Amarillo caterpillar equivalente a Pantone 18-3 c
Café oscuro equivalente a Pantone 497 m

Figure 7D. Wood protected area directional sign specifications.

Type 4



Medidas

		ancho	largo	grosor
A	Panel 1	18"	x	72" x 2"
B	Panel 2	12"	x	72" x 2"
C	Panel 3	8"	x	72" x 2"
H	Flechas	10"x8"		
I	Entre tablón	2"		
J	Logos	9" de Altura		

Fuentes

D	FuturT Demi	620 pts	75%
E	FuturT Demi	420 pts	75%
F	FuturT Demi	380 pts	100%
G	FuturT Demi	380 pts	75%

Colores

Letras amarillo caterpillar sobre café oscuro
Amarillo caterpillar equivalente a Pantone 18-3 c
Café oscuro equivalente a Pantone 497 m

Figure 7E. Wood protected area directional sign specifications.

Type 5



Medidas	ancho	largo	grosor	Fuentes		
A Panel 1	18"	x	72"	x	2"	D FuturT Demi 620 pts 75%
B Panel 2	12"	x	72"	x	2"	E FuturT Demi 420 pts 75%
C Panel 3	8"	x	72"	x	2"	F FuturT Demi 380 pts 100%
H Flechas	10"x8"			G FuturT Demi 380 pts	75%	
I Entre tablón	2"					
J Logos	9" de Altura					

Colores

Letras amarillo caterpillar sobre café oscuro
Amarillo caterpillar equivalente a Pantone 18-3 c
Café oscuro equivalente a Pantone 497 m

Figure 7F. Wood protected area directional sign specifications.

Type 6



Medidas

A Panel 1 18" x 72" x 2"

B Panel 2 12" x 72" x 2"

C Panel 3 8" x 72" x 2"

H Flechas 10"x8"

I Entre tablón 2"

J Logos 9" de Altura

Fuentes

D FuturT Demi 620 pts 75%

E FuturT Demi 420 pts 75%

F FuturT Demi 380 pts 100%

G FuturT Demi 380 pts 75%

Colores

Letras amarillo caterpillar sobre café oscuro

Amarillo caterpillar equivalente a Pantone 18-3 c

Café oscuro equivalente a Pantone 497 m

Figure 8. Metal city directional sign specifications.



Dimensiones

		ancho	largo
A	Panel 1	262.6 cm	x 91 cm
B	Panel 2	151.6 cm	x 91 cm

Fuentes

FuturT Demi	75%	
C	765 pts	18 cm de altura
D	574 pts	14 cm de altura
E	710 pts	16 cm de altura
F	525 pts	12 cm de altura
G	Flechas	25 cm x 25 cm

Colores

Letras blancas reflectivas sobre café
Café equivalente a Pantone 39-1 C

Figure 9. Wood protected area community sign specifications.



Medidas

A Panel 1 18" x 72" x 2"

B Panel 2 12" x 72" x 2"

C Panel 3 8" x 72" x 2"

H Flechas 10"x8"

I Entre tablón 2"

J Logos 9" de Altura

Fuentes

D FuturT Demi 620 pts 75%

E FuturT Demi 420 pts 75%

F FuturT Demi 380 pts 100%

G FuturT Demi 380 pts 75%

Colores

Letras amarillo caterpillar sobre café oscuro

Amarillo caterpillar equivalente a Pantone 18-3 c

Café oscuro equivalente a Pantone 497 m

Figure 10. Wood parking sign specifications



Medidas				Fuentes		
	ancho	largo	grosor			
A Panel 1	18" x	72" x	2"	D FuturT Demi	620 pts	75%
B Panel 2	12" x	72" x	2"	E FuturT Demi	420 pts	75%
C Panel 3	8" x	72" x	2"	F FuturT Demi	380 pts	100%
				G FuturT Demi	380 pts	75%
H Flechas	10"x8"					
I Entre tablón	2"					
J Logos	9" de Altura					

Colores

Letras amarillo caterpillar sobre café oscuro
Amarillo caterpillar equivalente a Pantone 18-3 c
Café oscuro equivalente a Pantone 497 m

Figure 11A

Example of kiosk structure

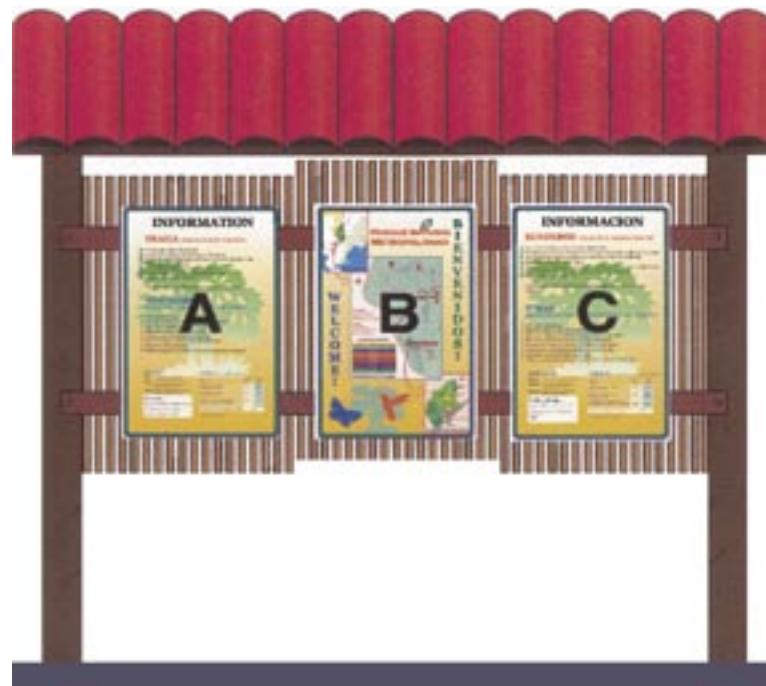
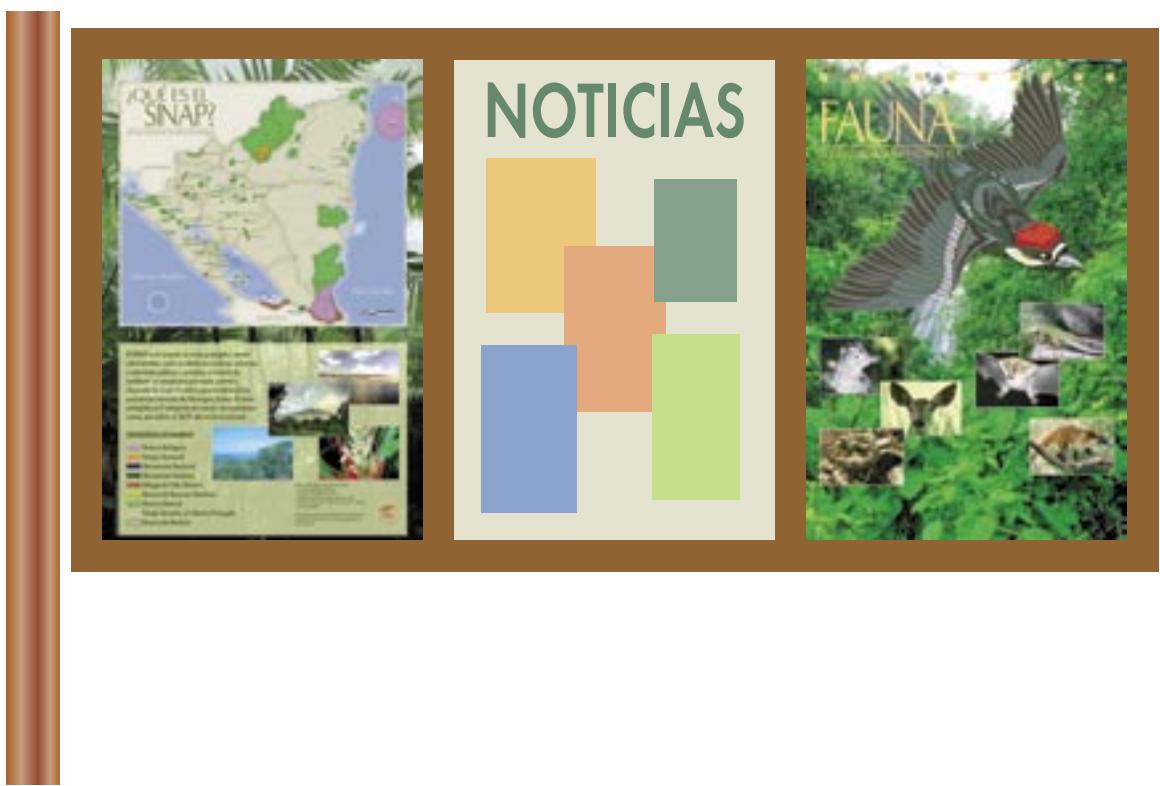


Figure 11B

Illustrative kiosk panel specifications





SUMMARY OF RECOMMENDATIONS

6.0

The existing signage situation is indicated on a series of maps, with photographs of the key intersections and existing signs and recommendations for sign placement are given (Maps 1 to 14). Tables 3-9 contain detailed information on sign placement and the priority of the action. Priority of sign action is ranked from 1 to 3, with 1 being immediate, 2 med-term (3-6 months) and 3 long-term (1 year). Detailed sign design for each of the eight recommended sign types is given in Figures 15 to 21.

A text summary of the recommendations is given on separate pages for each of the protected areas.



6.1 RESERVA NATURAL EL CHOCOYERO - EL BRUJO

(MAPS 1A, 1B & 2A, 2B)

Intersection A (Highway 4). There are currently no signs at this intersection to indicate this is the turn to El Chocoyero - El Brujo. We recommend two metal directional signs be installed on the right shoulder immediately before the turn, one from each direction.

Intersection B. This intersection is located at the northern edge of the community of Ticuantepe. Another metal highway directional sign placed at the top of the "Y" of the turn would help direct visitors to the Natural Reserve.

