

DROUGHT ACTION PLAN IN THE SEGURA RIVER BASIN

**7<sup>th</sup> WORLD GENERAL ASSEMBLY OF THE  
INTERNATIONAL NETWORK OF BASIN  
ORGANISATIONS**



**DROUGHT ACTION PLAN IN THE SEGURA RIVER  
BASIN**

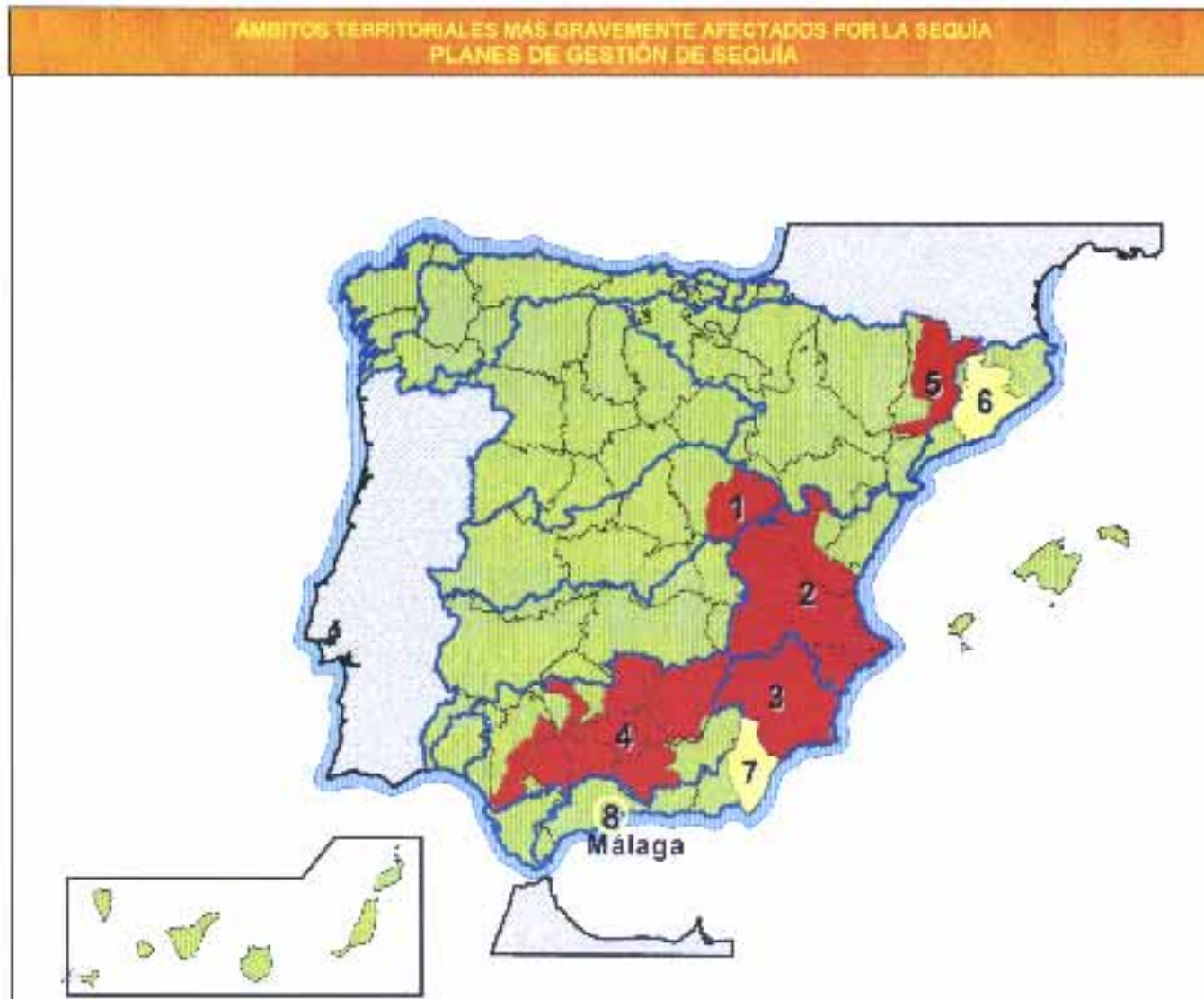
**Mario Andres Urrea Mallebrera, Head of the Water Management Planning Office  
of the Segura River Basin Authority**

