A MANAGEMENT OF PORT SEDIMENT IN A WORKING WITH NATURE (WwN) CONTEXT TO ACHIEVE A ZERO RESIDUES GENERATION

SedNet

SEDIMENT CONTINUUM: APPLYING AN INTEGRATED MANAGEMENT APPROACH

LISBON, PORTUGAL (SEPT, 2023)

Working with Nature

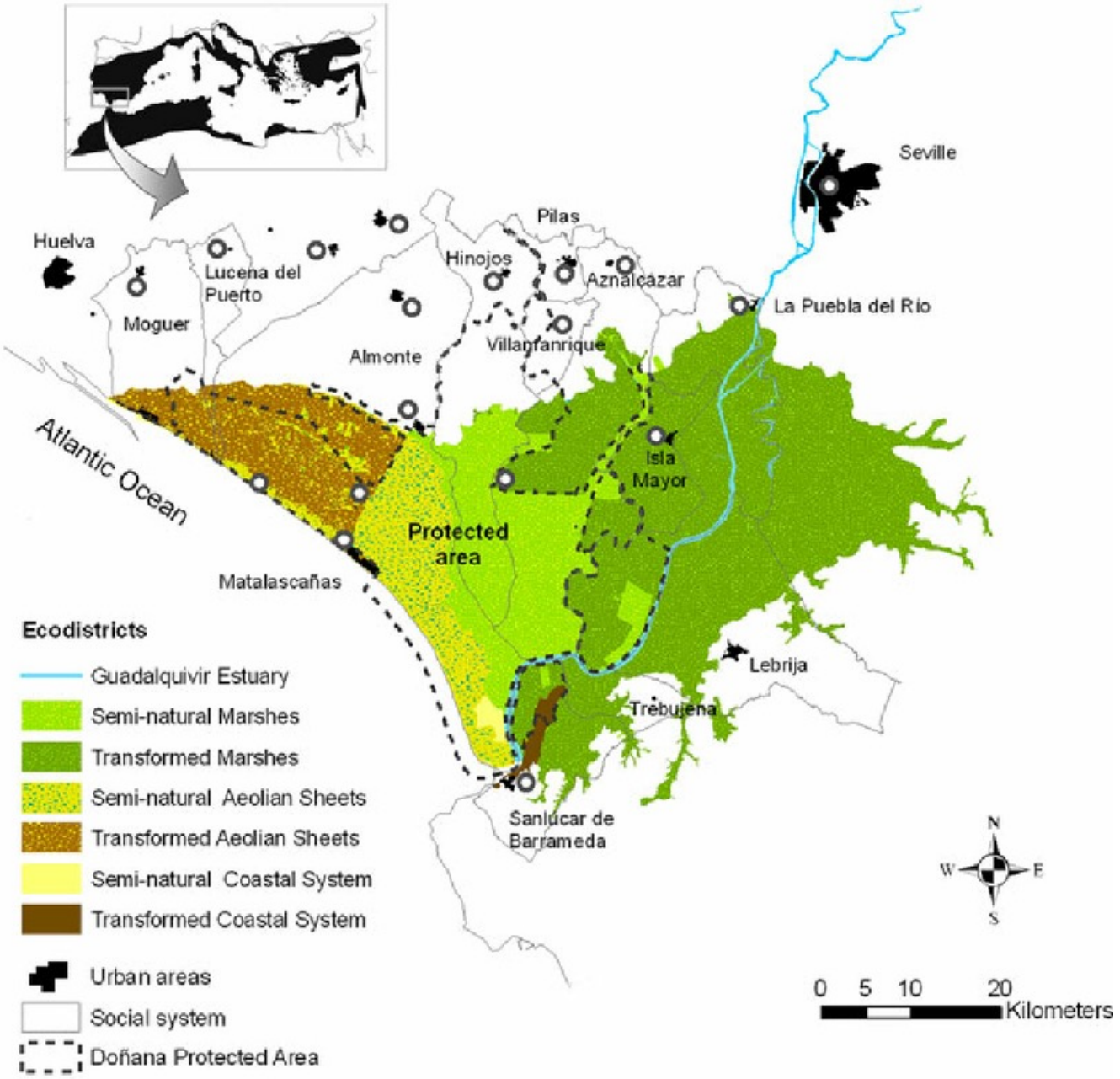
PIANC A.I.P.C.N. NAVIGARE NECESSE

XXIV PREMIO ANDALUCÍA DE MEDIO AMBIENTE

TECNOAMBIENTE
A TRADEBE COMPANY

A MANAGEMENT OF PORT SEDIMENT IN A WWN CONTEXT TO ACHIEVE A ZERO RESIDUES GENERATION

CONTEXT



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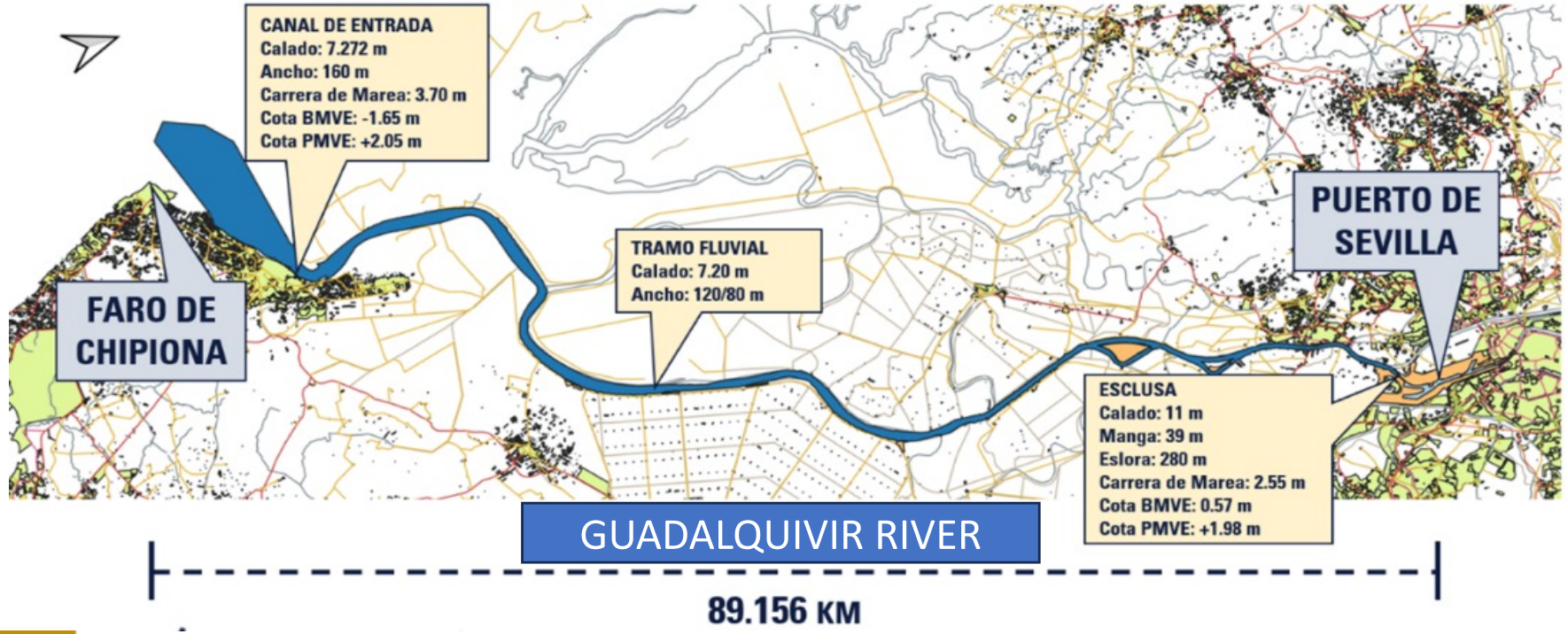

OPTIMIZATION OF THE NAVIGATION IN THE EUROVIA E.60.02 GUADALQUIVIR

NEW DREDGING TECHNIQUES

- MINIMIZE THE EXTRACTION OF SEDIMENT FROM THE ESTUARY. WATER INJECTION DREDGING