Intersection C. There are presently two wooden signs at this critical intersection, one large "Bienvenidos" (welcome) sign immediately adjacent to the hairpin turn, and the other one on the right hand shoulder across the road. We recommend both signs be removed. The big welcome sign should be replaced with a redesigned entrance sign and reoriented at its current location so that it can be seen from both directions. In addition, two new metal approach signs should be installed along the roadway 300 meters in both directions from the intersection to alert drivers to this turn.

Intersections D-L. There are currently small wooden signs, some in the shape of an arrow, with distances in kilometers to the visitor center located at all intersections except G. Although these are adequate, we suggest that they be upgraded to the recommended design to coincide with the opening of the new visitor center and serve as a model for other protected areas.

The sign at intersection E is especially important. There are two secondary road routes into the Reserve and the current sign shows two arrows. This could cause problems. The route to the left is presently impassable due to erosion and, more important, forcing visitors to choose one over the other can be confusing. One option is to show only the right arrow on the redesigned sign. An alternative is to design a sign with the option to show one or the other route depending on which is in better condition at that time. This can be done by painting both the left and right arrows and covering the one not recommended with a brown piece of wood.

Location M. There is a "Bienvenidos" (welcome) sign situated at the parking lot directly in front of the new visitor center building. A slightly revised version of this sign should be installed. It should be raised slightly and repositioned so that it is not obstructed by parked cars.



Table 3 SIGN RECOMMENDATIONS SUMMARY, RESERVA NATURAL EL CHOCOYERO - EL BRUJO

Junction	Sign Type	Distance	Arrow	Action	Priority
A	2	17 km	<	install	1
A	2	17 km	>	install	1
B	2	? km*	>	install	1
C	1	300 m	<	install	1
C	1	300 m	>	install	1
C	3	7 km	<	remove	1
C	3	7 km	>	replace	2
D	4	•	>	replace	1
E	4	•	>	replace	1
F	4	•	>	replace	1
G	•	•	•	none	•
H	4	•	<	replace	1
I	4	•	>	replace	1
J	4	•	>	replace	1
K	4	•	<	replace	1
L	4	•	>	replace	1
M	3	•	•	replace	1

* Km distances must be verified

Sign Type Key

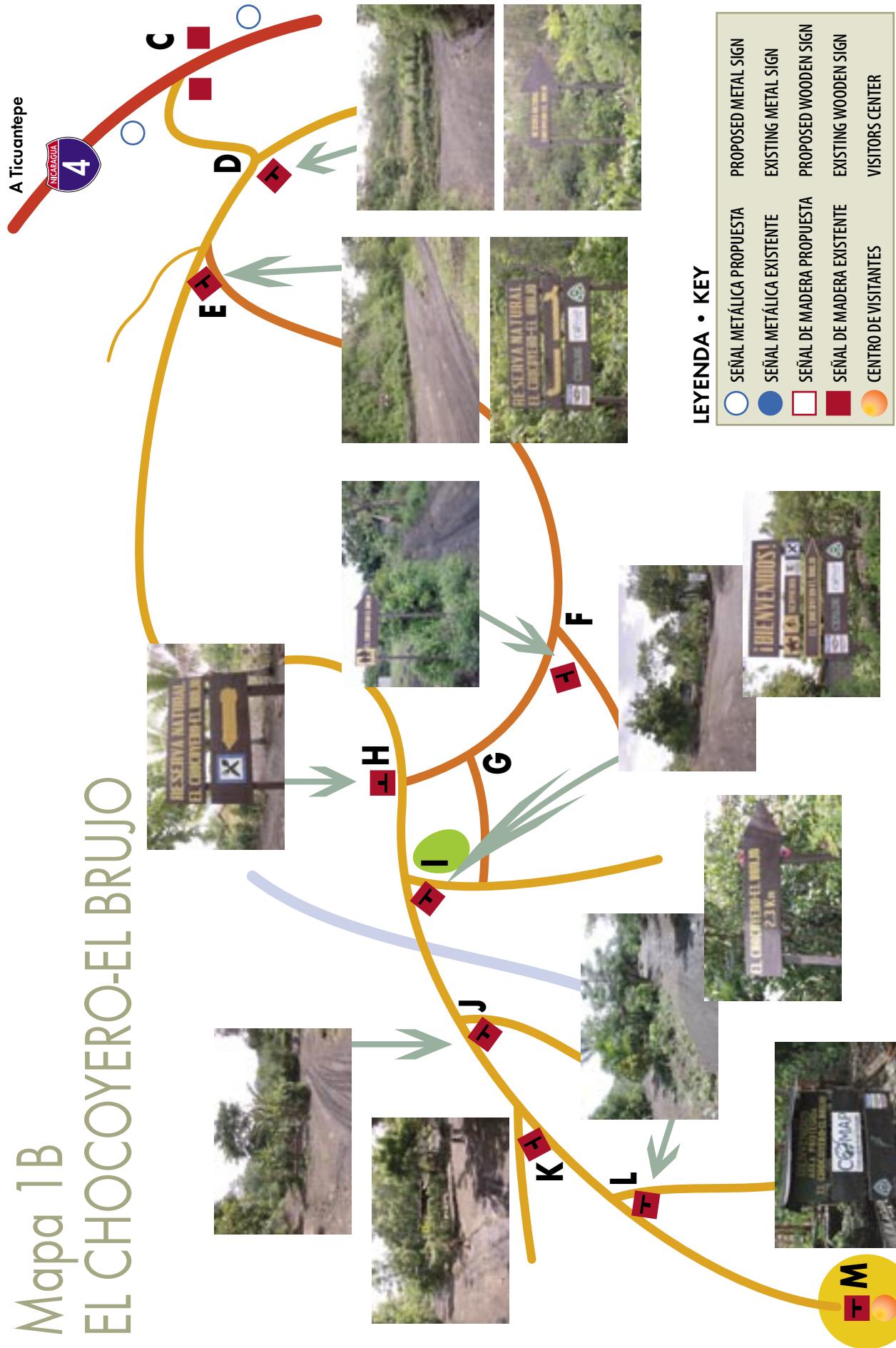
1	metal highway approach	5	metal city
2	metal highway directional	6	wood community name
3	wood welcome	7	wood parking
4	wood directional	8	kiosk