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Debrecen, 7 June 2007

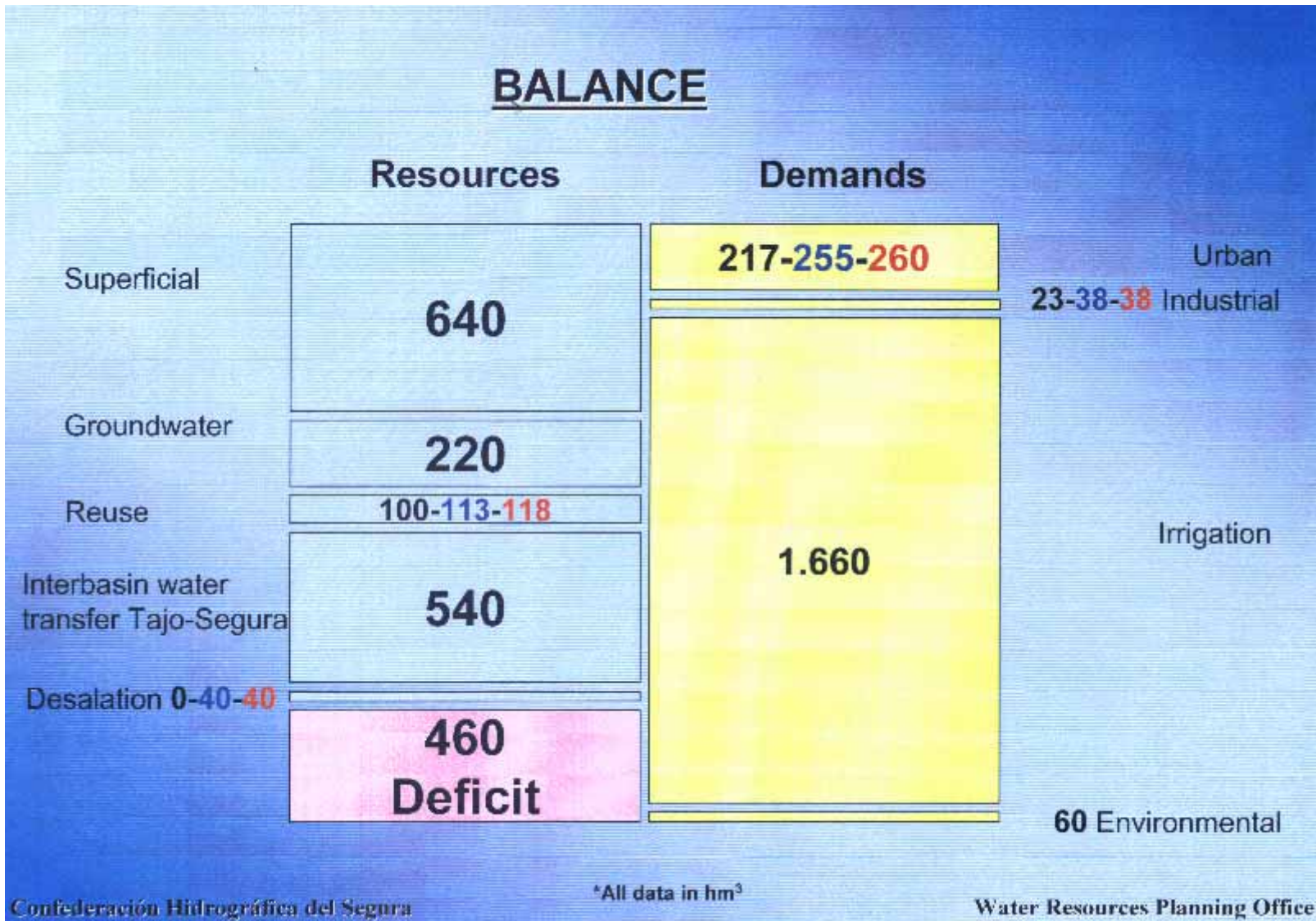


## DROUGHT ACTION PLAN IN THE SEGURA RIVER BASIN



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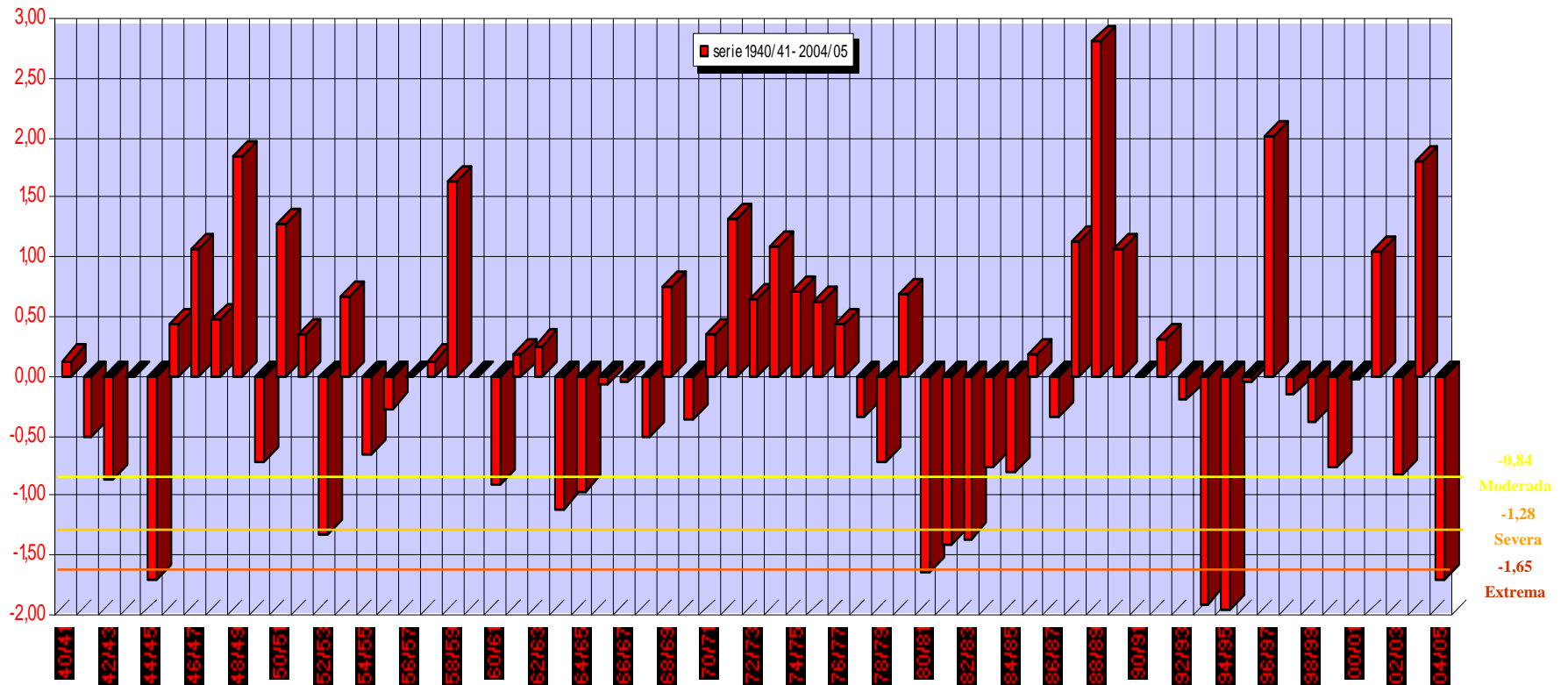
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# DROUGHT ACTION PLAN IN THE SEGURA RIVER BASIN