- IMPROVEMENT OF DREDGING SYSTEMS WITH USING MORE SUSTAINABLE TECHNIQUES
- STRICT DELIMITATION OF THE DREDGIND AREAS, DESIGNING THE DESTINATION AREAS

USE OF SEDIMENTS

- MANAGEMENT OF CONFINED DISPOSAL FACILITIES TO CREATE BIRD NESTING AREAS
- USE OF THE BED DEPRESSIONS FOR ITS FILLING, AVOIDING THE SEDIMENT EXTRACTION OF THE FLUVIAL SYSTEM
- REGENERATION OF BEACHES AND RIVER BANKS USING SUITABLE MATERIAL FOR IT
- USE OF THE FINE MATERIAL FOR THE CERAMIC INDUSTRY

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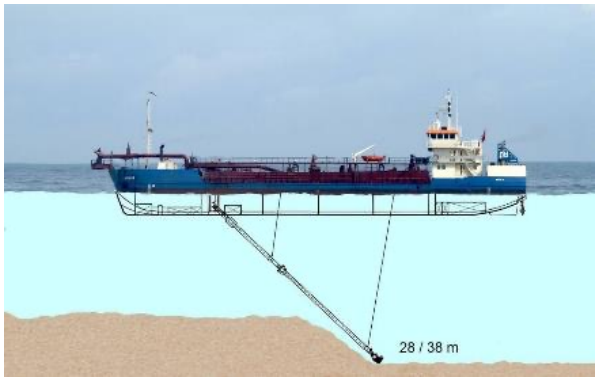
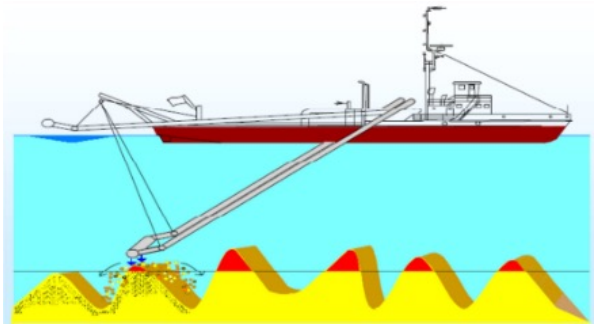
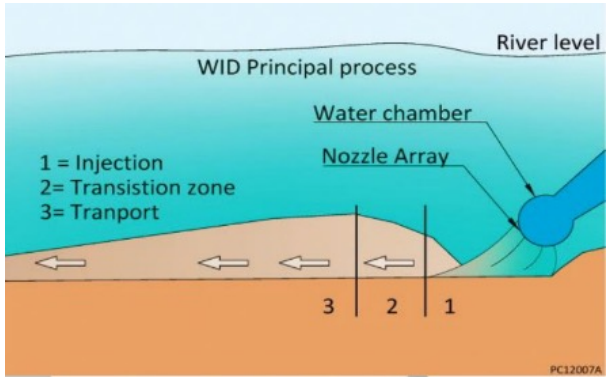
NEW DREDGING TECHNIQUES