Mapa 1A EL CHOCOYERO-EL BRUJO



Mapa 1B EL CHOCOYERO-EL BRUJO

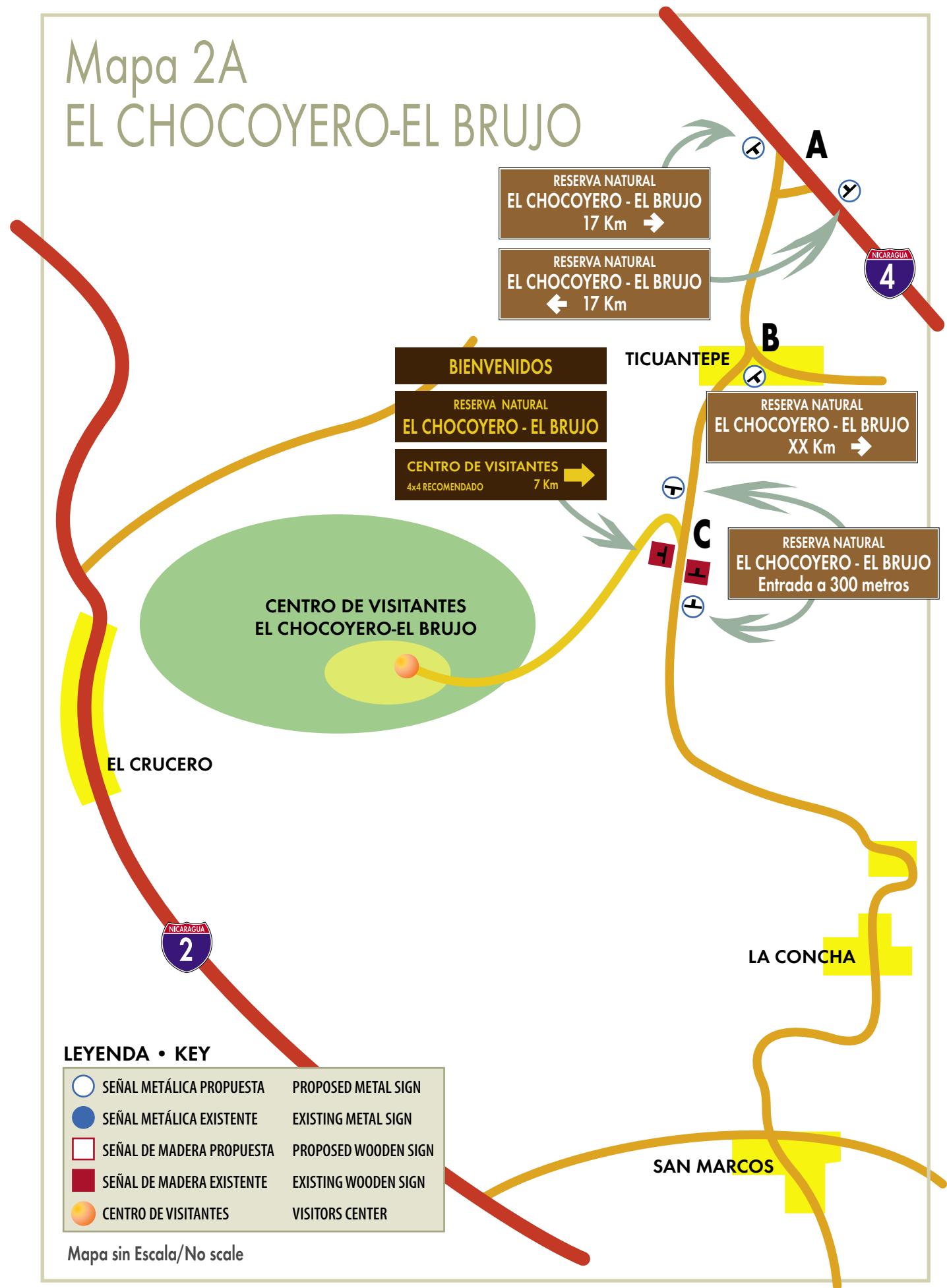


LEYENDA • KEY

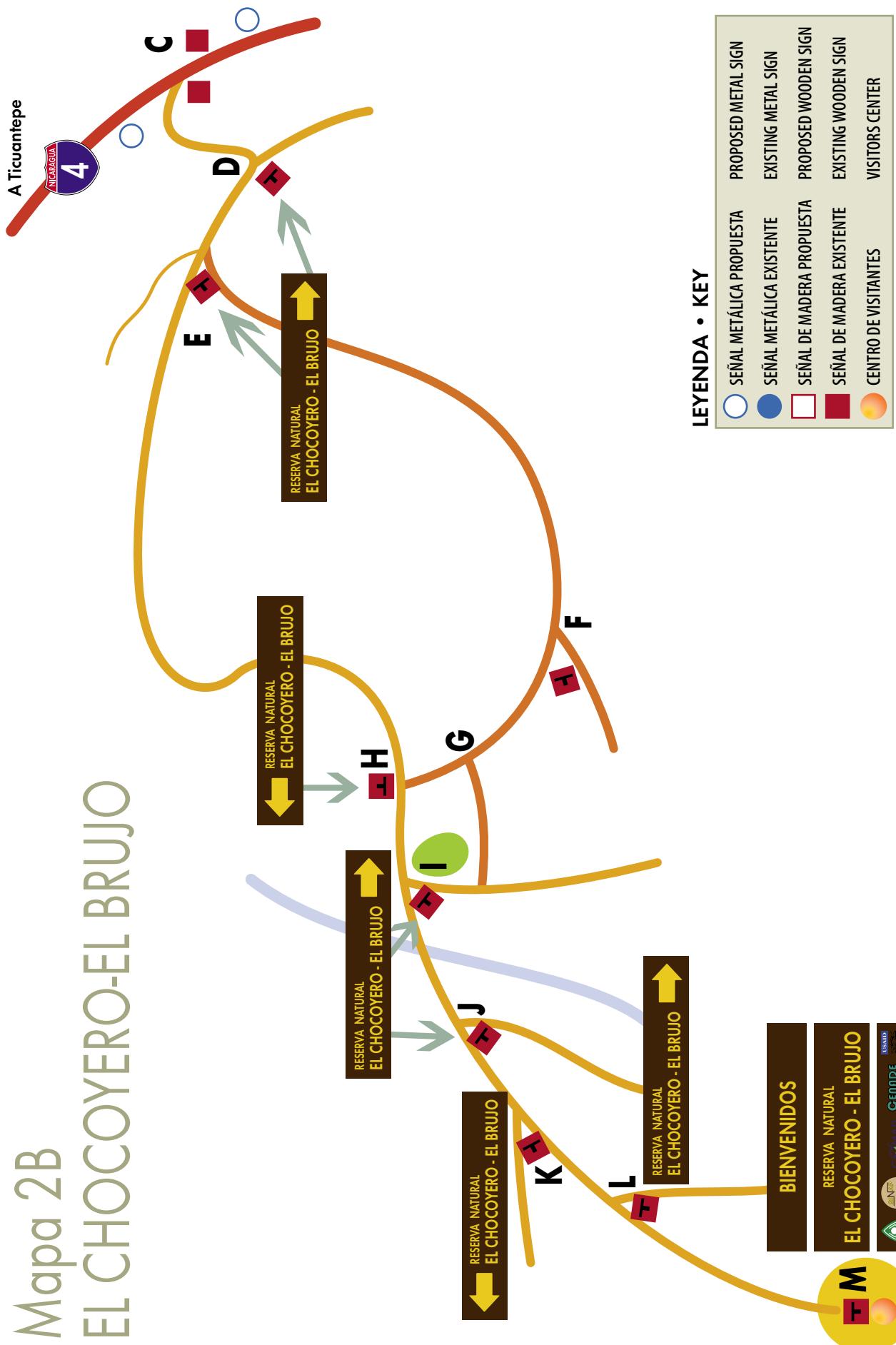
SEÑAL METÁLICA PROPUESTA	PROPOSED METAL SIGN
SEÑAL METÁLICA EXISTENTE	EXISTING METAL SIGN
SEÑAL DE MADERA PROPUESTA	PROPOSED WOODEN SIGN
SEÑAL DE MADERA EXISTENTE	EXISTING WOODEN SIGN
CENTRO DE VISITANTES	VISITORS CENTER

Mapa sin Escala/No scale

Mapa 2A EL CHOCOYERO-EL BRUJO



Mapa 2B EL CHOCOYERO-EL BRUJO



SEÑAL METÁLICA PROPUESTA	PROPOSED METAL SIGN
SEÑAL METÁLICA EXISTENTE	EXISTING METAL SIGN
SEÑAL DE MADERA PROPUESTA	PROPOSED WOODEN SIGN
SEÑAL DE MADERA EXISTENTE	EXISTING WOODEN SIGN
CENTRO DE VISITANTES	VISITORS CENTER

Mapa sin Escala/No scale

Figure 12. Sign designs Reserva Natural El Chocoyero - El Brujo



A



A



B



C



C



M



D, E, F, I, L



G, H, K

6.2 RESERVA NATURAL ISLA JUAN VENADO

(Maps 3A, 3B & 4A, 4B)

There are two entrances to the Reserve, one on the North leaving Leon and going to the communities of Poneloya and Las Penitas, and one on the south leaving the Highway 12 and going to Salinas Grande.

Intersection A. This is the first intersection as you are leaving the town of Leon. A metal highway direction sign is recommended here with an arrow and distance to the Reserve.

Intersection B. Same as intersection A.

Intersection C. There are two routes to the visitor center. One winds through the two small coastal communities and the other turns (left) here to take a more direct route. We recommend visitors be directed to make a left turn here by a wood directional sign with an arrow and distance.

Location D. The newly constructed visitor center has a “Bienvenidos” (welcome) sign located at the front of the building facing the beach. We recommend that this sign be upgraded sometime in the future (with smaller logos) and that another welcome sign be installed at the rear of the building where visitors arrive by car.

Intersection E. The junction of Highway 12 with the secondary road to Salinas Grande is a critical turn for visitors wishing to visit the southern end of the Reserve. The present wooden sign could be upgraded at its present location. In addition, two new metal highway approach signs could be installed 300 meters in each direction from the intersection to alert drivers to the turn.

Intersection F. A simple wooden direction sign with an arrow at this intersection would help direct travelers to the right.

Intersection G. Arriving at the beach, visitors see a “Bienvenidos” (welcome) sign slightly down the road on the left hand side. This sign could be simplified and relocated so that it is directly in front of arriving vehicles.

Location H. We recommend the present sign near the end of the road be redesigned and relocated to a better position, perhaps closer to a new kiosk.

Location I. A simple, roofed kiosk at this location could help welcome and orient visitors. It could include up to six 24” x 36” panels, each on a different topic. For an example refer to Figures 13 & 14. We recommend an interpretive plan and detailed kiosk design be immediately developed for this important location.