## CHARACTERISATION OF EARLIER droughtS

SPI EN LA CUENCA DEL SEGURA

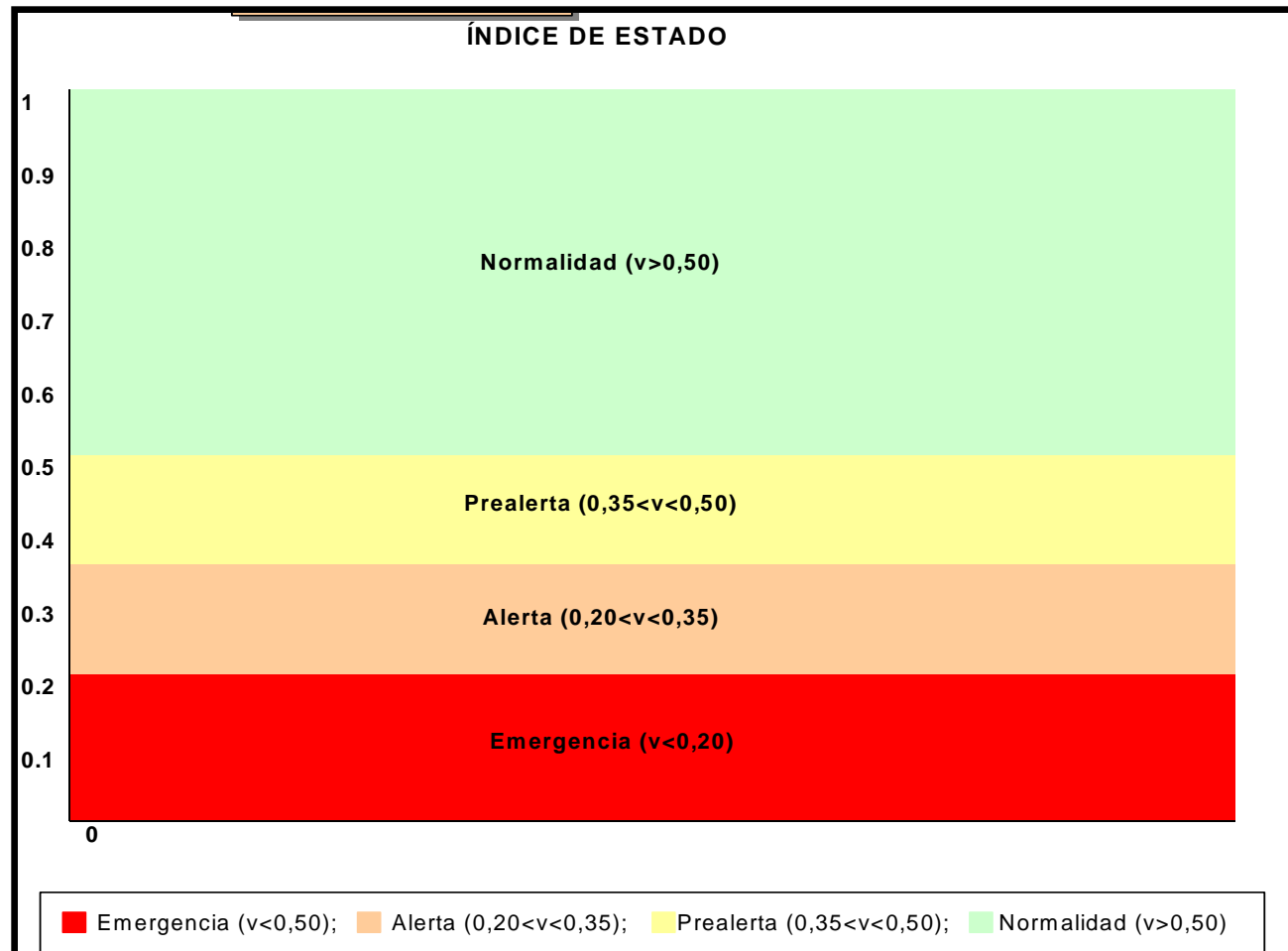


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## DROUGHT ACTION PLAN IN THE SEGURA RIVER BASIN

### ELECTION OF THRESHOLD VALUES



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## DROUGHT ACTION PLAN IN THE SEGURA RIVER BASIN

### **ADOPTION OF drought INDICATORS (1/2)**

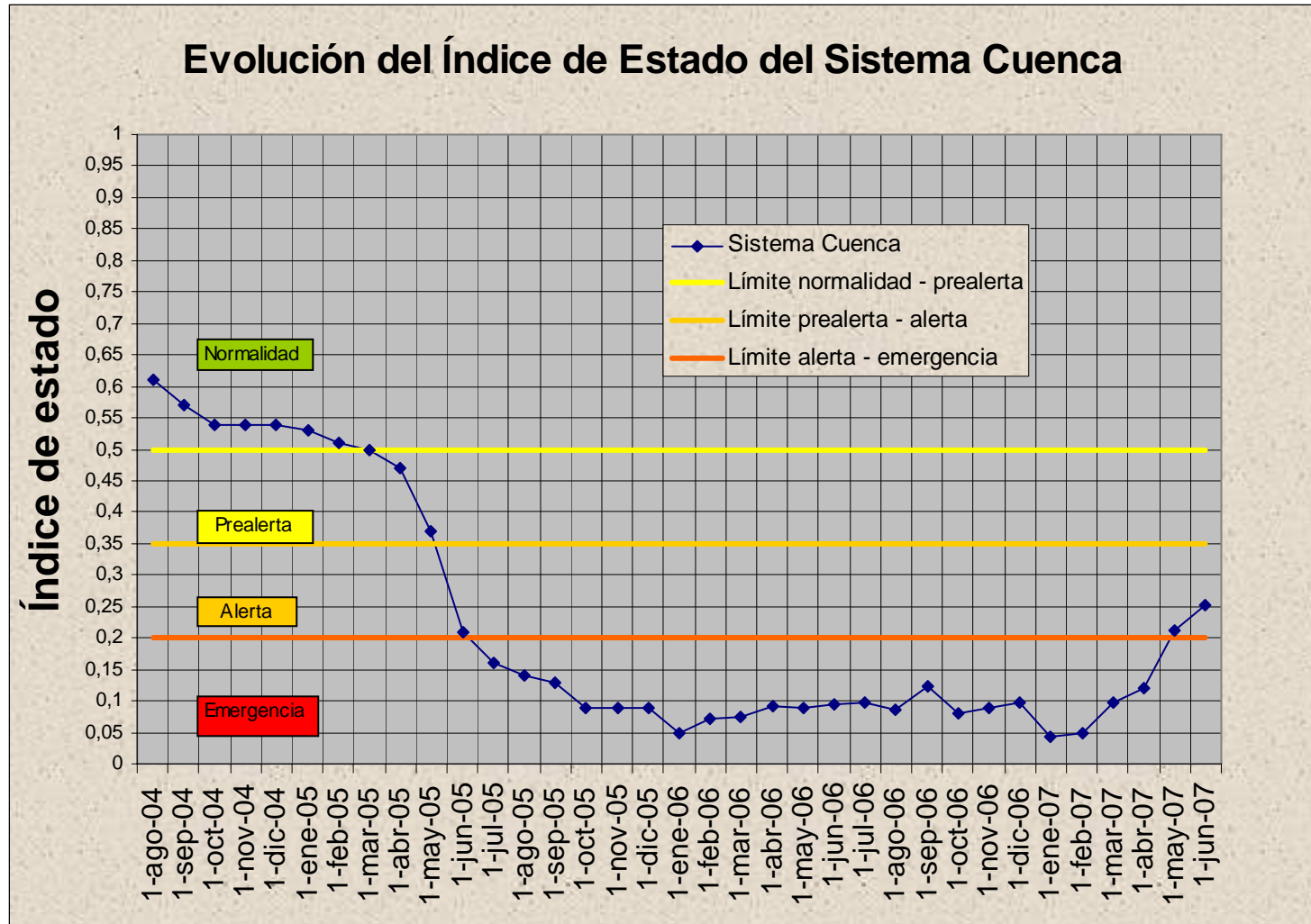
- **A system of representative status indicators is defined with respect to the evolution of the offer of resources and the demands to fulfil in each operation sub-systems (the Taibilla Canal Consortium System, the River Basin System and the Tajo-Segura Transfer System).**
- **These indicators are composed of various variables that include both reservoir storages and natural flows in the river basin.**
- **The indicators are adopted definitively after calibration and validation in relation to real situations in order to verify their adequacy.**