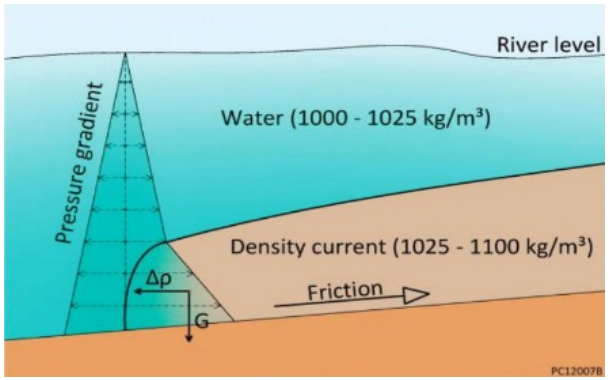
TSHD+ PLOUGH





WATER INJECTION DREDGING





FUNDAMENTALS

- HYDRODINAMIC DREDGING TECHNIQUE
- LOW PRESSION WATER INJECTION
- COHESIVE LAYERS WITH THE ABILITY TO MOVE HORIZONTALLY

WHICH ARE THE IMPROVEMENTS IN COMPARISON WITH CONVENTIONAL DREDGING TECHINQUES?

- NO EXTRACTION OF SEDIMENTS FROM THE RIVER
- SUSTAINABILTY. FOOTCARBON PRINT. WWN. ECOSYSTEM RESOURCES.
- PLANNING IMPROVEMENTS OF THE DREDGING OPERATIONS IN THE EUROVÍA E.60.02.

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USE OF MATERIAL

VALORIZATION OF THE MATERIAL

- **REPLACEMENT IN TERRESTRIAL DUMPS. CIRCULAR ECONOMY**
  - ADAPTATIVE DUMP MANAGEMENT
  - TEMPORARY STOCKS OF MATERIAL
  - CERAMIC USES
  - AGRICULTURE AND CIVIL WORKS

RELOCATION IN THE TMPD

- **RELOCATION IN NATURAL PITS**
- **RELOCATION IN BEACHES/LITTORAL**
- **RELOCATION IN MARINE DUMP**

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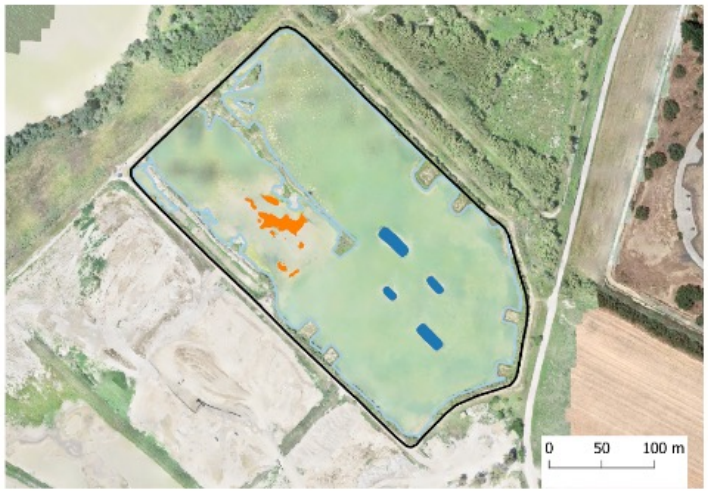
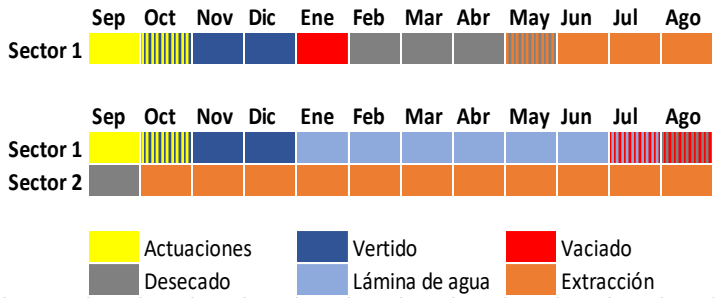
ADAPTATIVE MANAGEMENT OF MAINTENANCE DREDGES FOR THE CREATION OF BIRD NESTING AREAS





PROPOSAL OF ACTIONS AND MANAGEMENT OF WATER CYCLES. BUTANO SECTOR 2

ADAPTATION OF BUTANO SECTOR 2

OBSERVED BIRDS

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ADAPTATIVE MANAGEMENT OF MAINTENANCE DREDGES FOR THE CREATION OF BIRD NESTING AREAS