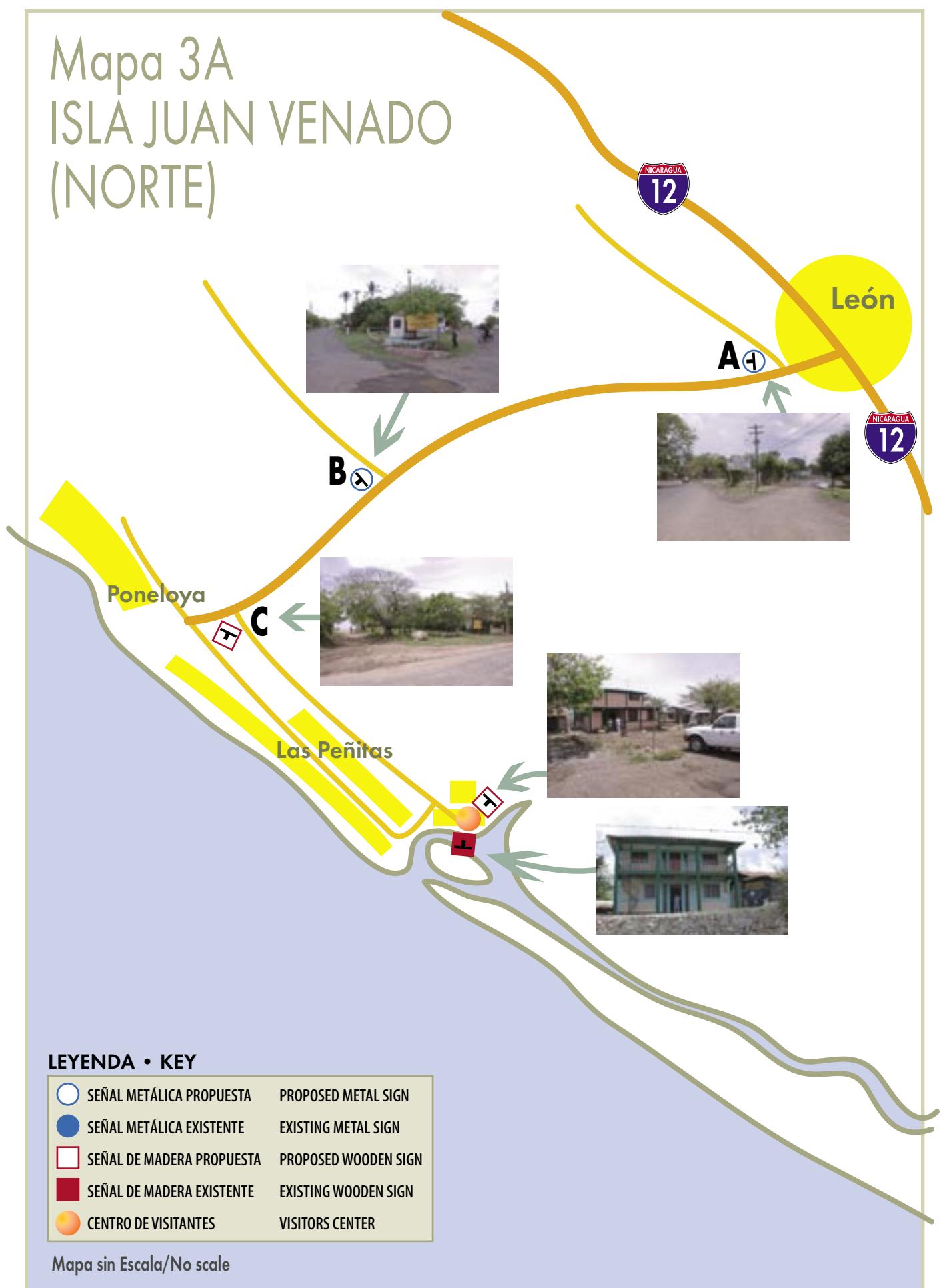


Table 4 SIGN RECOMMENDATIONS SUMMARY, RESERVA NATURAL ISLA JUAN VENADO

Junction	Sign Type	Distance	Arrow	Action	Priority
A	2	19 km	<	install	1
B	2	3 km	<	install	1
C	4	2 km	<	install	1
D	3	•	•	install	1
D	3	•	•	replace	2
E	1	300 m	•	install	1
E	1	300 m	•	install	1
E	4	13 km	<	replace	2
F	4	•	>	install	1
G	4	•	>	replace	2
H	3	•	•	replace	2
I	8	•	•	install	1
Sign Type Key					
1	metal highway approach			5	metal city
2	metal highway directional			6	wood community name
3	wood welcome			7	wood parking
4	wood directional			8	kiosk



Mapa 3A ISLA JUAN VENADO (NORTE)



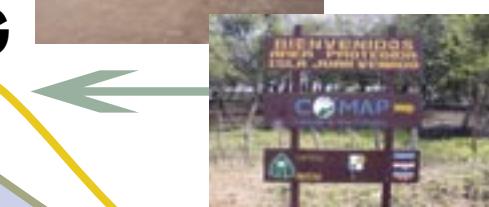


Mapa 3B ISLA JUAN VENADO (SUR)



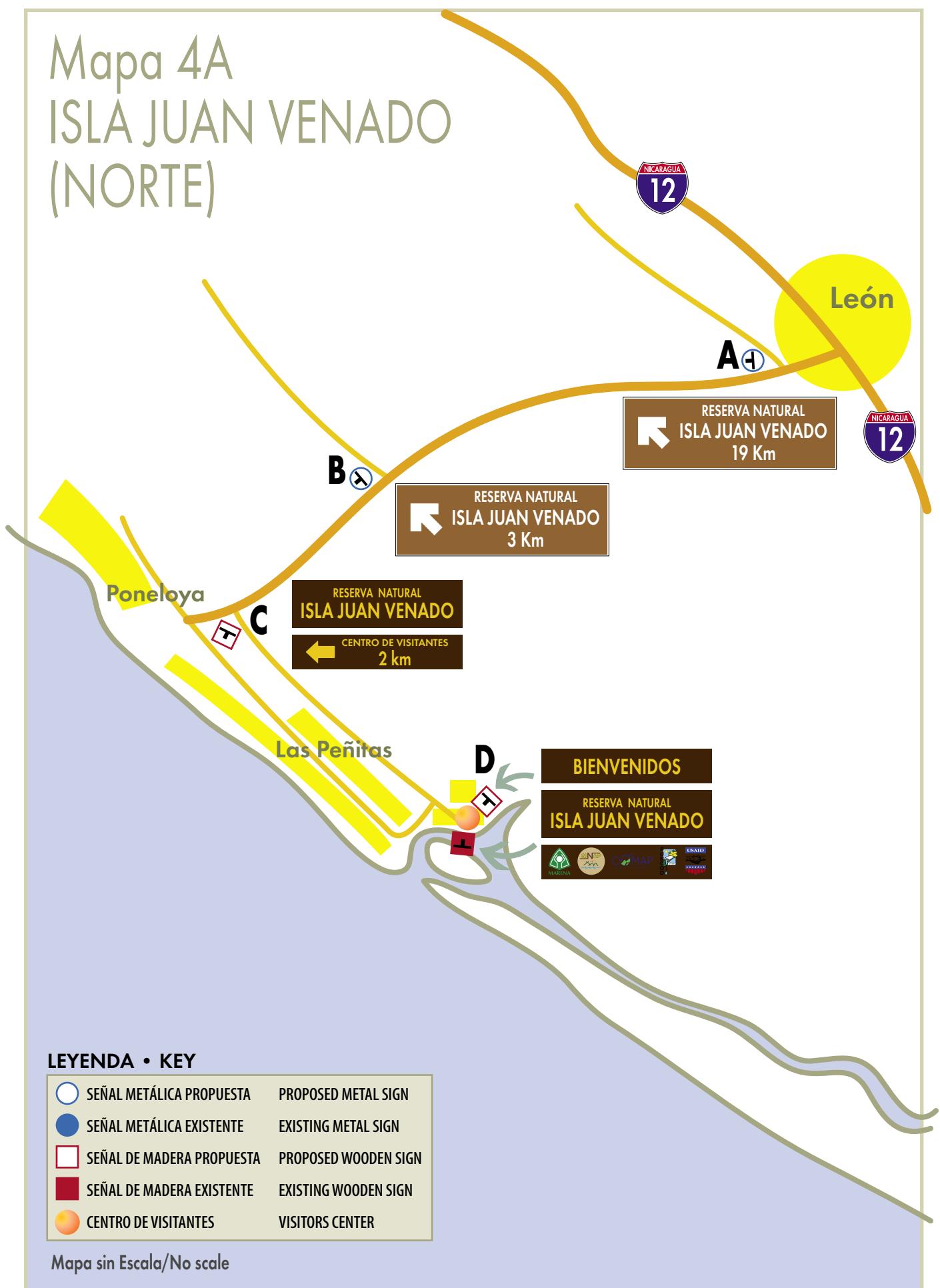
- | | |
|-----------------------------|----------------------|
| ○ SEÑAL METÁLICA PROPUESTA | PROPOSED METAL SIGN |
| ● SEÑAL METÁLICA EXISTENTE | EXISTING METAL SIGN |
| □ SEÑAL DE MADERA PROPUESTA | PROPOSED WOODEN SIGN |
| ■ SEÑAL DE MADERA EXISTENTE | EXISTING WOODEN SIGN |
| ● CENTRO DE VISITANTES | VISITORS CENTER |
| ▲ KIOSKO | KIOSK |

LEYENDA • KEY



Mapa sin Escala/No scale

Mapa 4A ISLA JUAN VENADO (NORTE)





Mapa 4B ISLA JUAN VENADO (SUR)

