



Región de Murcia
Consejería de Agua, Agricultura,
Ganadería y Pesca



Nuevo Reglamento europeo sobre reutilización de agua para riego agrícola

Mesa redonda y consultoría

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- 1.500.000 habitantes
- 99,3 % población tiene servicio de depuración
- 98 % agua depurada se reutiliza (directa e indirecta)
- Volumen medio agua tratada : 120 Hm³/año
- 100 depuradoras



Table 1 Classes of reclaimed water quality and allowed agricultural use and irrigation method

Minimum reclaimed water quality class	Crop category*	Irrigation method
A	All food crops, including root crops, consumed raw and food crops where the edible part is in direct contact with reclaimed water	All irrigation methods
B	Food crops consumed raw where the edible part is produced above ground and is not in direct contact with reclaimed water, processed food crops and non-food crops including crops to feed milk- or meat-producing animals	All irrigation methods
C	Food crops consumed raw where the edible part is produced above ground and is not in direct contact with reclaimed water, processed food crops and non-food crops including crops to feed milk- or meat-producing animals	Drip irrigation** or other irrigation method that avoids direct contact with the edible part of the crop
D	Industrial, energy, and seeded crops	All irrigation methods***

Table 2 Reclaimed water quality requirements for agricultural irrigation

Reclaimed water quality class	Indicative technology target	Quality requirements				
		<i>E. coli</i> (number/100 ml)	BOD ₅ (mg/l)	TSS (mg/l)g/l)	Turbidity (NTU)U)	Other
A	Secondary treatment, filtration, and disinfection	≤10	≤10	≤10	≤5	<i>Legionella</i> spp.: <1,000 cfu/l where there is risk of aerosolization
B	Secondary treatment, and disinfection	≤100	According to Council Directive 91/271/EEC ¹ ((Annex I, Table 1) _____	According to Directive 91/271/EEC ((Annex I, Table 1)	-	Intestinal nematodes (helminth eggs): ≤1 egg/l for irrigation of pastures or forage
C	Secondary treatment, and disinfection	≤1,000			-	
D	Secondary treatment, and disinfection	≤10,000			-	



Table 4 Validation monitoring of reclaimed water for agricultural irrigation

Reclaimed water quality class	Indicator microorganisms (*)	Performance targets for the treatment chain (log ₁₀ reduction)
A	<i>E. coli</i>	≥ 5.0
	Total coliphages/ F-specific coliphages/somatic coliphages/coliphages(**)	≥ 6.0
	<i>Clostridium perfringens</i> spores/spore-forming sulfate-reducing bacteria(***)	≥ 4.0 (in case of <i>Clostridium perfringens</i> spores) ≥ 5.0 (in case of spore-forming sulfate-reducing bacteria)



(*) The reference pathogens *Campylobacter*, Rotavirus and *Cryptosporidium* can also be used for validation monitoring purposes instead of the proposed indicator microorganisms. The following log₁₀ reduction performance targets should then apply: *Campylobacter* (≥ 5.0), Rotavirus (≥ 6.0) and *Cryptosporidium* (≥ 5.0).

(**) Total coliphages is selected as the most appropriate viral indicator. However, if analysis of total coliphages is not feasible, at least one of them (F-specific or somatic coliphages) has to be analyzed.

(***) *Clostridium perfringens* spores is selected as the most appropriate protozoa indicator. However sporeforming sulfate-reducing bacteria is an alternative if the concentration of *Clostridium perfringens* spores does not allow to validate the requested log₁₀ removal.



Aspectos relativos al análisis de riesgos

➤ Aspectos que se deben contemplar según normativa :

The following requirements and obligations shall, as a minimum, be taken into account in the risk assessment:

