



# 1<sup>st</sup> GRANDE Workshop

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WATER QUALITY GROUP  
ORGANIC AND INORGANIC POLLUTION IN THE CHOQUEYAPU  
RIVER BASIN

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## Choqueyapu River



## Summary of studies on pollution in Choqueyapu river

### STUDIES RELATED TO CHOQUEYAPU RIVER BASIN

DATE

Environmental Action Plan of the municipality of La Paz 2008

Review and Update of Master Drainage Plan for the Urban area of La Paz 2006

Sanitary Sewer and Stormwater Master Plan and Wastewater Treatment 1993

Study for the Control of Water Pollution of Rivers in the city of La Paz 1993

Hidrological Study of La Paz river basin using tracer technique 1999

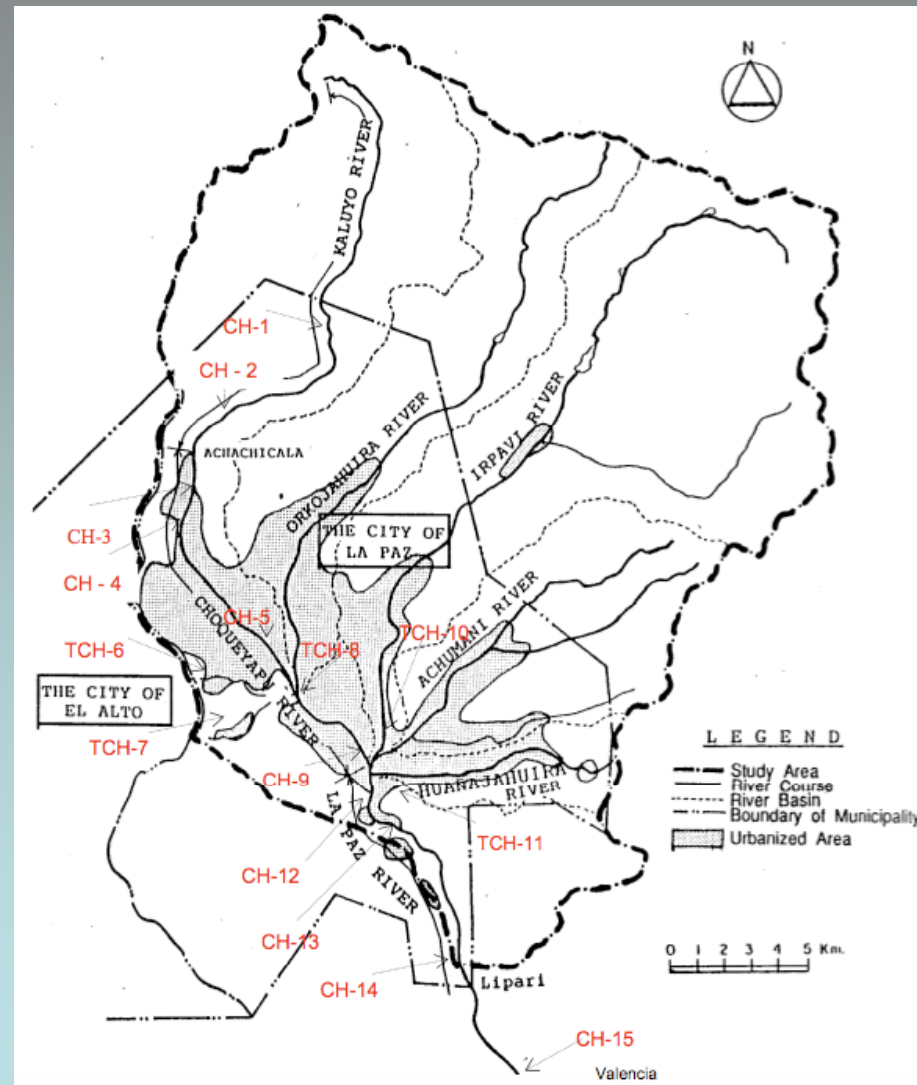
Sanitation Project for La Paz River - EPSAS 2001

Organic and inorganic pollution in the Choqueyapu River Basin 2006

Base Study for the Implementation of a Monitoring Network Water Quality of Major tributaries to the Choqueyapu River Basin 2004