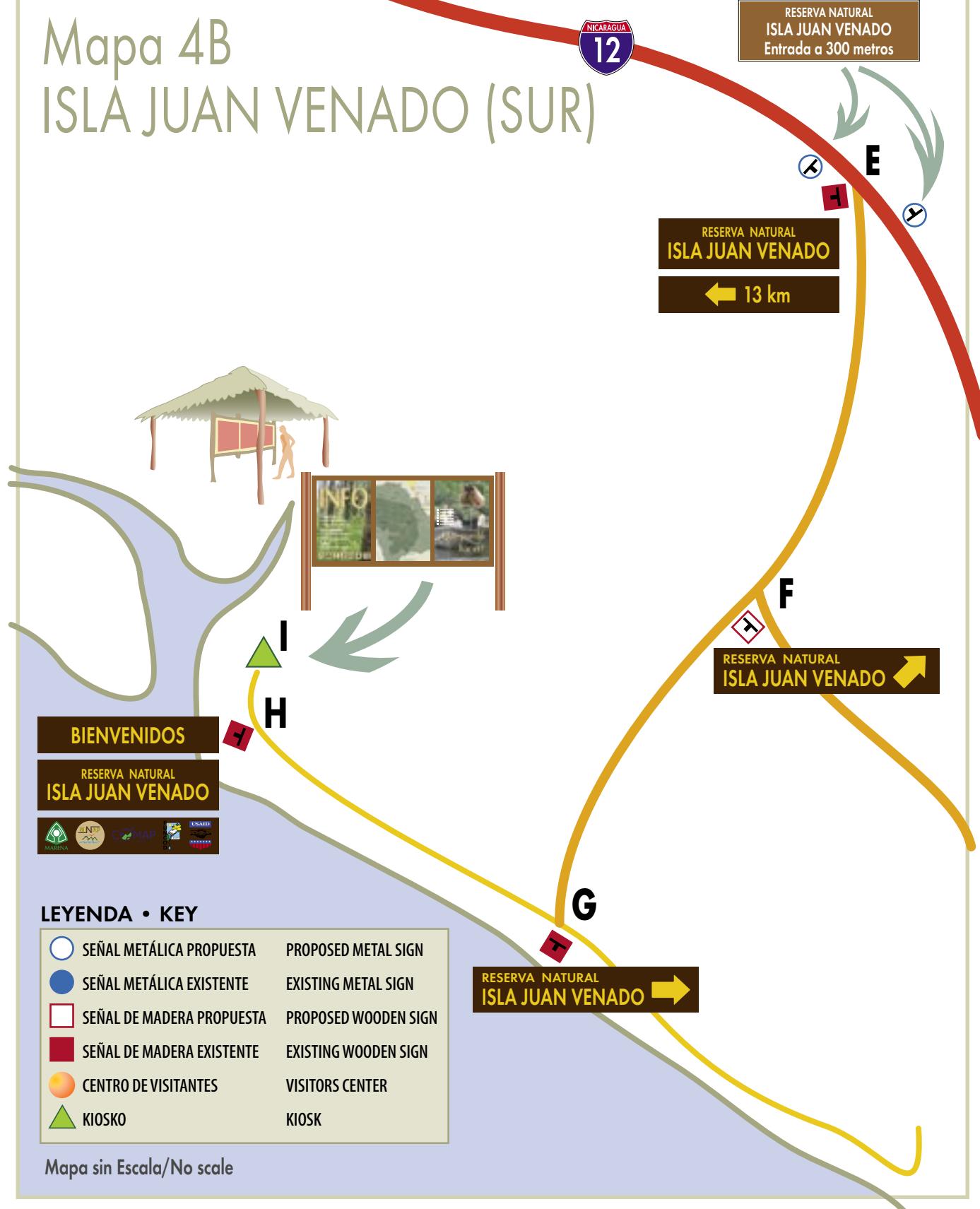


Figure 13

Example of kiosk structure

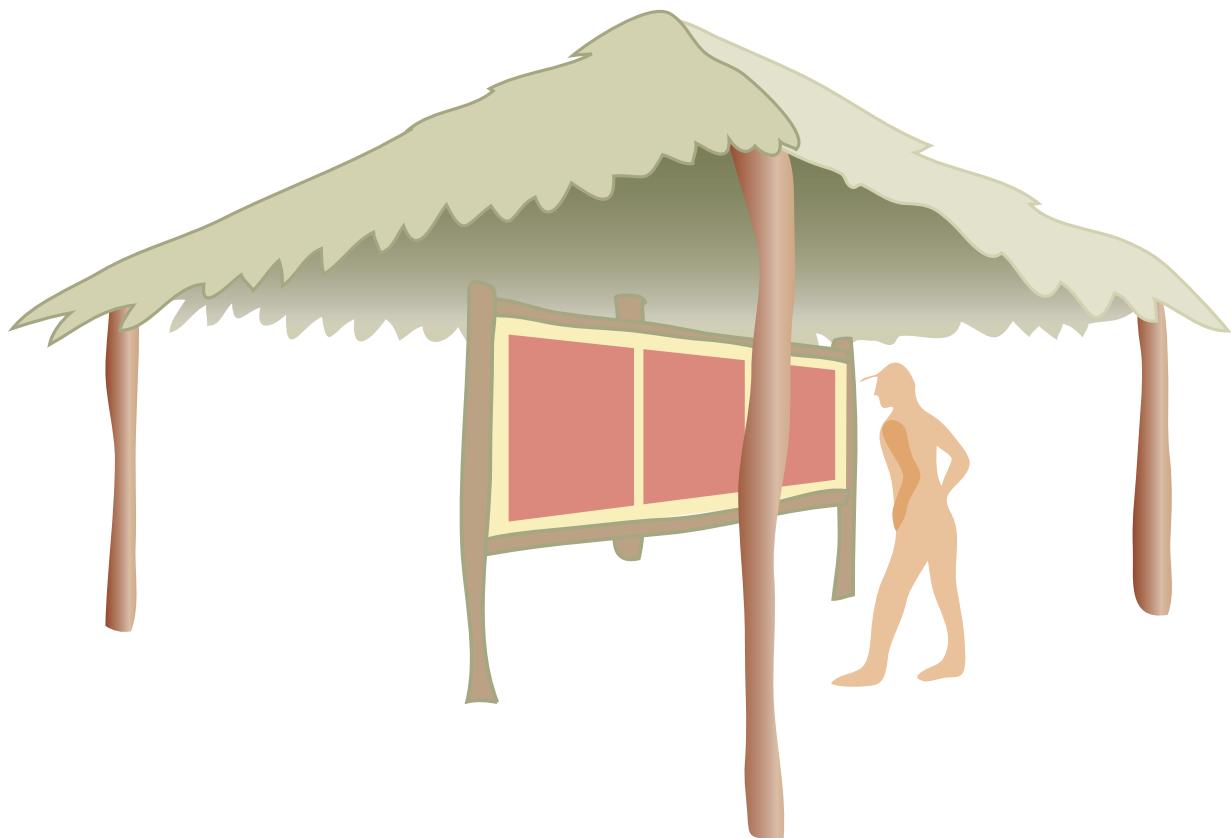
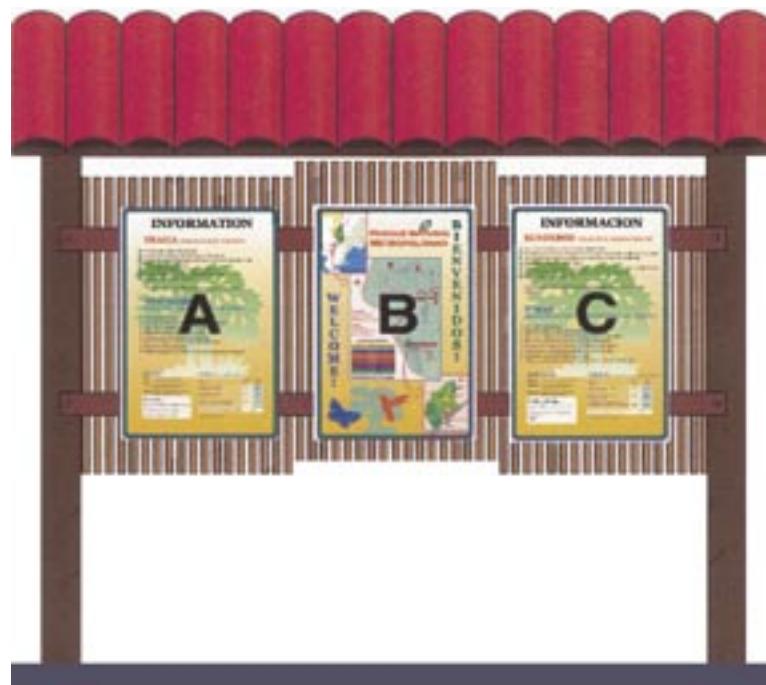


Figure 15. Sign designs Reserva Natural Isla Juan Venado



A



B



C



D, H



E



E



F



G



6.3 RESERVA NATURAL ESTERO PADRE RAMOS

(Maps 5 & 6)

Intersection A This intersection presently has a wooden sign in the center of the “Y.” At this location, it will not last long. We recommend a redesigned sign be placed at the edge of the roadway against the hillside, where it will be out of the way of traffic. In addition, a metal highway sign should be installed on the east side of the highway showing directional arrows and distances to both Reserva Natural Estero Padre Ramos and Reserva Natural Volcán Cosiguina.

Location B There is a wooden sign on the left hand side of the road at the entrance to the community of Jiquilillo. This can be redesigned to indicate the direction and distance to the visitor center.

Intersection C The first intersection in the community of Padre Ramos should have a new wooden sign directing visitors onward toward the visitor center.

Intersection D The sign at this intersection should be redesigned.

Location E The existing “Bienvenidos” (welcome) sign can be redesigned to match the other signs.

Table 5 SIGN RECOMMENDATIONS SUMMARY, RESERVA NATURAL ESTERO PADRE RAMOS					
Junction	Sign Type	Distance	Arrow	Action	Priority
A	4	11 km	< & ^ *	install	1
A	3			eliminate	1
A	2	2 km	up	install	1
B	4	•	>	replace	3
C	4	•	up	install	1
D	4	•	>	replace	3
E	3	•	•	replace	3 *Combined Estero Padre Ramos and Volcán Cosigüina directional sign

Sign Type Key

1	metal highway approach	5	metal city
2	metal highway directional	6	wood community name
3	wood welcome	7	wood parking
4	wood directional	8	kiosk