- (e) the requirement to reduce and prevent water pollution from nitrates in accordance with Council Directive 91/676/EEC²;
- (f) the obligation for drinking water protected areas to meet the requirements of Council Directive 98/83/EC³;
- (g) the requirement to meet the environmental objectives set out in Directive 2000/60/EC of the European Parliament and of the Council⁴;
- (h) the requirement to prevent groundwater pollution in accordance with Directive 2006/118/EC of the European Parliament and of the Council⁵;
- (i) the requirement to meet the environmental quality standards for priority substances and certain other pollutants laid down in Directive 2008/105/EC of the European Parliament and of the Council⁶;
- (j) the requirement to meet the environmental quality standards for pollutants of national concern (i.e. river basin specific pollutants) laid down in Directive 2000/60/EC;
- (k) the requirement to meet the bathing water quality standards laid down in Directive 2006/7/EC of the European Parliament and of the Council⁷;
- (l) the requirements concerning the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture under Council Directive 86/278/EEC⁸;
- (m) the requirements regarding hygiene of foodstuffs as laid down in Regulation (EC) No 853/2004 of the European Parliament and of the Council⁹ and the guidance provided in the Commission Notice on guidance document on addressing microbiological risks in fresh fruits and vegetables at primary production through good hygiene;

- (n) the requirements for feed hygiene laid down in Regulation (EC) No 1831/2005 of the European Parliament and of the Council¹⁰;
- (o) the requirement to comply with the relevant microbiological criteria set out in Commission Regulation (EC) No 2073/2005¹¹;
- (p) the requirements regarding maximum levels for certain contaminants in foodstuffs set out in Commission Regulation (EC) No 1831/2006¹²;
- (q) the requirements regarding maximum residue levels of pesticides in or on food and feed set out in Regulation (EC) No 396/2005 of the European Parliament and of the Council¹³;
- (r) the requirements regarding animal health in Regulation (EC) 1069/2009 of the European Parliament and of the Council¹⁴ and Commission Regulation (EC) 142/2011 of the European Parliament and of the Council¹⁵.

5. When necessary and appropriate to ensure sufficient protection of the environment and human health, **specify requirements for water quality and monitoring that are additional to and/or stricter than those specified in Annex I.**

Depending on the outcome of the risk assessment referred to in point 4, such additional requirements may in particular concern:

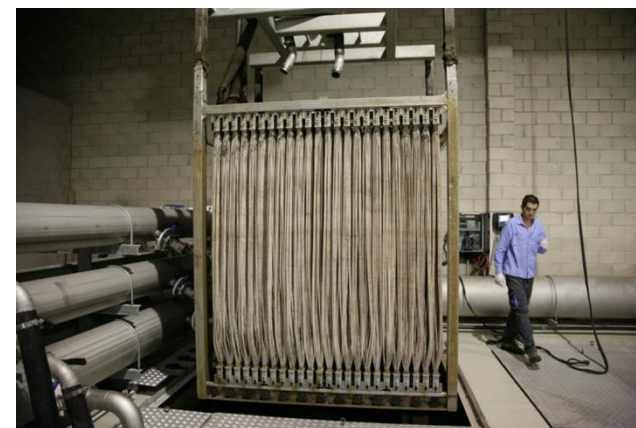
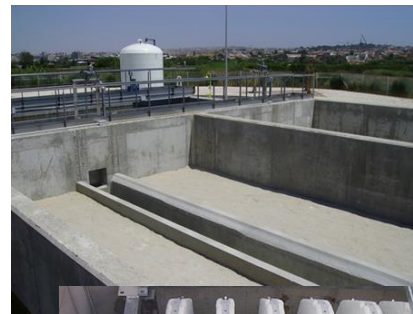
- (a) heavy metals;
- (b) pesticides;
- (c) disinfection by-products;
- (d) pharmaceuticals;
- (e) other substances of emerging concern;
- (f) anti-microbial resistance.



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Tratamientos terciarios habituales





DESAFÍOS ANTE NUEVO REGLAMENTO

- Los operadores tienen una responsabilidad que antes no tenían
- Las dificultades en cuanto a tratamiento están únicamente ante el tipo A
- Los planes de gestión del riesgo están sometidos a mucha subjetividad por el evaluador: Incertidumbre
- Validación posiblemente se defina mediante “acto delegado” de la CE
- La relación con el resto de actores de la reutilización va a ser compleja

Actuaciones de ESAMUR:

- Selección de las tecnologías de tratamiento (optimización) y control muy riguroso. Actuaciones
- Planes de gestión de riesgos
- Tiempo y presupuesto (barreras)
- Implicación de los usuarios en los costes