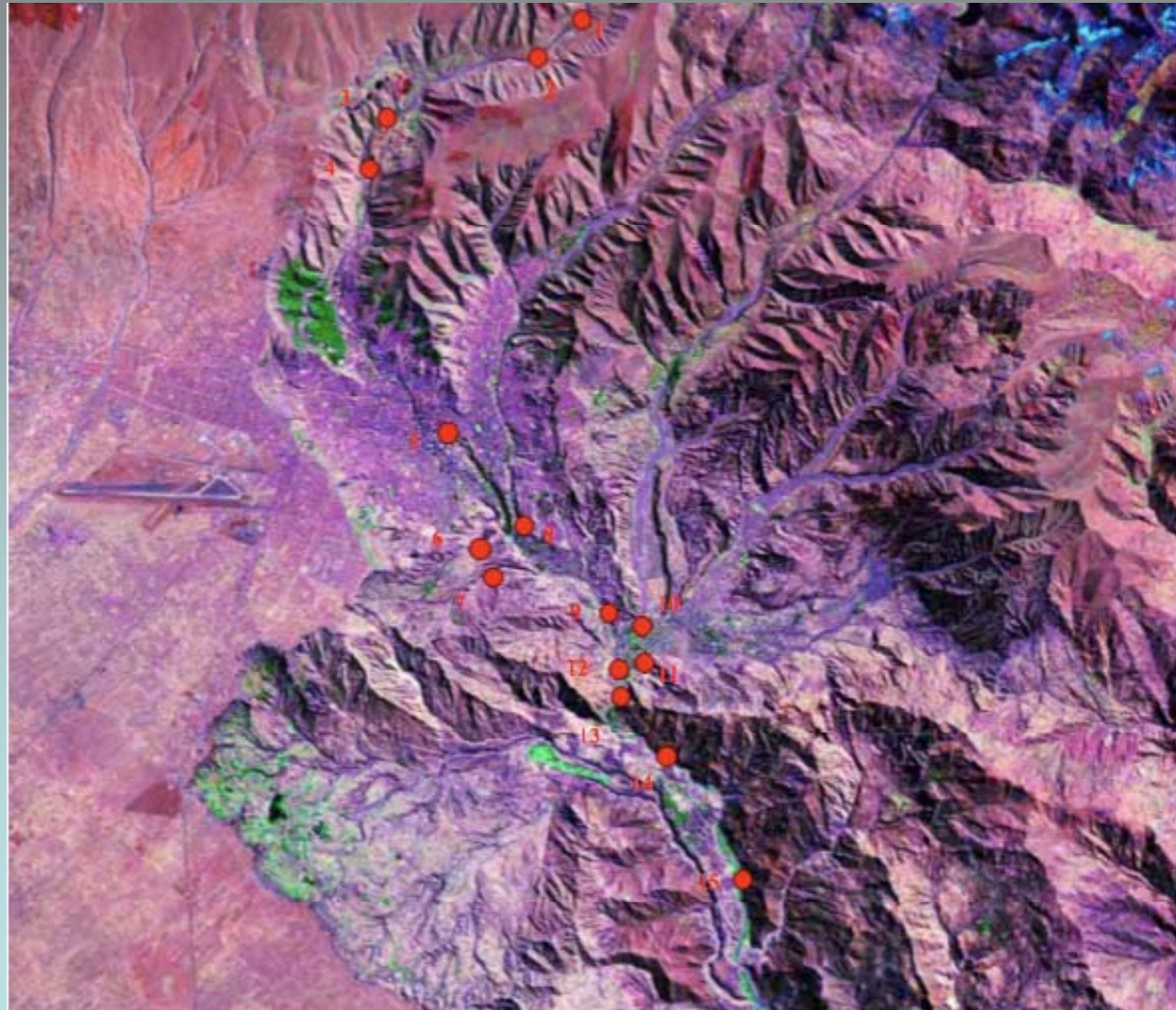
Implementation of a Monitoring Network for Water Quality in Choqueyapu River Basin 2006