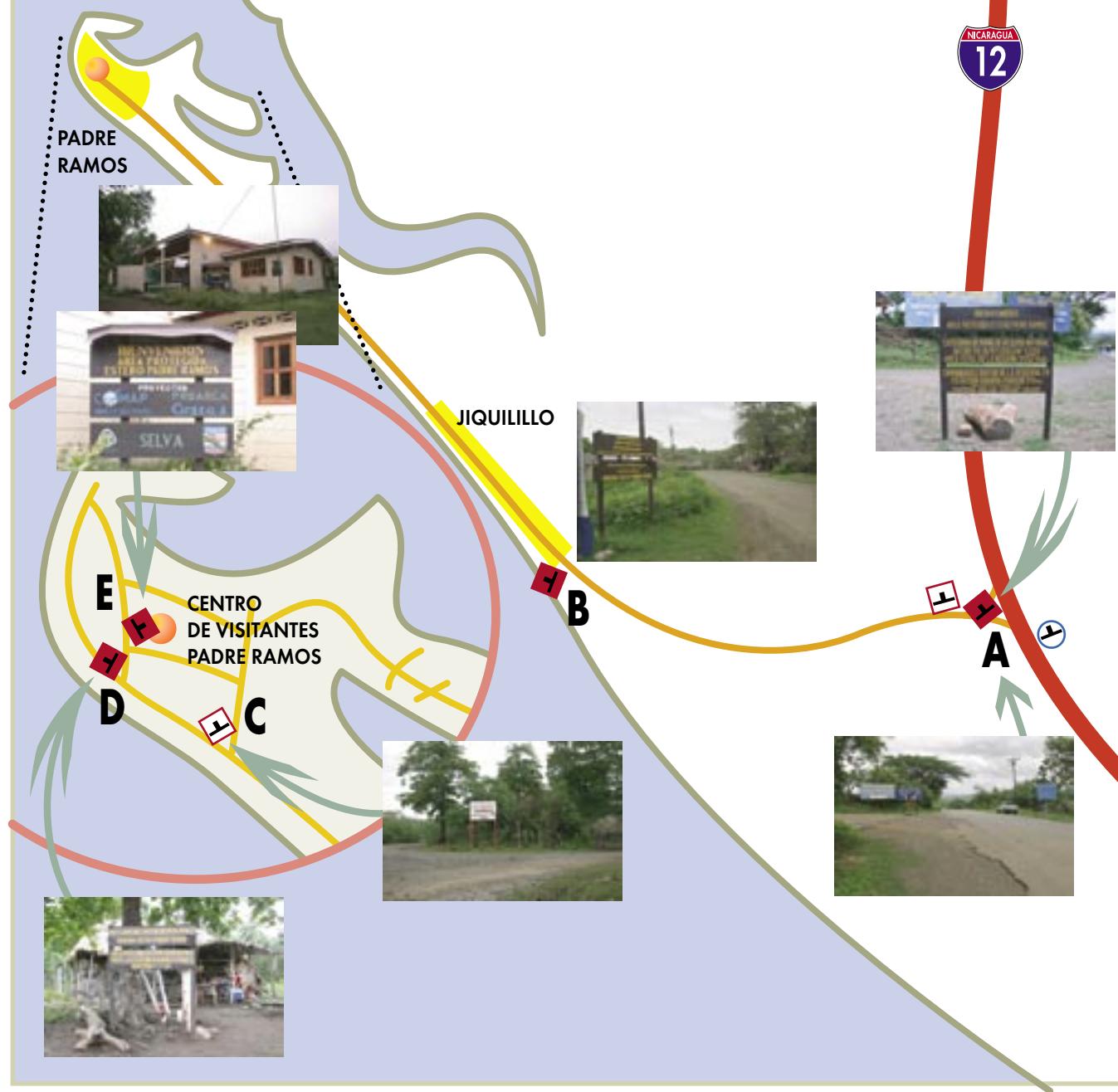


Mapa 5 ESTERO PADRE RAMOS

LEYENDA • KEY

SEÑAL METÁLICA PROPUESTA	PROPOSED METAL SIGN
SEÑAL METÁLICA EXISTENTE	EXISTING METAL SIGN
SEÑAL DE MADERA PROPUESTA	PROPOSED WOODEN SIGN
SEÑAL DE MADERA EXISTENTE	EXISTING WOODEN SIGN
CENTRO DE VISITANTES	VISITORS CENTER

Mapa sin Escala/No scale



Mapa 6 ESTERO PADRE RAMOS

LEYENDA • KEY

SEÑAL METÁLICA PROPUESTA	PROPOSED METAL SIGN
SEÑAL METÁLICA EXISTENTE	EXISTING METAL SIGN
SEÑAL DE MADERA PROPUESTA	PROPOSED WOODEN SIGN
SEÑAL DE MADERA EXISTENTE	EXISTING WOODEN SIGN
CENTRO DE VISITANTES	VISITORS CENTER

Mapa sin Escala/No scale

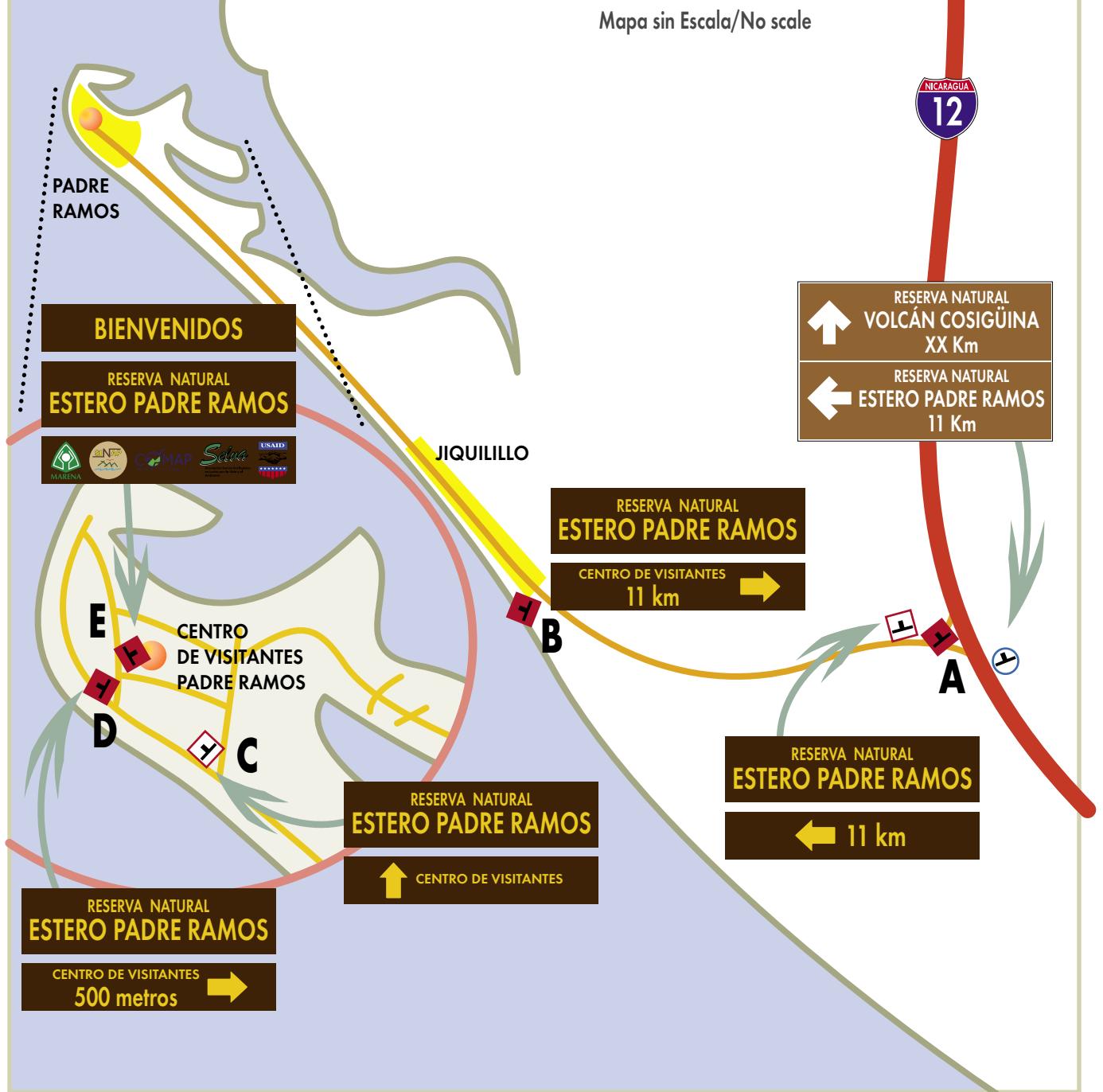


Figure 16. Sign designs Reserva Natural Estero Padre Ramos



A



A



B



C



D



E



6.4 Reserva Natural Tisey-Estanzuela

(Maps 7 & 8)

Intersection A This is the North entrance to the reserve along the Pan American Highway #1. Metal highway approach signs should be installed at 300 m distance from north and south approaches. Currently there is an existing “Bienvenidos” sign, which is more of a project promotional sign than a directional sign. We recommend that this sign be replaced with the redesigned wood directional sign.

Intersection B This is an intersection with a secondary road leading to a small village. A project promotional sign currently exist at this location. We recommend that this be replaced with a wood directional sign.

Intersection C This is the entrance to the Estanzuela Waterfall, one of the biggest visitor attractions to this protected area. Currently there is a project promotional sign located at this entrance. We recommend that this sign be replaced with a wood directional sign. In addition, this is a perfect location for an information/interpretive kiosk.

Intersection D This is an intersection with a secondary road leading to a small village. A project promotional sign currently exist at this location. We recommend that this be replaced with a wood directional sign.

Intersection E This is an intersection with a secondary road leading to a local hotel. We recommend that a wood directional sign be installed.

Intersection F This is an intersection with a secondary road leading to a small village and the reserve visitor center. Two project promotional sign currently exist at this location. We recommend that these be replaced with a two sided (back to back) wood directional sign.

Intersection G At the entrance to the small village we recommend a wood community name sign be installed. At the far end of the village, as the road goes towards the visitor center we recommend a parking sign be installed.

Intersection H This is the reserve visitor center, where a “Bienvenidos” (welcome) sign is located as the road enters the compound. We recommend that this sign be replaced with the redesigned welcome sign.

Intersection I This is an intersection of two secondary roads. A project promotional sign currently exist at this location. We recommend that this be replaced with a wood directional sign, positioned so it can be viewed from both approach angles.

Intersection J This is the South entrance to the reserve along the Pan American Highway #1. Metal highway approach signs should be installed at 300 meter distance from north and south approaches. Currently there is an existing “Bienvenidos” sign, which is more of a project promotional sign than a directional sign. We recommend that this sign be replaced with a redesigned wood directional sign.