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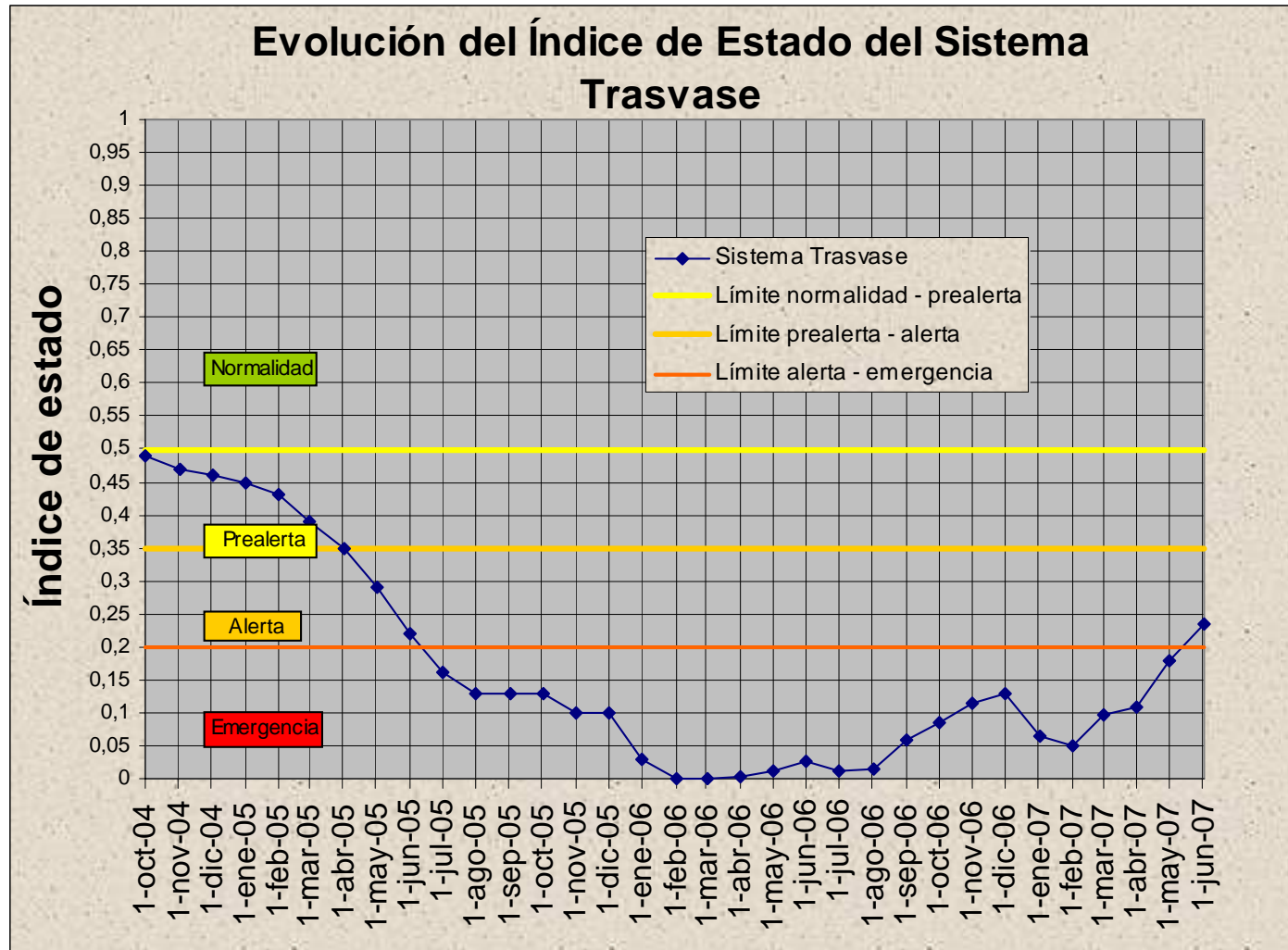