## Area of study



Project BOL 8/007  
Final Report. La Paz Municipal  
Government. IBTEN-IIS

## La Paz basin and sampling sites

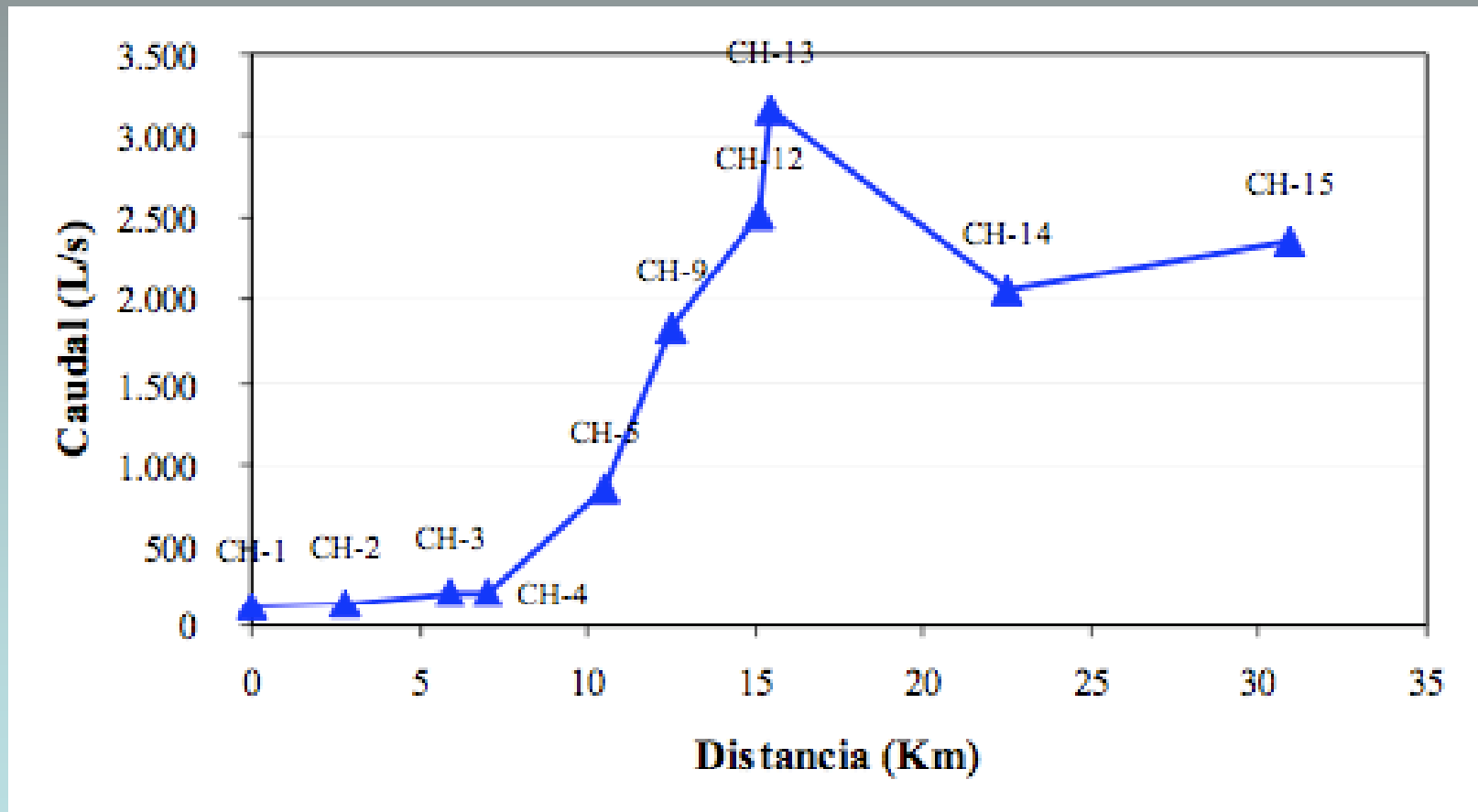


Project BOL 8/007  
Final Report. La Paz Municipal  
Government. IBTEN-IIS