Cajas de agua. Drenaje

Laderas para abejaruco

Islas. Vaciadero Butano

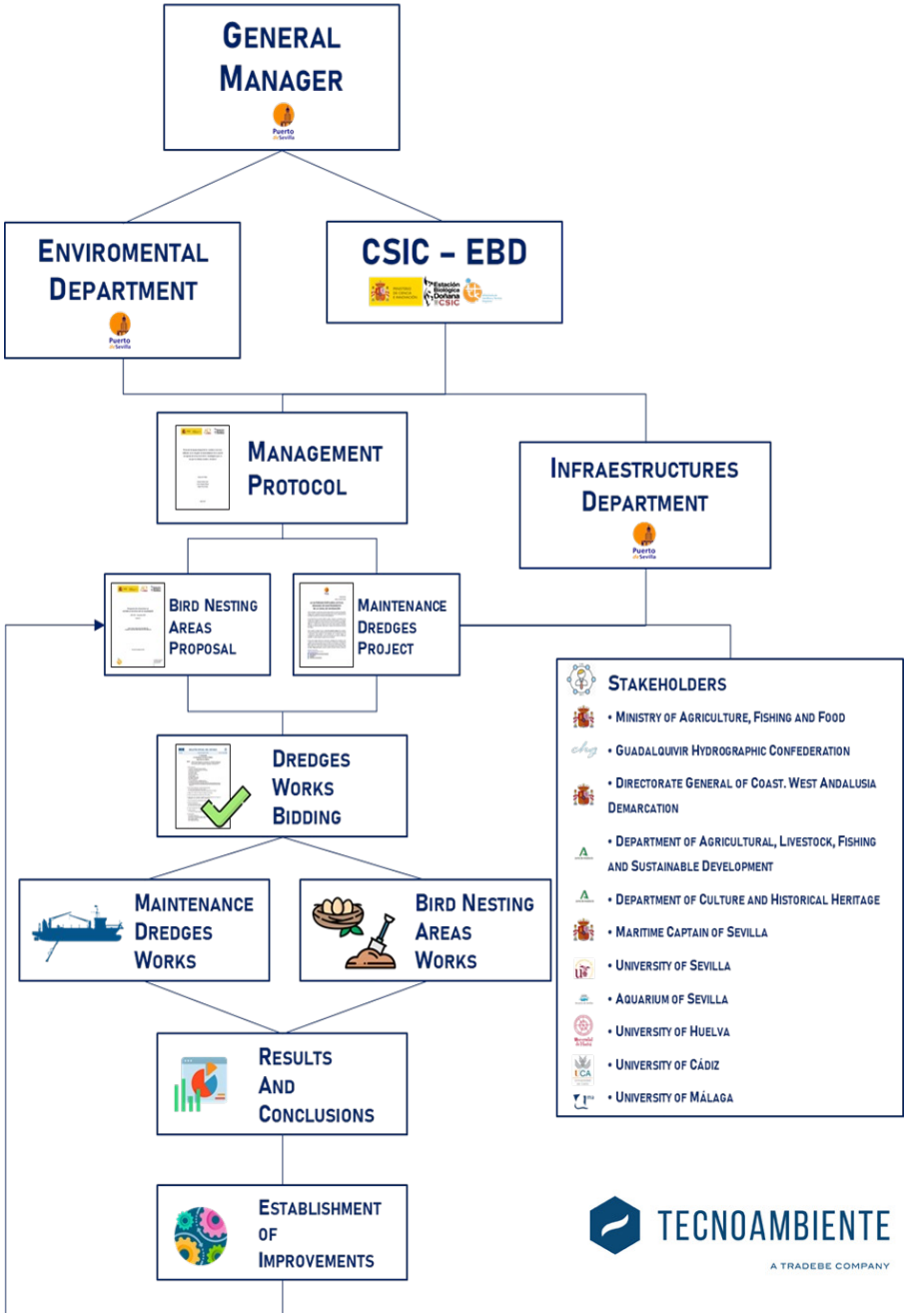
Vaciadero Butano en operación
Islas y península con vegetación

Secuencia del proceso constructivo

Garcilla bueyera, flamencos y abejarucos. Correlimos

Pagazas piquirrojas

Cigüeñuelas



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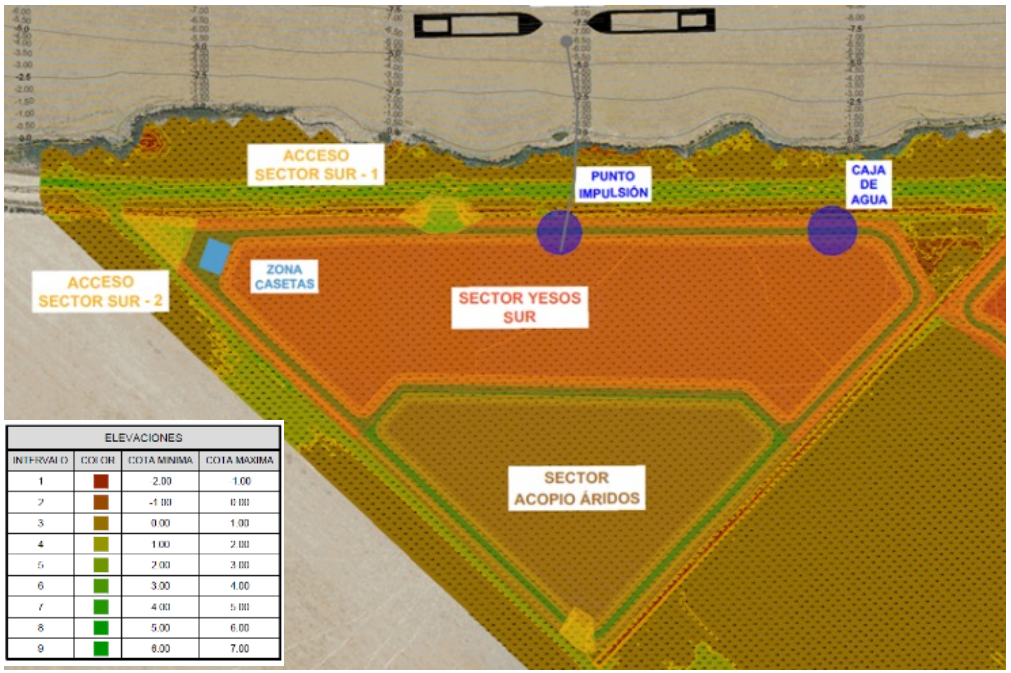
TEMPORARY STOCK OF MATERIAL