The Special Action Plan for Drought Situations was approved on 21 March 2007 (BOE 23/03/07), the value of the index related to June 2007 was calculated according to the methodology described in this Plan.

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## DROUGHT ACTION PLAN IN THE SEGURA RIVER BASIN

### THE MANAGEMENT OF DROUGHTS

- The Reservoir Release Commission should deliberate and formulate proposals to the President of the River Basin Authority on the adequate filling and release of the reservoirs and aquifers in accordance with article 33 of the Consolidated Text of the Water Act (Legislative Royal Decree 1/2001).
- After the approval of the Drought Decree, a Drought Monitoring Permanent Commission is created, which includes the principal officers in charge of water resource management, the users and the principal stakeholders of the river basin.
- This Commission will be advised by the Drought Technical Office formed by a multidisciplinary technical team active in the scope of the river basin authority.
- A *Public Participation Process* will be undertaken, both for the adoption and approval procedure of the Plan and for the adoption the most significant measures.




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### **SUMMARY OF THE MEASURES TO BE ADOPTED** **Regulatory Measures**

- RD 10/2005 of urgent measures to reduce damages caused by drought and other climatic adversities in the agricultural sector. 
- RD 1265/2005 to adopt exceptional administrative measures for water resources management and to repair the effects of drought in the Júcar, Segura and Tajo river basins. 
- RDL 15/2005 of urgent measures for the regulation of water right transactions.
- RD 287/2006 to regulate urgent works for the improvement and consolidation of irrigations in order to obtain adequate water savings that may alleviate the damages produced by the drought. 
- RDL 9/2006 of urgent measures to alleviate the effects produced by the drought in urban water supply and in irrigated agricultural lands in certain river basins.

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### RELATIONSHIP WITH THE URBAN WATER SUPPLY PLANS FOR MORE THAN 20,000 PEOPLE

- Act 10/2001 requires that the authorities responsible for urban water supply systems serving more than 20,000 people develop an Emergency Plan for drought situations.
- Within the Segura River Basin, there are 18 municipalities of more than 20,000 inhabitants (15 are supplied by the Taibilla Canal Consortium + Hellín, Yecla, Jumilla) the emergency plans of which were presented to the Segura River Basin Authority.
- The Special Drought Plan contains the definition of the basic elements for co-ordination and homogenisation of these emergency plans.

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## DROUGHT ACTION PLAN IN THE SEGURA RIVER BASIN

### WATER SUPPLY

#### Structural Measures:

- Disconnect certain municipalities that may be supplied from other sources from the Taibilla sub-system.
  - Extension of the Lorca water treatment plant (2,5 M euros).
  - Connection of Lorquí, Ceutí, Archena, Ojós, Ricote, Ulea y Villanueva with the Sierra Espada WTP. (4 M euros).

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### WATER SUPPLY

#### Measures to Increment Resources

- Declare the desalination plant of de San Pedro del Pinatar II (89 M Euro) an emergency work 100% operational at present 24 hm<sup>3</sup>/año. 
- Extraordinary abstractions from the Calasparra Sinclinal Aquifer (hm<sup>3</sup>).

<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>TOTAL</u>
30,8	28,1	24,3	83,2

- Creation of a new strategic reserve in the Segura river basin of 17 hm<sup>3</sup>, (partly consumed already) and extraordinary transfers from the Jucar River Basin
- Cession of water rights.