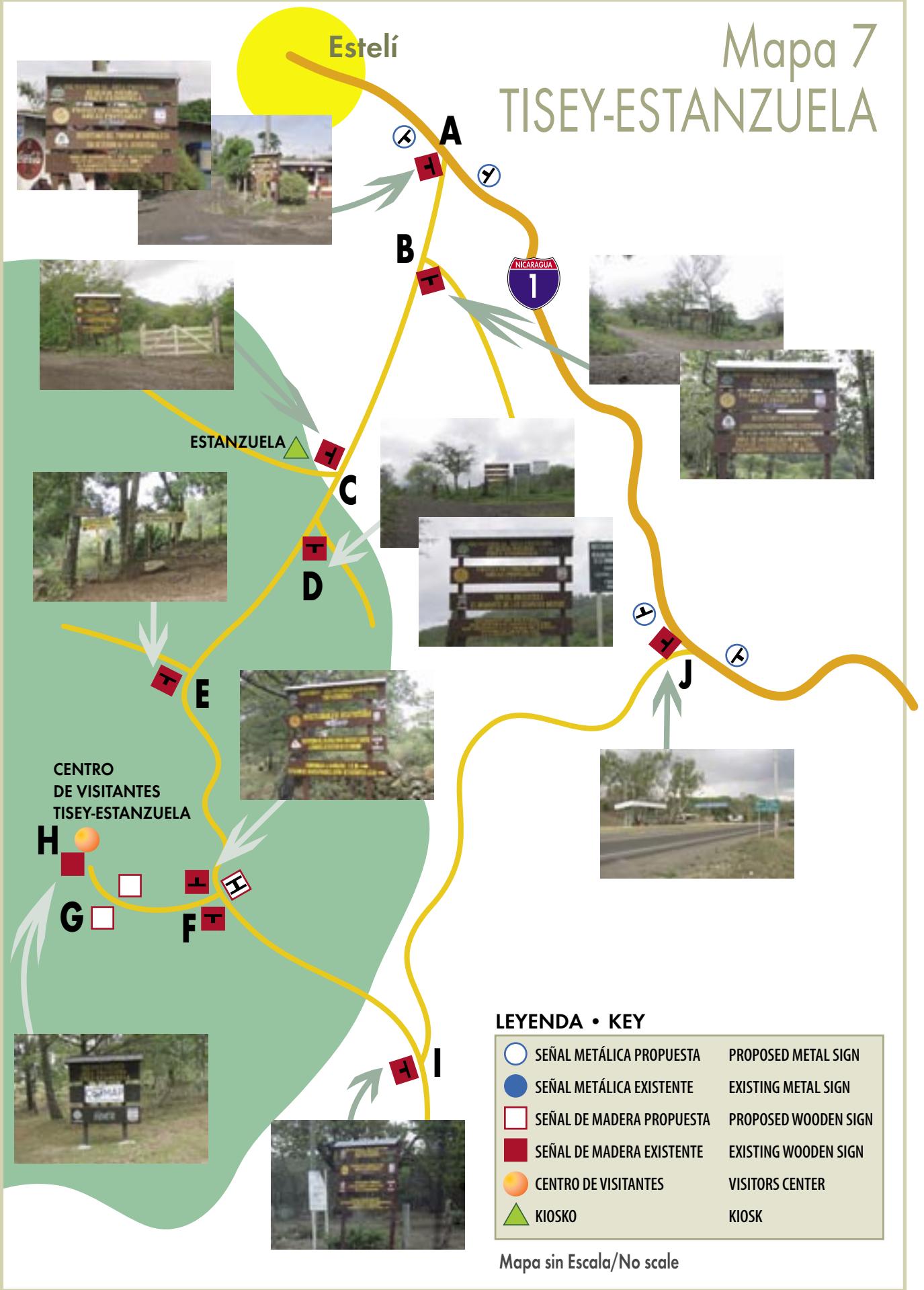
Table 6 SIGN RECOMMENDATIONS SUMMARY, RESERVA NATURAL TISEY-ESTANZUELA

Junction	Sign Type	Distance	Arrow	Action	Priority
A	1	300 m	•	install	1
A	1	300 m	•	install	1
A	3, 4	•		remove	1
A	4	15 km	<	install	1
B	3, 4	•		remove	2
B	4	800 m	<, up	install	2
C	3, 4	•	•	remove	2
C	4	600 m	>, up	install	2
C	8	•	•	install	2
D	3, 4	•	•	remove	2
D	4	5 km	<, up	install	2
E	3, 4	•	•	remove	2
E	4	•	up	install	2
F	3, 4	•	•	remove	2
F	3, 4	•	•	remove	2
F	4	2 km	<	install	2
F	4	2 km	>	install	2
G	6	•	•	install	1
G	7	•	•	install	1
H	3, 4	•	•	remove	1
H	3	•	•	install	1
I	3, 4	•	•	remove	2
I	4	•	>	install	2
J	3, 4	•	•	remove	2
J	4	14 km	<	install	2
J	1	300 m	•	install	1
J	1	300 m	•	install	1

Sign Type Key

1	metal highway approach	5	metal city
2	metal highway directional	6	wood community name
3	wood welcome	7	wood parking
4	wood directional	8	kiosk

Mapa 7 TISEY-ESTANZUELA



Mapa 8 TISEY-ESTANZUELA

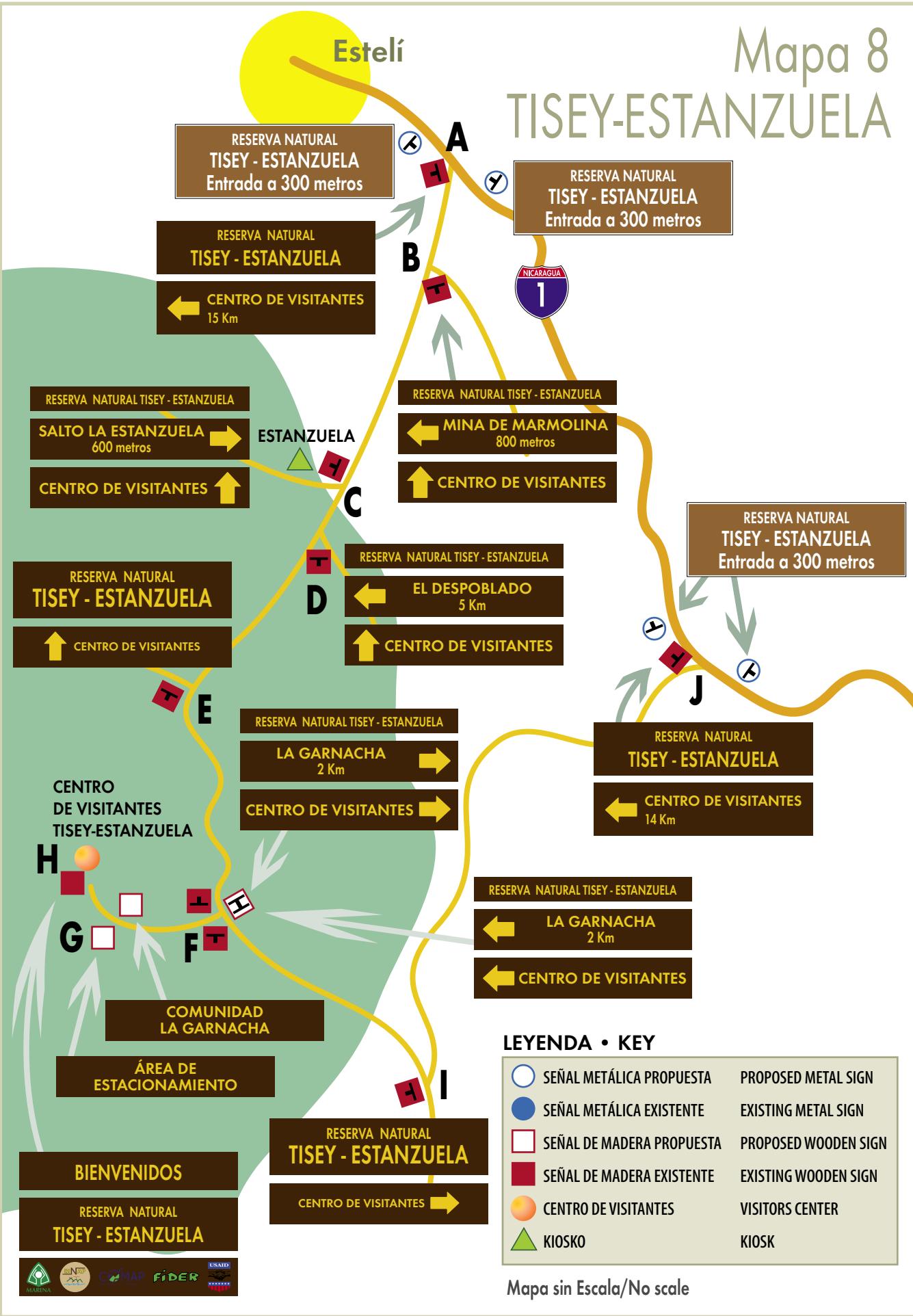


Figure 17. Sign designs A Reserva Natural Tisey - Estanzuela



A



A



B



C



D



E

Figure 18. Sign designs B Reserva Natural Tisey - Estanzuela



F



F



G



G



H



I



J



J

6.5 RESERVA NATURAL CERRO MUSÚN

(MAPS 9 & 10)

Intersection A This is the primary highway the town of Rio Blanco. A highway directional sign should be installed at this location. Another highway directional sign should be installed at the edge of the town as the road leaves Rio Blanco and goes to the Reserve.

Intersection B This is a secondary road leading into the Reserve. A wood directional sign should be installed at this location.