ELEVACIONES

INTERVALO	COLOR	COTA MINIMA	COTA MAXIMA
1		2.00	1.00
2		-1.00	0.00
3		0.00	1.00
4		1.00	2.00
5		2.00	3.00
6		3.00	4.00
7		4.00	5.00
8		5.00	6.00
9		6.00	7.00

DUMP LOS YESOS

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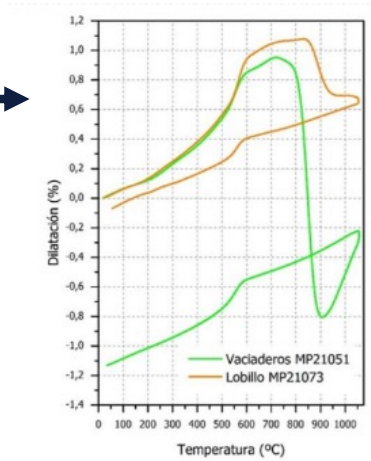
CIRCULAR ECONOMY. CERAMIC AND CONSTRUCTION MATERIAL

- STEPS
  - STEP 1:BASIC CHARACTERIZATION OF DUMPS
  - STEP 2: ECONOMICAL AND TECHNOLOGICAL FEASIBILITY
  - STEP 3: INDUSTRIAL TEST

- USE TO MANUFACTURE OF CERAMIC MATERIALS TO CONSTRUCTION
- ADDITION RECOMMENDED FOR OPTIMAL SHAPING, DRYING AND FIRING PROCESS.
  - MIX: 15% (20% MAX.).
  - Tª MAX. HEATING: 950ºC.
- EMPLOYMENT IN RED TERRACOTTA BRICKS AND TILES.
- ECOTEJAR. SUSTAINABILITY/ENERGETIC SOVEREIGNTY/COLLECTION AND USE OF RAINWATER /ZERO RESIDUE/ ECOLOGICAL DEPURATION (WETLAND-SECONDARY TREATMENT)

SAMPLING

CHARACTERIZATION



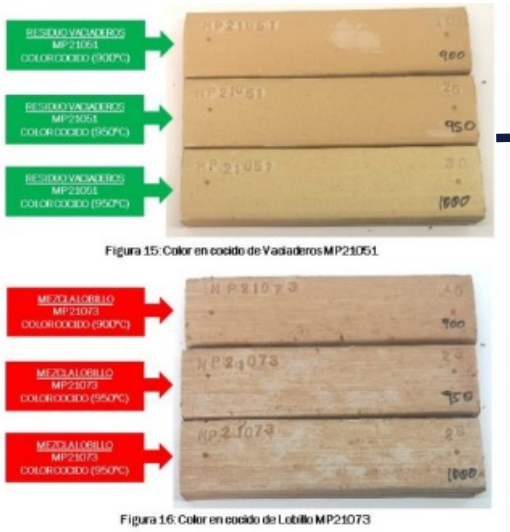


Figura 15: Color en cocido de Vaciaderos MP21051

Figura 16: Color en cocido de Lobillo MP21073

OBJECTIVE

innovarcilla CENTRO TECNOLÓGICO

todobarro.