2006 C.R. Canal de las Aves (Tajo) 35,52 hm<sup>3</sup>/año

Arrozales de Hellín (2006) 1,20 hm<sup>3</sup>/año

2007 C.R. Canal de las Aves (Tajo) 36,00 hm<sup>3</sup>/año

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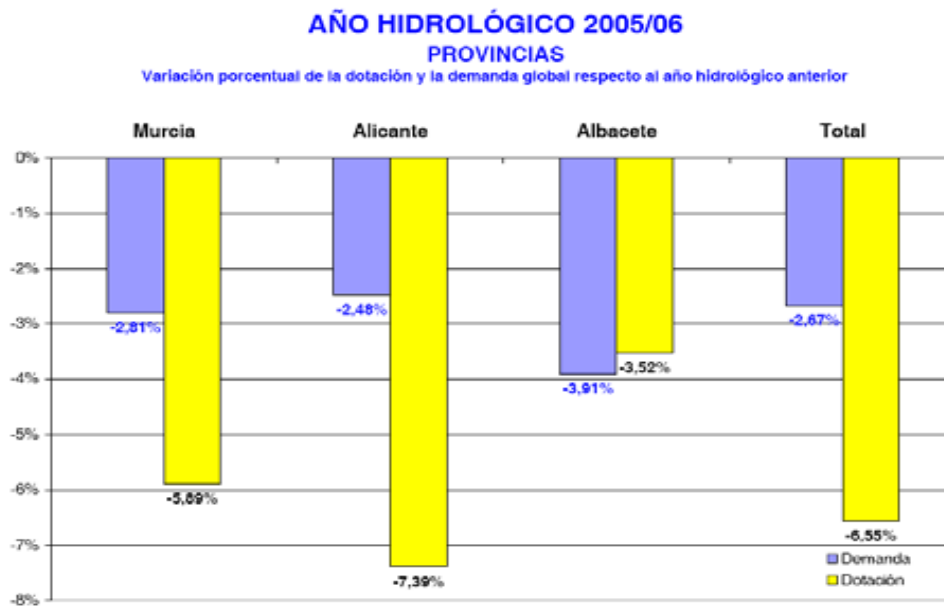
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### Management measures

- Voluntary savings, facilitated by conservation campaigns.
- Prohibition of non essential uses (irrigation of gardens, sprinkling etc).



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## DROUGHT ACTION PLAN IN THE SEGURA RIVER BASIN

### Irrigation

Both the Segura Drought Action Protocol and the SDP establishes the following restrictions:

Pre-Warning	10%
Warning	25%
<b>Emergency</b>	<b>50%</b>

Cession of water rights in favour of the SCRATS, of the irrigators of Extremera.

2005/06 34,05 hm<sup>3</sup>

2006/07 31,00 hm<sup>3</sup>

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## DROUGHT ACTION PLAN IN THE SEGURA RIVER BASIN

TYPE	Nº WELLS	Qm m3/seg.	V (hm3)
Wells operated directly by the authority	37	3,645	36,88
Wells ceded to the authority and operated by the Water Commissariat	34	2,17	9,64
Wells under entrustment	33	2,9	31,28
Indirect re-use of STP			50,00

**TOTAL                    127,80**



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### Environmental Management and Control

- Maintenance of minimum flows in the natural river beds. (River type water bodies)



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Medium and Lower Valley. Segura river channelling.  
Heavily Modified Water Bodies.