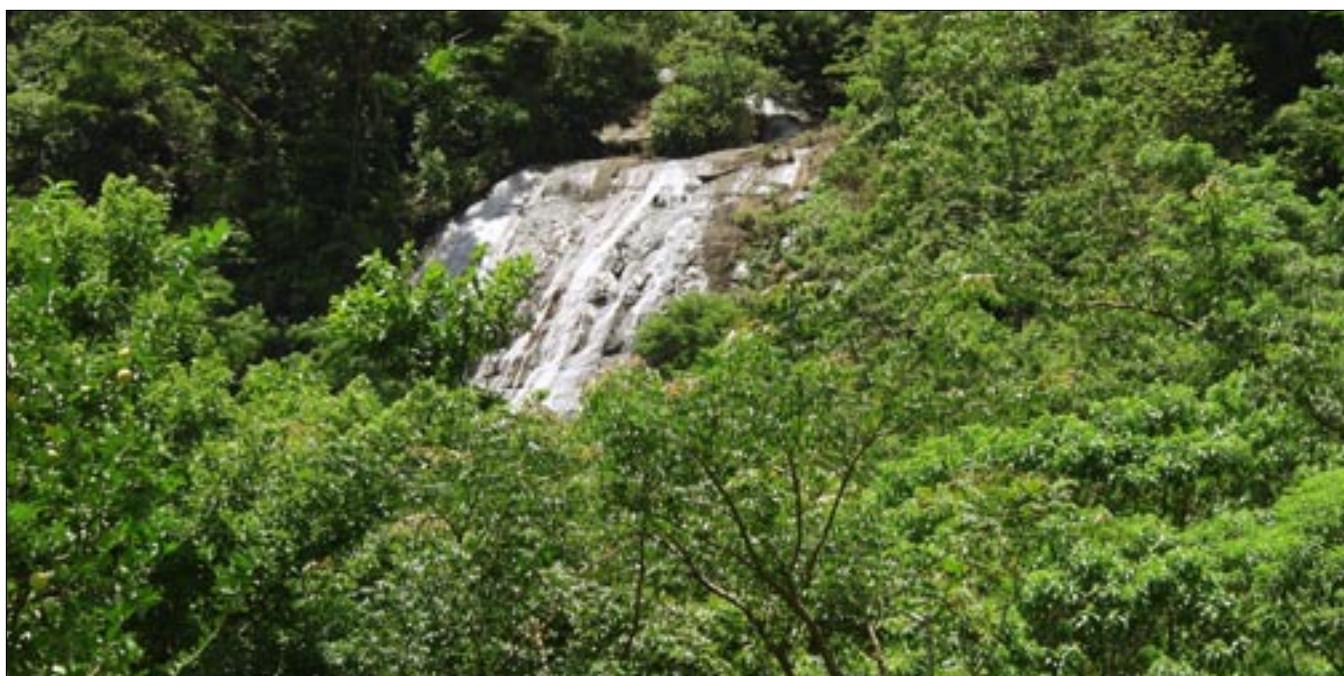
Intersection C A directional sign should be installed here to lead the visitor to the visitor center.

Intersection D This is the proposed site for the forest guard house / visitor center. A welcome sign should be installed here.

TABLE 7 SIGN RECOMMENDATIONS SUMMARY, RESERVA NATURAL CERRO MUSÚN					
Junction	Sign Type	Distance	Arrow	Action	Priority
A	5	•	Up	install	1
A	3	•	up	install	1
B	4	? km*	<	install	1
C	4	•	>	install	1
D	4	•	up	install	1
E	3	•	•	install	1

* Km distance must be verified

Sign Type Key					
1	metal highway approach		5	metal city	
2	metal highway directional		6	wood community name	
3	wood welcome		7	wood parking	
4	wood directional		8	kiosk	



Mapa 9 CERRO MUSÚN

RESERVA NATURAL CERRO MUSÚN



CENTRO DE VISITANTES
CERRO MUSÚN (PROPUESTO)



LEYENDA • KEY

○ SEÑAL METÁLICA PROPUESTA	PROPOSED METAL SIGN
● SEÑAL METÁLICA EXISTENTE	EXISTING METAL SIGN
□ SEÑAL DE MADERA PROPUESTA	PROPOSED WOODEN SIGN
■ SEÑAL DE MADERA EXISTENTE	EXISTING WOODEN SIGN
● CENTRO DE VISITANTES	VISITORS CENTER

Mapa sin Escala/No scale

Mapa 10 CERRO MUSÚN

RESERVA NATURAL CERRO MUSÚN

BIENVENIDOS

RESERVA NATURAL
CERRO MUSÚN



CENTRO DE VISITANTES
CERRO MUSÚN (PROPUESTO)



RESERVA NATURAL
CERRO MUSÚN

CENTRO DE VISITANTES
300 metros

RESERVA NATURAL
CERRO MUSÚN

CENTRO DE VISITANTES
XX Km

RESERVA NATURAL
CERRO
MUSÚN



RÍO BLANCO

A

LEYENDA • KEY

	SEÑAL METÁLICA PROPUESTA	PROPOSED METAL SIGN
	SEÑAL METÁLICA EXISTENTE	EXISTING METAL SIGN
	SEÑAL DE MADERA PROPUESTA	PROPOSED WOODEN SIGN
	SEÑAL DE MADERA EXISTENTE	EXISTING WOODEN SIGN
	CENTRO DE VISITANTES	VISITORS CENTER

Mapa sin Escala/No scale

Figure 19. Sign designs Reserva Natural Cerro Musún



A



B



C



D



E

6.6 RESERVA NATURAL VOLCÁN COSIGÜINA

(MAPS 11 & 12)

Intersection A This junction is the psychological entrance to the Reserve. The existing “Bienvenidos” (welcome) sign could be redesigned and relocated from the right hand side of the road to the top of the “T” so that it is directly in front of approaching vehicles.

Location B This is the start of Los Humedales (swamp) trail. The simple wooden sign here is adequate but could be upgraded the next time it is replaced.

Location C We recommend a new directional sign be installed here to direct visitors to Las Palmas trail.

Intersection D We recommend a new direction sign be installed here at the inside of the “Y” to direct visitors to the visitor center.

Intersection E We recommend the current wooden sign be replaced with a new directional sign to El Jovo trail.

Intersection F The main intersection in the small community of Rosario needs a sign directing visitors to the visitor center.

Location G We recommend a “Bienvenidos” (welcome) be installed immediately in front of the new visitors center.

Note: Although we did not have time to visit, we were told there is another trail at the end of this road past the new visitor center. To direct visitors to this trail, a directional sign should be installed at the visitor center entrance, as well as a “Bienvenidos” sign at the trailhead.

Table 8 SIGN RECOMMENDATIONS SUMMARY, RESERVA NATURAL VOLCÁN COSIGÜINA

Junction	Sign Type	Distance	Arrow	Action	Priority
A	3	•	•	eliminate	3
A	3	27 km	>	add	3
B	•	•	•	replace	3
C	4	•	>	install	1
D	4	12 km	<	install	1
E	4	•	<	replace	2
F	4	2 km	<	install	1
G	3	•	•	install	1
Sign Type Key					
1	metal highway approach			5	metal city
2	metal highway directional			6	wood community name
3	wood welcome			7	wood parking
4	wood directional			8	kiosk

Mapa 11 VOLCÁN COSIGÜINA



F
ROSARIO

G
CENTRO
DE VISITANTES
VOLCÁN COSIGÜINA

E

POTOSÍ

D

C

B

A



RESERVA NATURAL
COSIGÜINA



LEYENDA • KEY

● SEÑAL METÁLICA PROPUESTA	PROPOSED METAL SIGN
● SEÑAL METÁLICA EXISTENTE	EXISTING METAL SIGN
□ SEÑAL DE MADERA PROPUESTA	PROPOSED WOODEN SIGN
■ SEÑAL DE MADERA EXISTENTE	EXISTING WOODEN SIGN
● CENTRO DE VISITANTES	VISITORS CENTER

Mapa sin Escala/No scale

Mapa 12 VOLCÁN COSIGÜINA



Mapa sin Escala/No scale

Figure 20. Sign designs Reserva Natural Volcán Cosigüina



A



B



C



D



E



F



G

6.7 RESERVA NATURAL VOLCÁN MOMBACHO

(Maps 13 & 14)

There are three highway routes to the Reserve: through Maysya/Catrina on Highways 11 and 18, south from Granada on Highway 6, and north on Highway 6 from Nandaime. All require new metal highway and city directional signs.

Intersection A This intersection on the north side of Granada currently has a small metal sign showing the direction to Nandaime. We recommend a new sign be installed on the same post to direct visitors to the Reserve.

Intersection B The intersection at the south side of Granada near the cemetery also needs a small metal sign showing a left hand turn to the Reserve. Locate this sign at the top of the “T” near the stop sign and light post.

Intersection C A right turn is needed off of Highway 4 on to Highway 11. We recommend a new metal highway directional sign be placed on the right hand side of the road just before the intersection.

Intersection D We recommend a metal directional sign be placed on the right hand side of the road just before the “Y” intersection to direct visitors to the left.

Intersection E This is the main intersection immediately in front of the entrance to the Reserve. It is somewhat confusing because it requires a turn onto Highway 6 to find the entrance when coming from Catarina and Masaya. Metal highway approach signs are recommended 300 meters from this “Y” from all three directions. Perhaps because of the confused roads, the Reserve has installed an extremely tall welcome sign at the entrance that is visible from northwest and northeast (but not from the south). Much of the sign is filled with names of “ecofarms” and other commercial business that should be advertised separately from the Reserve. We recommend this large sign be replaced with a simpler one and reoriented so that is visible from all directions.

SIGN RECOMMENDATIONS SUMMARY, RESERVA NATURAL VOLCÁN MOMBACHO					
Junction	Sign Type	Distance	Arrow	Action	Priority
A	5	•	>	install	1
B	5	•	<	install	1
C	2	? km	>	install	1
D	2	? km	<	install	1
E	1	300 m	•	install	1
E	1	300 m	•	install	1
E	1	300 m	•	install	1
E	1	•	•	remove	1
E	3	•	^	replace	1
F	2	? km	>	install	1
Sign Type Key					
1	metal highway approach		5	metal city	
2	metal highway directional		6	wood community name	
3	wood welcome		7	wood parking	
4	wood directional		8	kiosk	

Mapa 13 VOLCÁN MOMBACHO



Mapa sin Escala/No scale

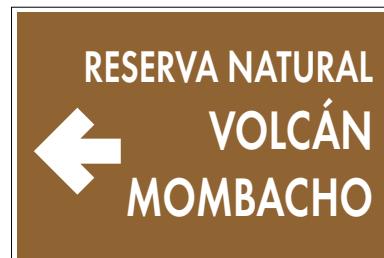
Mapa 14 VOLCÁN MOMBACHO



Figure 21. Sign designs Reserva Natural Volcán Mombacho



A



B



C



D



E



F



G

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Señales

RECOMENDACIONES Y DISEÑOS

FASE 1



ROTULACIÓN DE CARRETERAS Y CAMINOS
EN LAS ÁREAS PROTEGIDAS DE NICARAGUA