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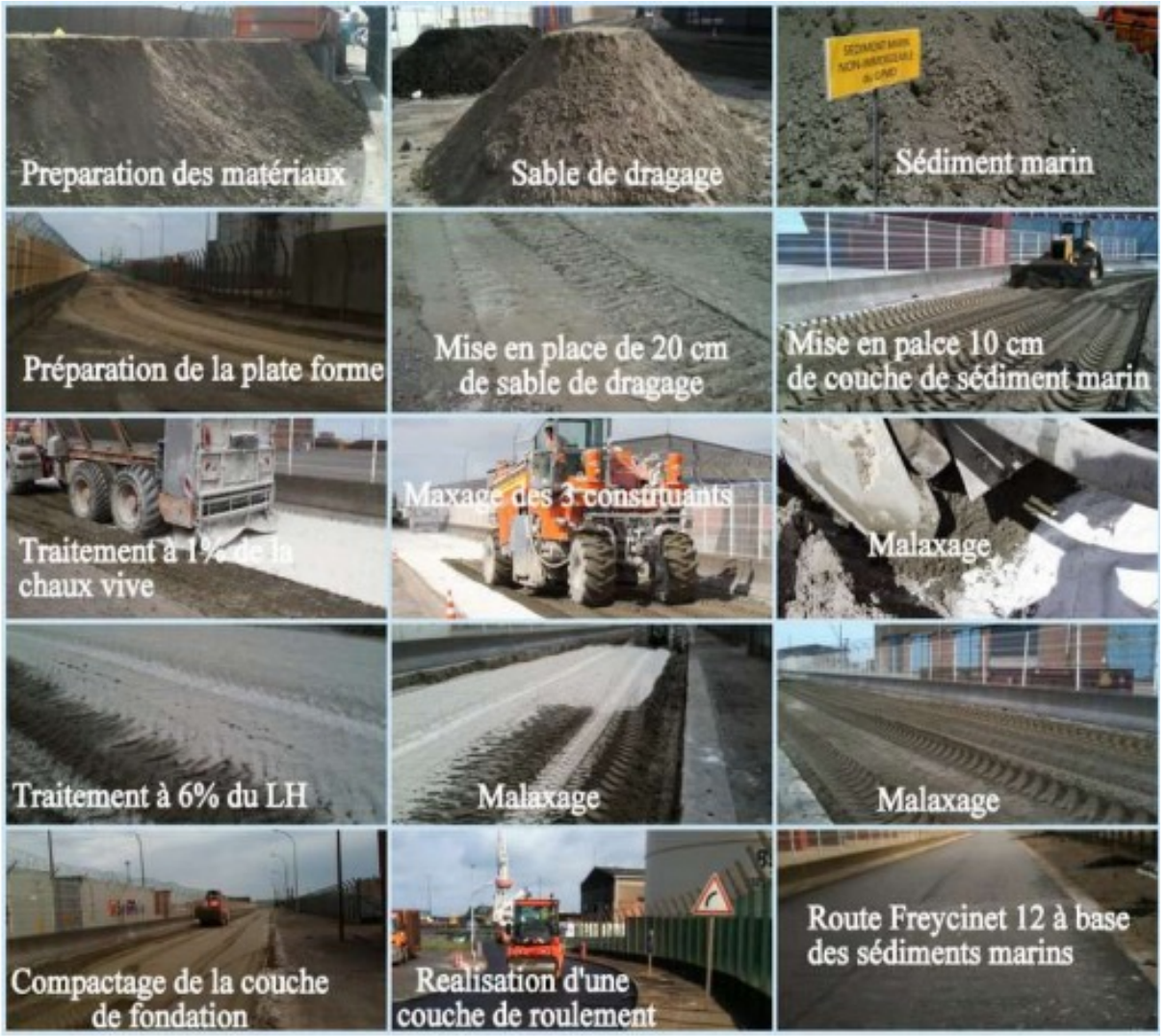
AGRICULTURE AND CIVIL WORKS



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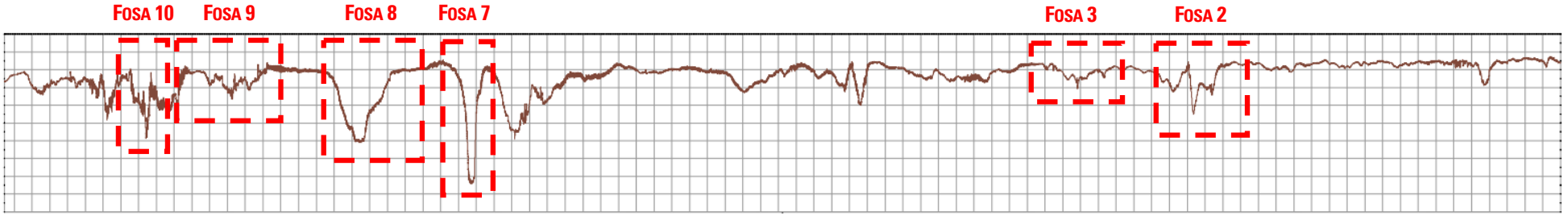
RELOCATION IN THE TMPD. PITS (I)