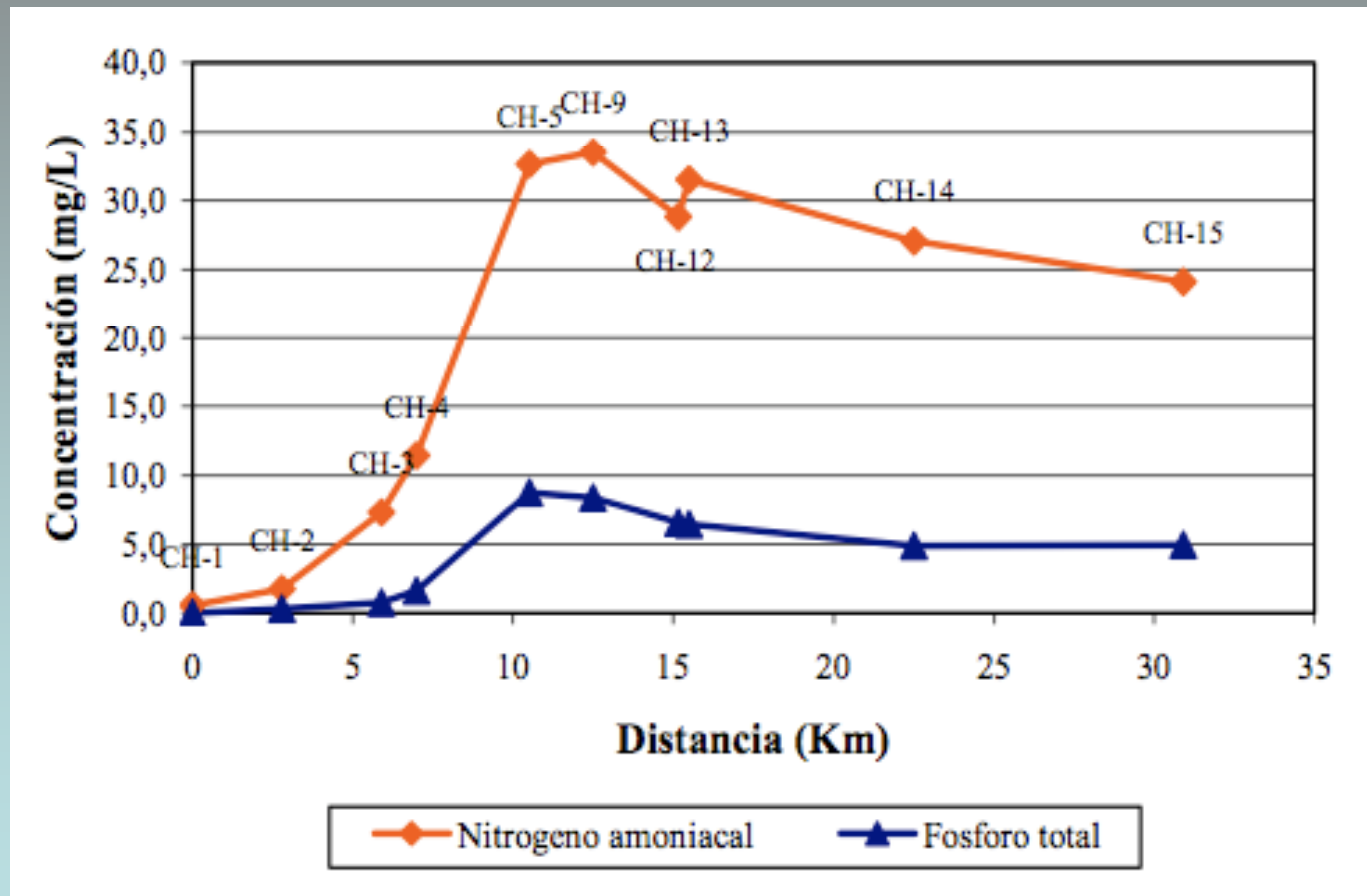
Parameters  
of water  
quality

- Flowrate
- pH , T.
- Conductivity
- DO
- BOD, COD
- N, P.
- As, Cd, Cu, Cr, Hg, Pb, Zn
- Suspended Solids
- Fat and oils
- VOC, Phenols
- Total Coliforms