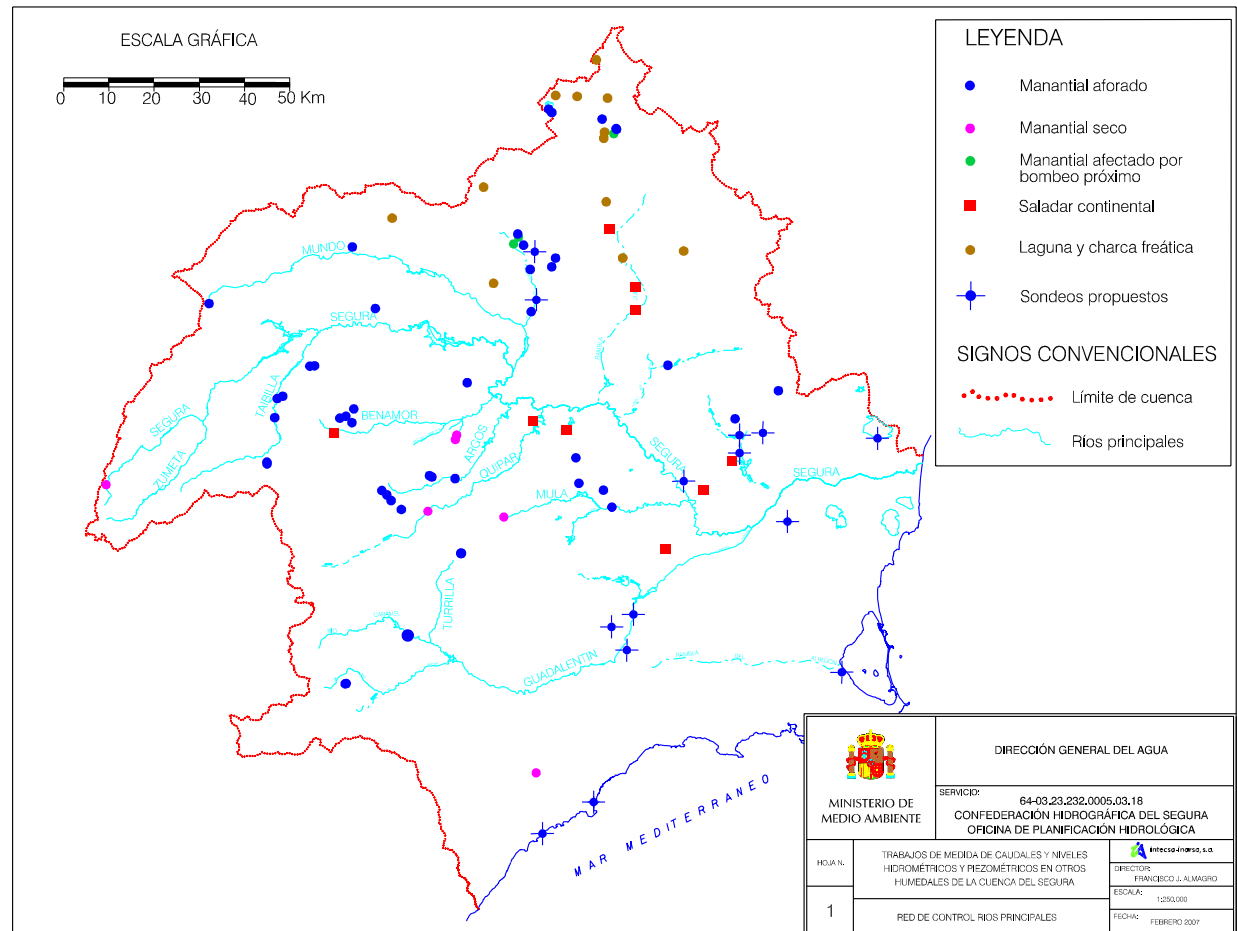


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# DROUGHT ACTION PLAN IN THE SEGURA RIVER BASIN

## Objectives

- Hydrologic analysis of wetlands and other areas of environmental interest related to groundwaters.
- Determine the impact caused by the drought and the exploitation of groundwaters.



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- Biological quality network.
  - Contrast potential affections on fish life (no fish mortality).
- River gauging and groundwater level monitoring networks.

NO IRREVERSIBLE DAMAGES ARE REPORTED

MINIMUM FLOWS ON THE FINAL REACH OF THE SEGURA RIVER

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# CONCLUSIONS

1. **No restrictions have been implemented in urban water supplies during the draught period and the related economic activities have been maintained throughout the river basin.**
2. **From the environmental point of view, the ecological flows have been reduced to compatible minimum levels that do not cause irreparable affections in lower river reaches.**
3. **The restrictions implemented in irrigation consisted of reducing the normal flow rates to approximately 50% causing minimum affections in tree crops and assignment of higher flows to crops of high socio-economic efficiency.**

DROUGHT ACTION PLAN IN THE SEGURA RIVER BASIN

GRACIAS POR SU ATENCION.  
THANK YOU FOR YOUR  
ATTENTION.  
KÖSZÖNÖM A FIGYELMÜKET.

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## DROUGHT ACTION PLAN IN THE SEGURA RIVER BASIN

- **Payment exemptions derived from irrigation water use:**
  - **Exemption in irrigation water tariffs.**
  - **Exemption of fix and variable costs of the Tajo-Segura Transfer tariff included in paragraphs b) and c).**
- **Compensation of revenue losses with earlier exemptions from the River Basin Authorities Contingency Funds.**

2005	16,5 M Euros
2006	17,8 M Euros



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## DROUGHT ACTION PLAN IN THE SEGURA RIVER BASIN

<b>Emergency actions (M Euro)</b>	<b>2005/06</b>	<b>2006/07</b>	<b>TOTAL</b>
Increase resources			
Desalination plant San Pedro del Pinatar	83,00	6,04	89,04
Drought wells	6,80	19,90	26,70
Management improvement and conservation	21,00	16,12	37,12
<b>TOTAL</b>	<b>110,80</b>	<b>42,06</b>	<b>152,86</b>

### **Emergency actions**

Connection of desalination plants with C.P.	86,50		
Alicante II desalination plant	99,00		



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## DROUGHT ACTION PLAN IN THE SEGURA RIVER BASIN

AUTONOMIC COMMUNITY	BUDGET (M Euro)	MAXIMUM PUBLIC INVESTMENT (M Euro)
Andalusia	10,00	6,00
Region of Murcia	225,10	156,93
Valencian Community	123,90	77,32
<b>TOTAL</b>	<b>359,00</b>	<b>240,25</b>



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# DESALADORA



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CONFEDERACION  
HIDROGRAFICA  
DEL SEGURA