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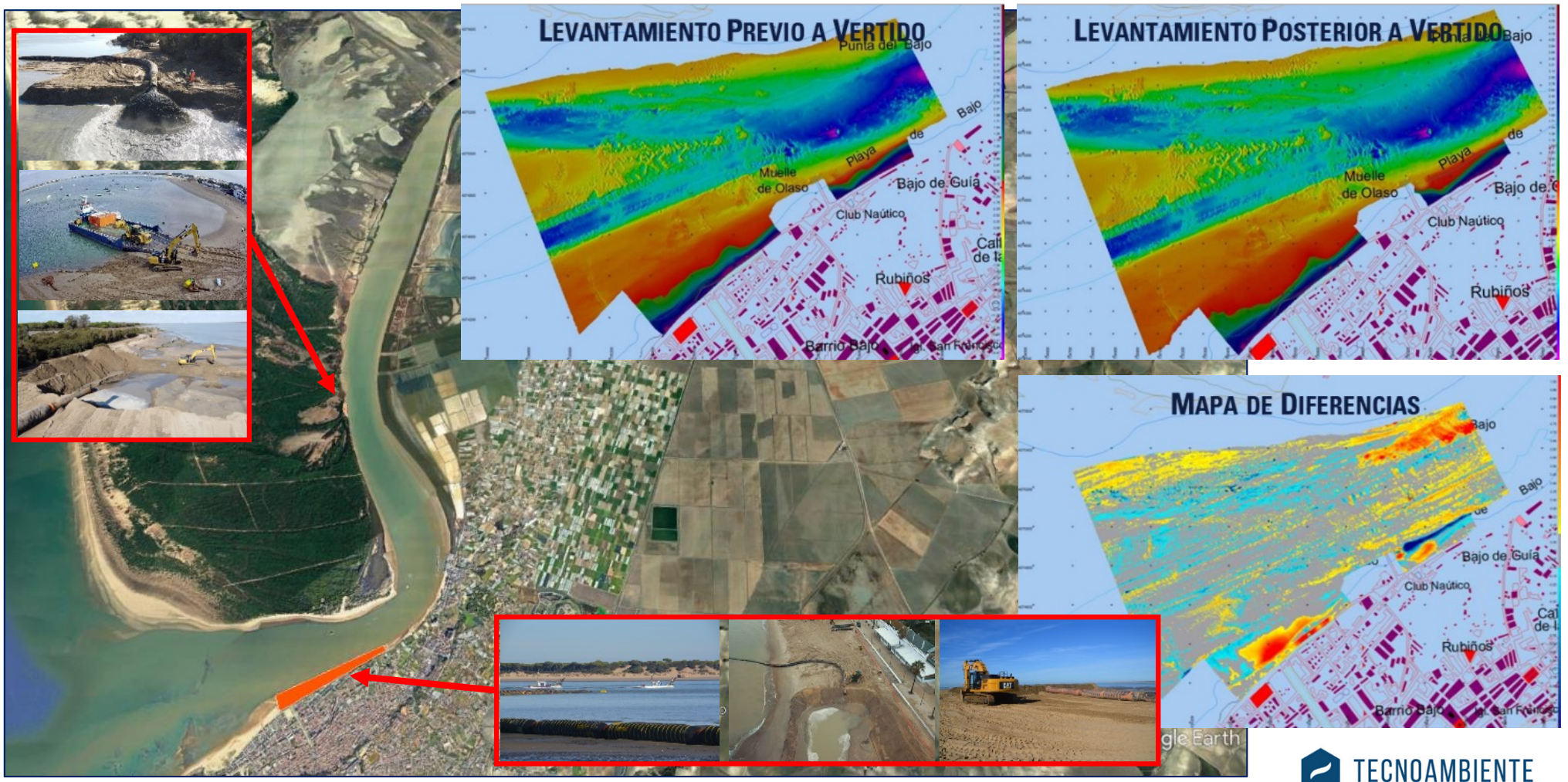
RELOCATION IN THE TMPD. PLACEMENT ON BEACHES/LITTORAL (II)



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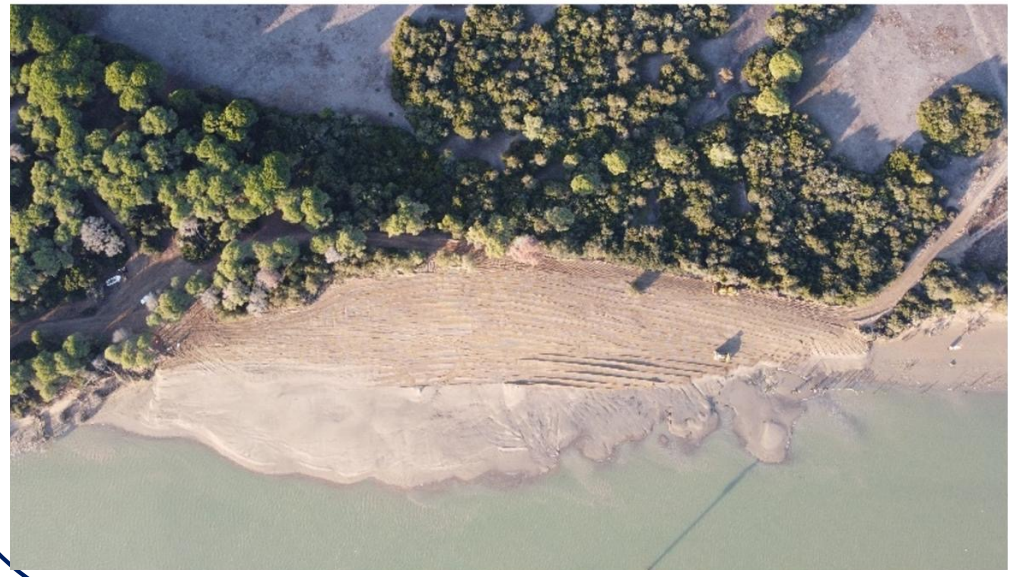
MANAGEMENT OF THE DREDGING MATERIAL



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RELOCATION IN THE TMPD. PLACEMENT ON BEACHES/LITTORAL (II)

DOÑANA NATURAL AREA

BEFORE

AFTER

RIVER BANK EROSION

EROSION-SEDIMENTATION MODEL

- PREVIOUS DIAGNOSIS TO DETECT WHICH FACTORS HAVE A GREATER INFLUENCE ON THE EROSIVE PROCESSES IN THE RIVER BANKS
- MODEL OF CHANNEL SECTIONS IN ORDER TO ASSESS THE SCOUR DEGREE OF THE RIVER BANKS AND WHICH IS THE MAJOR FACTOR.