## Flowrate

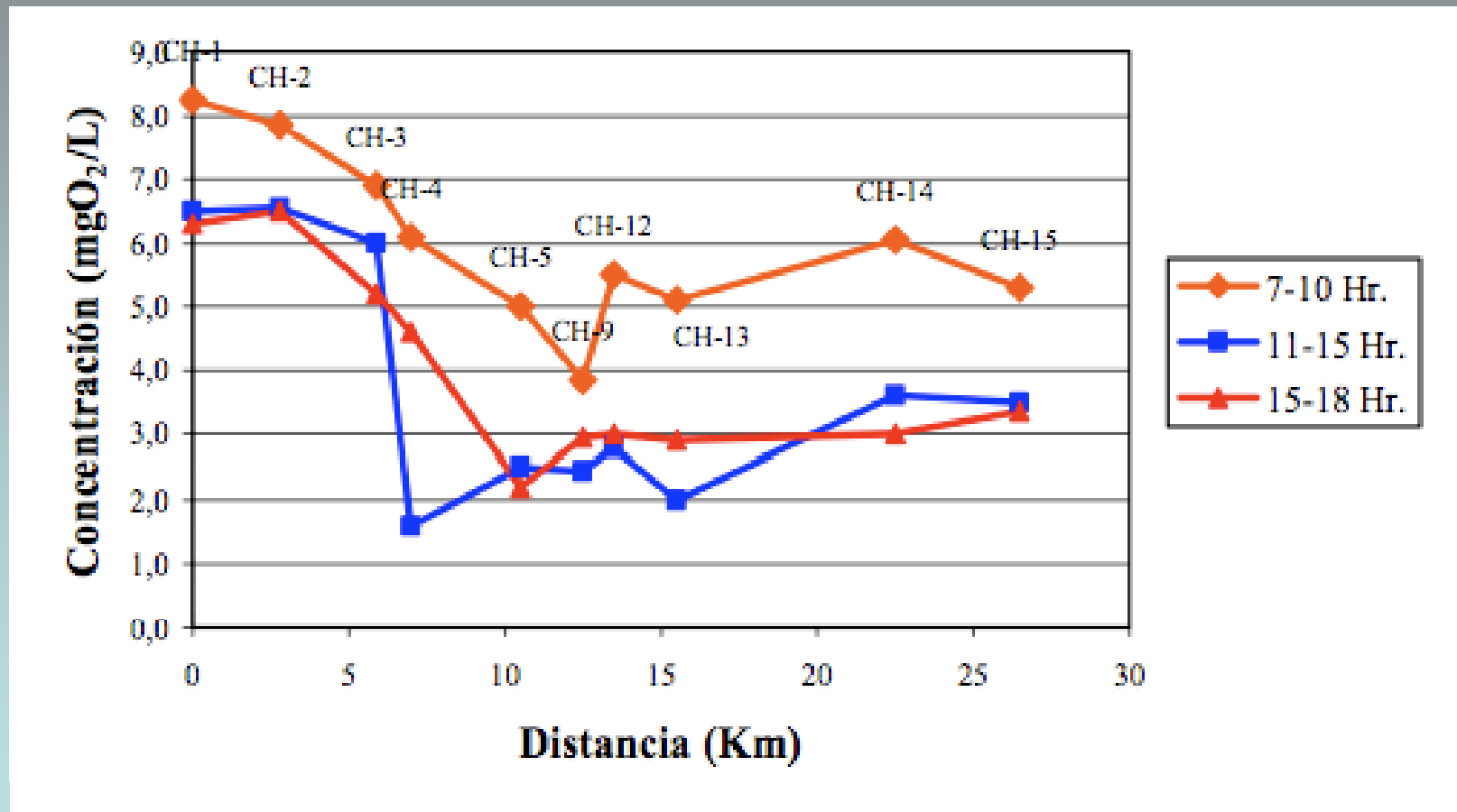


## Nitrogen and Phosphorus

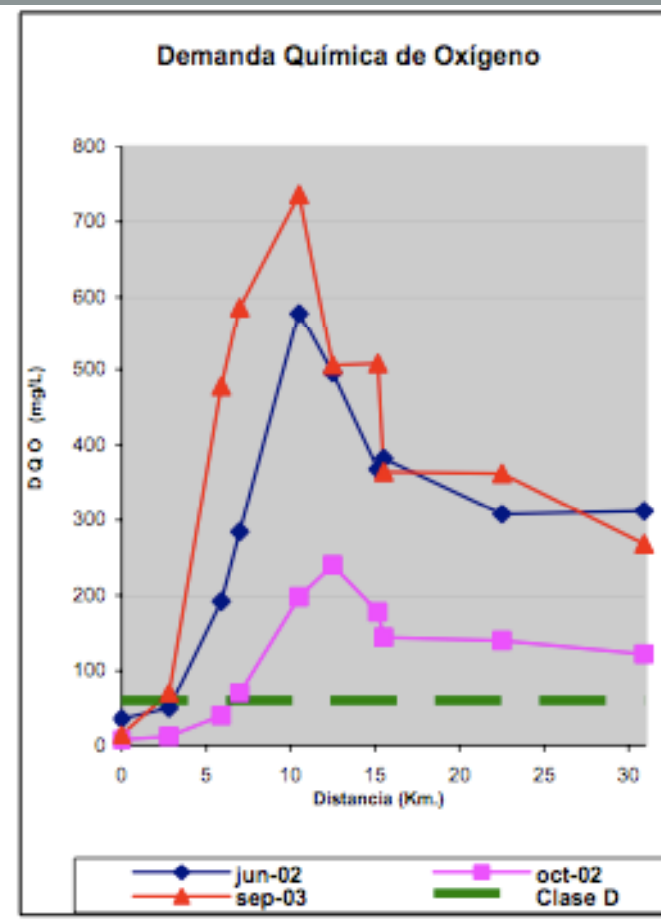
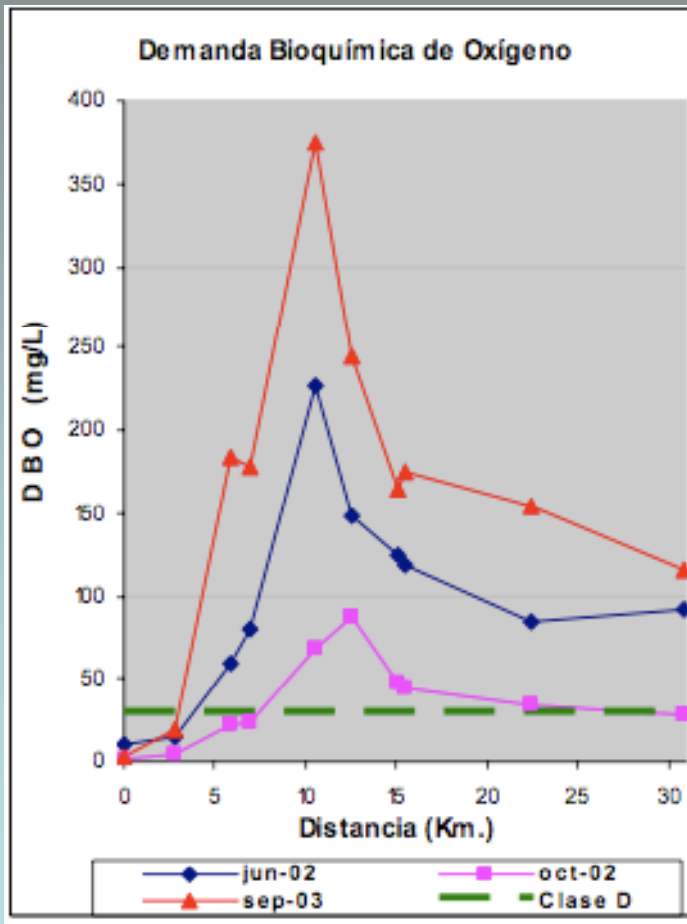