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Nuevas instalaciones



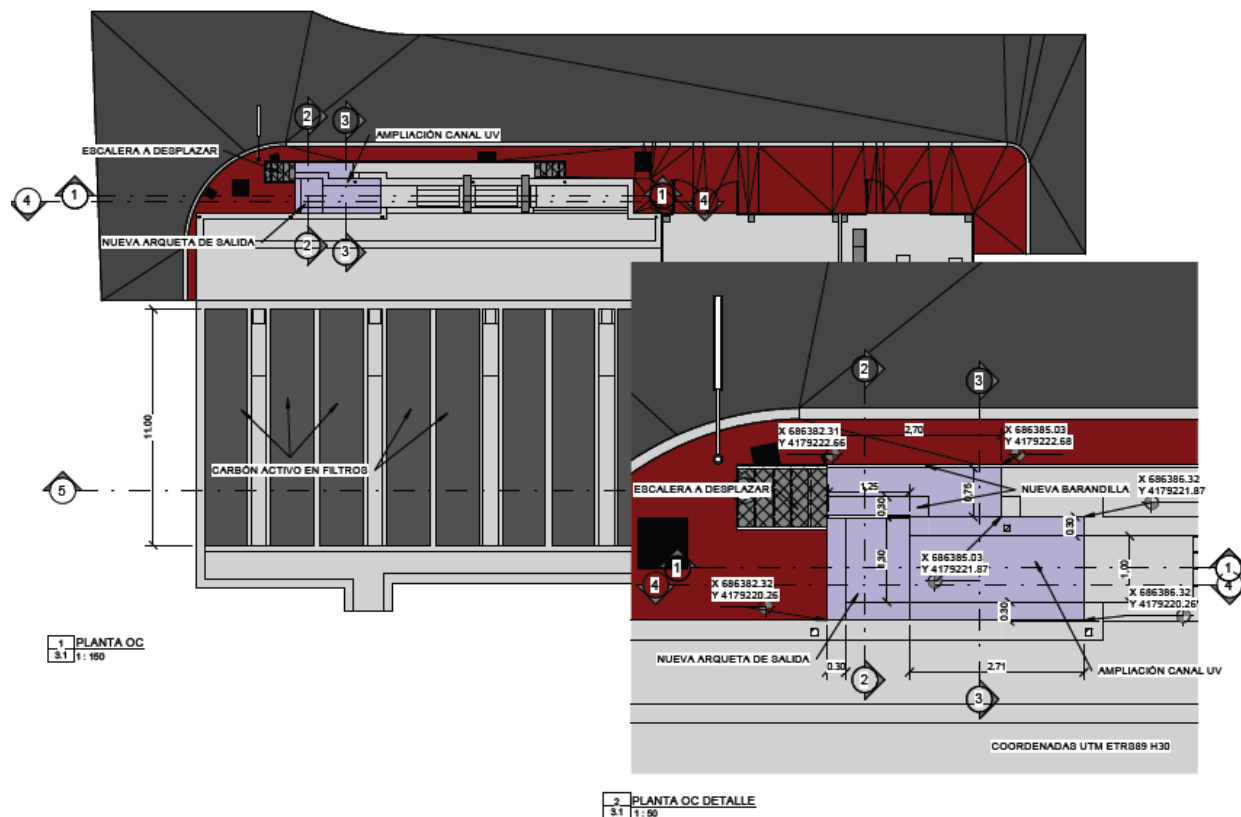
SISTEMAS EFECTIVOS PARA CONSEGUIR TIPO A:

- UV
- MEMBRANAS ULTRAFILTRACIÓN





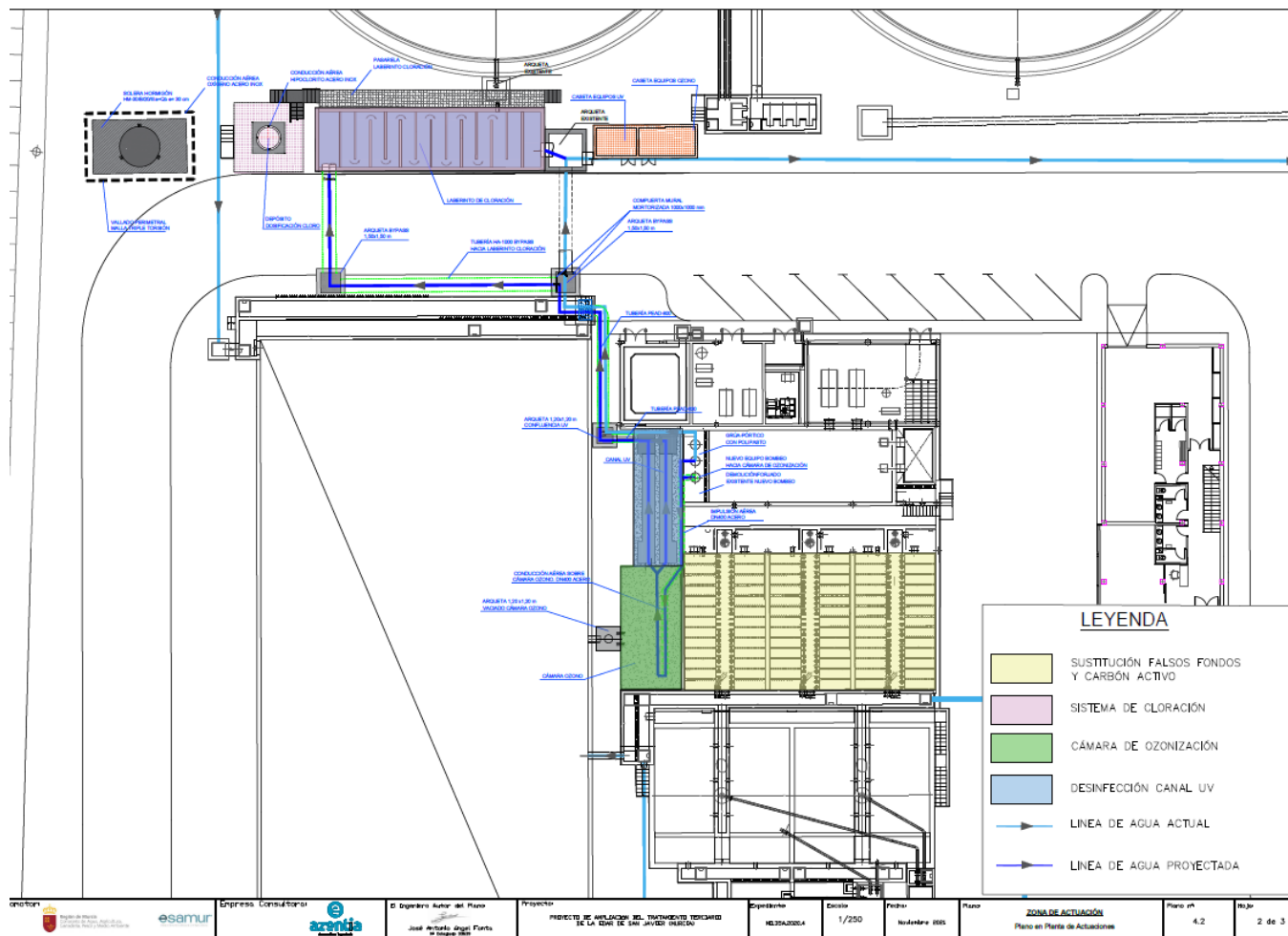
ACTUACIONES DE REMODELACIÓN DE INSTALACIONES



Remodelación EDAR Los Alcázares:

- Carbón activo en filtros arena
- Cuarto banco de UV
- Importe Lic. : 539. 304 €

Remodelación tratamiento regeneración EDAR San Javier



Remodelación EDAR San Javier:

- Carbón activo en filtros de arena
- Ozono
- Ampliación UV
- Laberinto y dosificación de hipoclorito
- Presupuesto: 2.047.248 €



ACTUACIONES EN PARALELO:

- Trabajos de investigación en campo sobre efectos en suelo y plantas del uso de aguas regeneradas
- Defensa y divulgación de los conocimientos adquiridos y resultados, en todos los foros posibles.

Nuevo Decreto español para sustituir al RD 1620/2007:

- Es inminente su aprobación
- Va a afectar a todos los usos
- Es bastante más exigente que el actual Real Decreto, en línea con el Reglamento UE 741/2020
- Extiende los planes de gestión de riesgos a todos los usos