STUDY OF BANK RIVER STABILITY

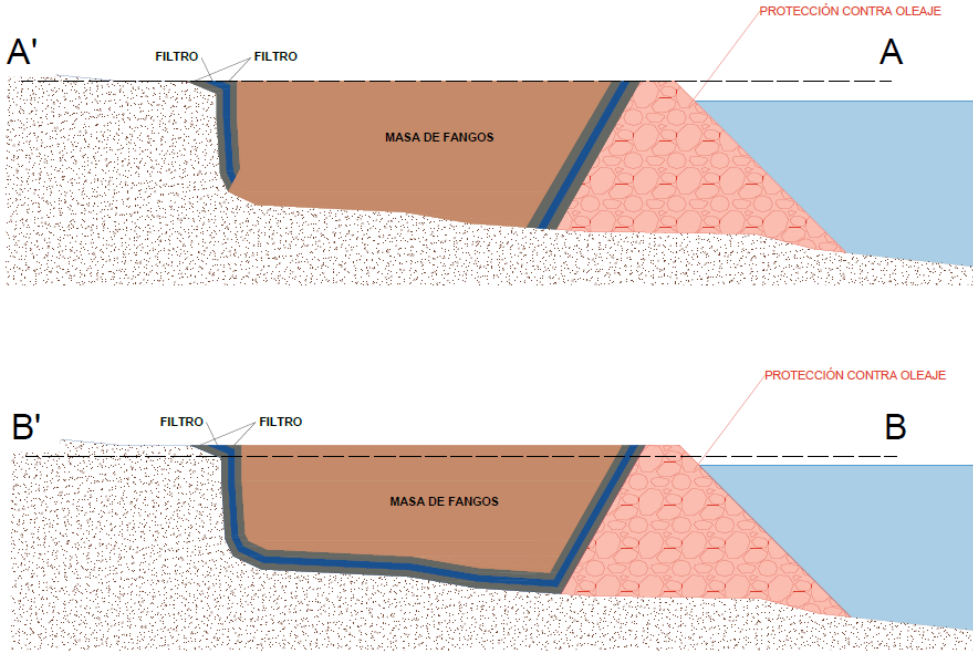
- INITIAL DIAGNOSIS TO ASSESS WHICH FACTORS INFLUENCE THE RIVER BANK STABILITY. SHIPS AND ENVIRONMENTAL FACTORS HAVE BEEN TAKEN INTO ACCOUNT, AS WELL AS THE FACTORS IN THE SOILS OF THE RIVER BANKS, SUCH AS THE IRRIGATION OF THE RICE FIELDS.
- PROPOSAL OF MEASURES TO MITIGATE OR IMPROVE THE ENVIRONMENT OF THE RIVER BANKS AFFECTED BY THE EROSION PROCESSES

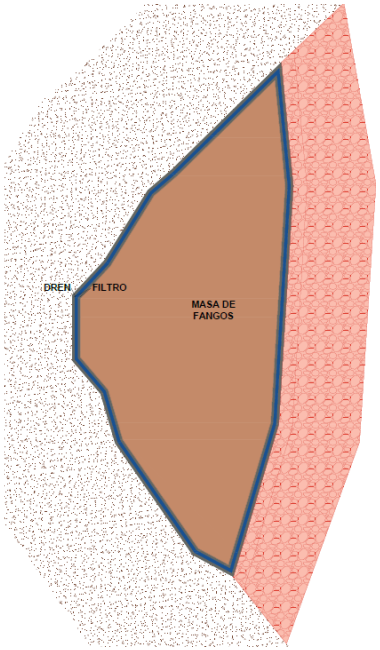
EROSION TYPES

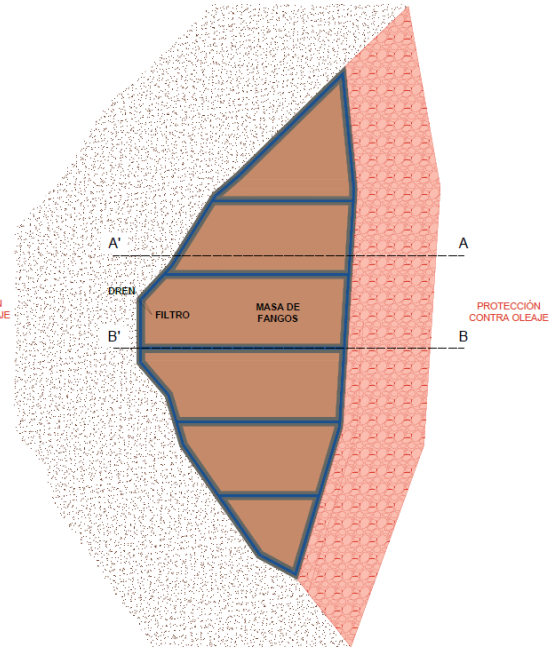
EROSION OF PATHOLOGICAL ORIGIN

EROSION BY FLUVIAL DYNAMICS

EROSIVE ZONES WITH PATHOLOGICAL FAILURE. SLUDGE MASS SOLUTION







THANK YOU FOR YOUR ATTENTION

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