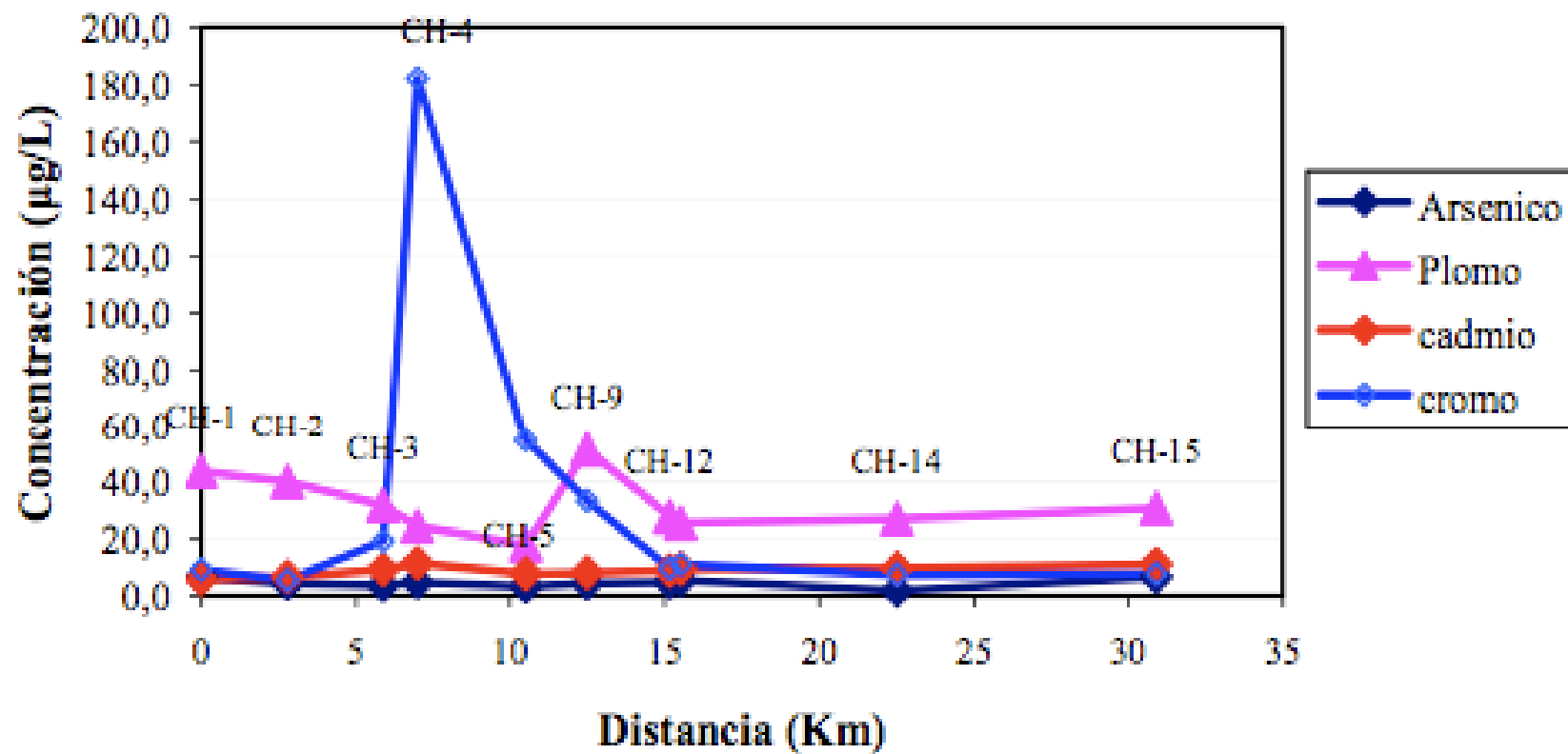
## Dissolved Oxygen



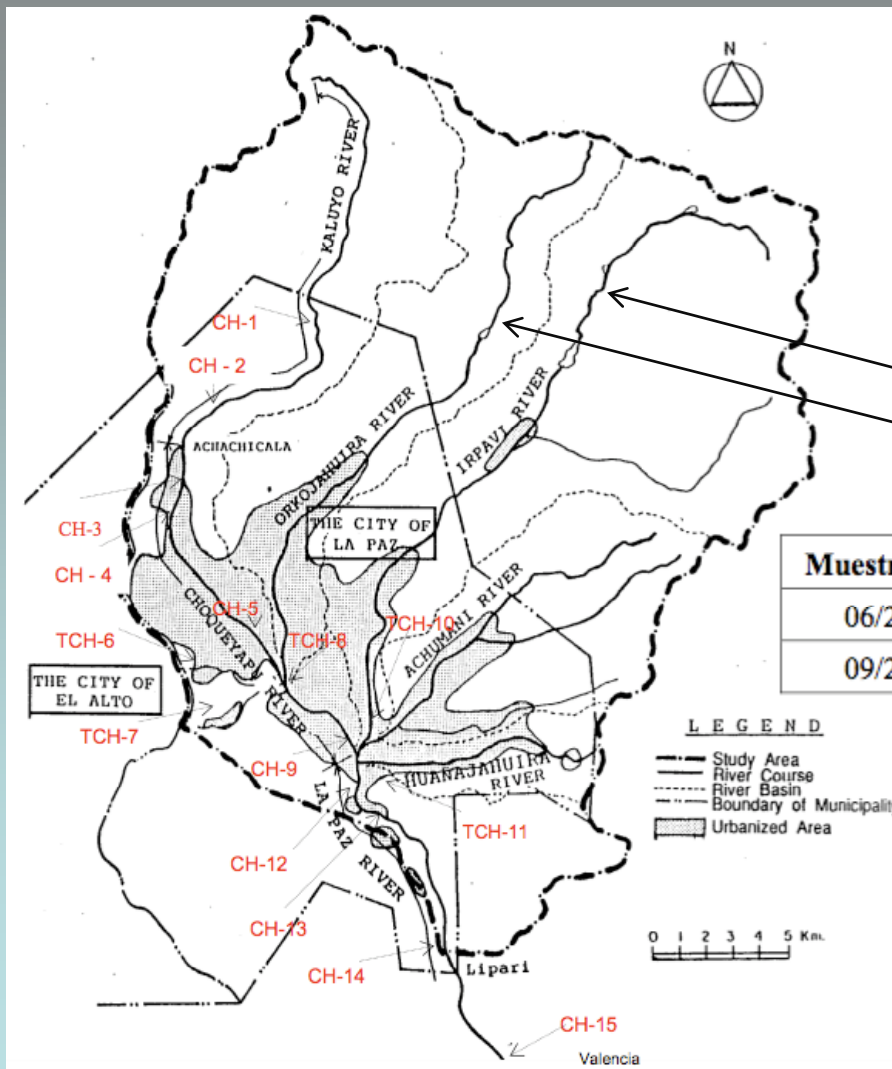
# BOD and COD



## Heavy Metals



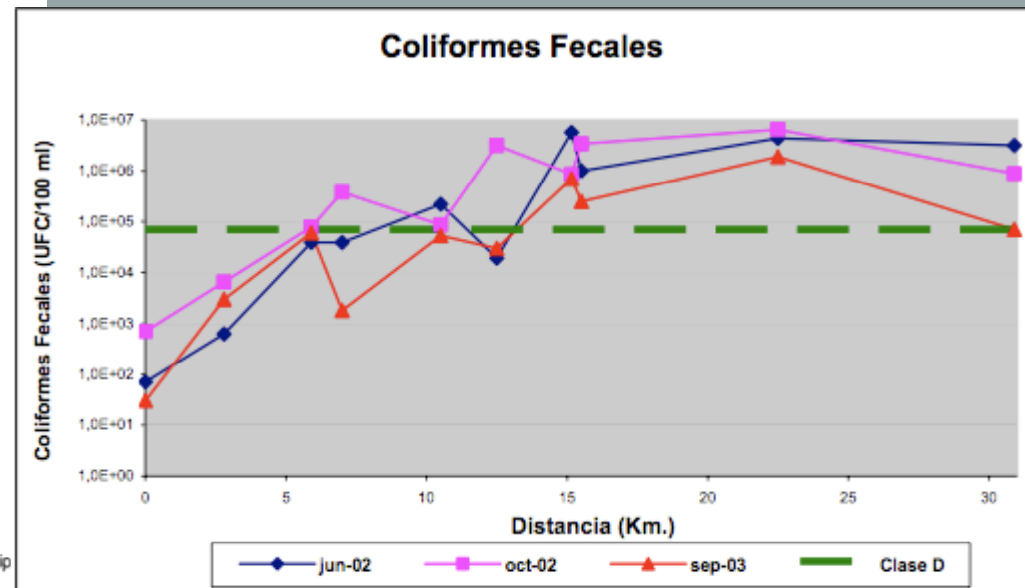
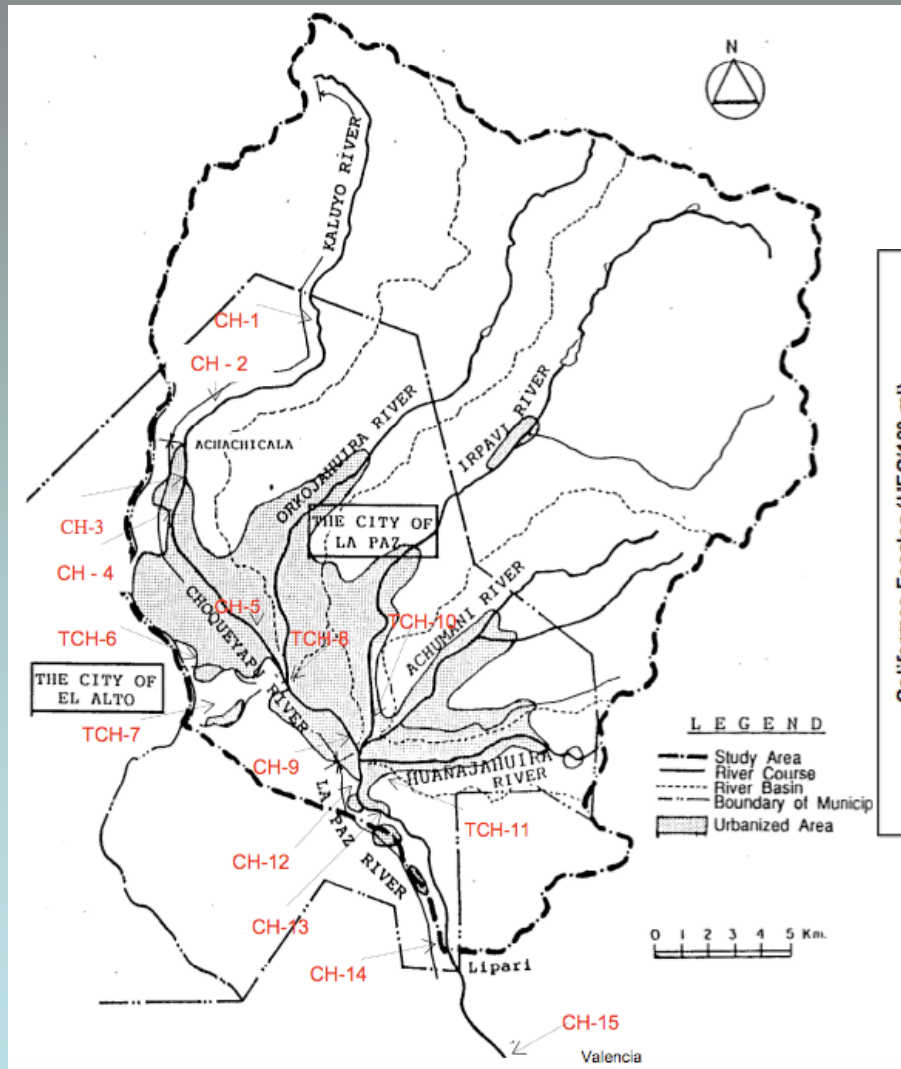
## Other rivers in the La Paz basin



Muestreo	T-CH-6	T-CH-7	T-CH-8	T-CH-10	T-CH-11
06/2002	403.60	168.90	1022.34	480.07	33.50
09/2003	439.83	192.09	709.08	240.53	49.08

**DQO**

# Coliforms in Choqueyapu River



## Final section of the river and regional activities

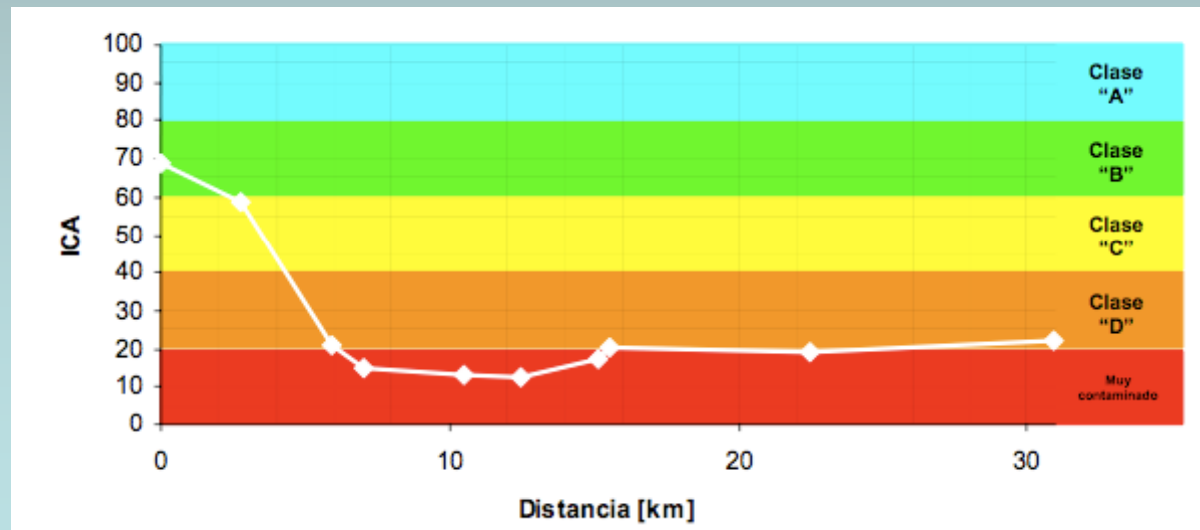


## Bolivian Water Quality Regulations

Parámetro	Unidades	Clase "A"	Clase "B"	Clase "C"	Clase "D"
Demanda Química de Oxígeno	[mg/L]	< 5	< 10	< 40	< 50
Coliformes termotolerantes	[UFC/100 mL]	< 50	< 1000	< 5000	<50000
Nitrógeno Amoniacal <sup>(1)</sup>	[mg/L]				
Oxígeno Disuelto	% de Sat.	> 60	> 70	> 80	> 90
Conductividad eléctrica <sup>(1)</sup>	[ $\mu$ S/cm]				
Detergentes	[mg/L]	0,5	0,5	0,5	0,5
Turbiedad	[UNT]	< 10	< 50	< 100	< 200
pH	----	6,0-8,5	6,0-9,0	6,0-9,0	6,0-9,0
Hierro total	[mg/L]	0,3	0,3	1,0	1,0
Cromo VI	[mg/L]	0,05	0,05	0,05	0,05
Cadmio	[mg/L]	0,005	0,005	0,005	0,005
Amoníaco	[mg NH <sub>3</sub> /L]	0,05	1	2	4
Sólidos Disueltos Totales	[mg/L]	1000	1000	1500	1500

## Water Quality Index vs. Distance

Categorización	Calificación y color
Excelente	80 - 100
Buena	60 - 80
Media	40 - 60
Mala	20 - 40
Muy Contaminada	0 - 20





## Water Quality Index vs. Distance and Time

