

## EPA Updates Cleanup Plan for the Omega Chemical Site

### Agreement Reached for Design, Construction and Operation of Groundwater Cleanup Facilities

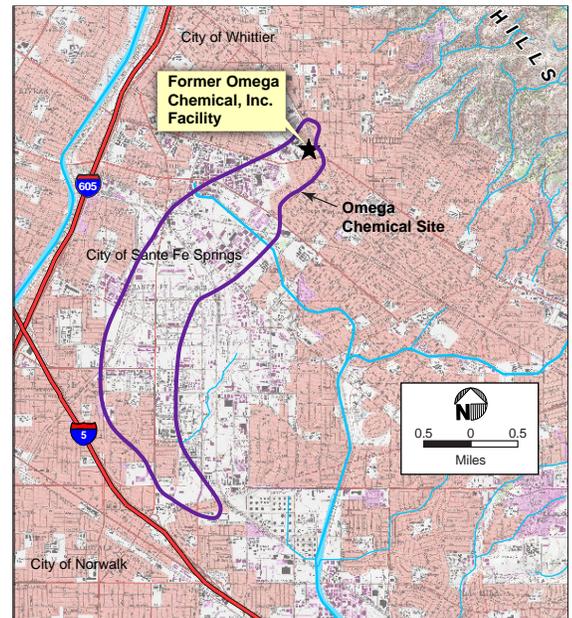
#### Introduction

This “Explanation of Significant Differences” (ESD) updates the United States Environmental Protection Agency’s (EPA) groundwater cleanup plan for the Omega Chemical Corporation Superfund Site Operable Unit 2 located in the cities of Whittier, Santa Fe Springs, and Norwalk, California. The term operable unit is explained on page 3. EPA signed the cleanup plan, known as a Record of Decision (ROD), in September 2011. The primary elements of the 2011 cleanup plan remain unchanged. The cleanup will still require the construction and operation of groundwater extraction wells and water treatment facilities as described further on pages 2-3.

This ESD makes four changes to the 2011 cleanup plan:

1. The ESD expands the possible uses of the groundwater after it has been pumped to the surface and the contaminants removed. There are now four options: i) delivery to an existing “reclaimed” water system for irrigation and industrial use; ii) return to the groundwater basin using “reinjection” wells; iii) return to the groundwater basin using an existing “spreading basin;” and iv) delivery to one or more water purveyors for use as drinking water. These four end-uses are referred to in this update as “reclaimed use,” “reinjection,” “spreading,” and “drinking water use,” respectively.
2. The ESD removes a preference established in the ROD for a drinking water use;
3. The ESD adds a new drinking water standard, the 10 micrograms per liter ( $\mu\text{g/L}$ ) State of California Maximum Contaminant Level (MCL) for hexavalent chromium, as a potential treatment requirement. Hexavalent chromium is one of 13 “chemicals of concern” in the groundwater; and
4. The ESD updates EPA’s cleanup cost estimates to reflect the new treatment requirement for hexavalent chromium, the more stringent treatment requirement for 1,4-dioxane described in the 2011 ROD, and to correct an error in the 2011 cost estimate. The chemical 1,4-dioxane is another “chemical of concern” in the groundwater.

These changes are further described on pages 3–7. EPA is not selecting an end-use for the treated groundwater at this time. The end-use will be chosen during the design process for the cleanup facilities. EPA will oversee the design, construction, and operation of the groundwater wells and water treatment facilities to ensure that its cleanup goals are met no matter which end-use is chosen.



**Figure 1:** Location map of the Omega Chemical Superfund Site

#### Reason for this Explanation of Significant Differences

If and when significant changes are needed in a Superfund cleanup plan, and the changes do not fundamentally modify a remedy, EPA informs the community through a document known as an “Explanation of Significant Differences.” This is a requirement in the Superfund law and regulations (Section 117(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”) and §300.435(c)(2)(i) of the National Contingency Plan [NCP]). This fact sheet and an updated site Administrative Record have been prepared to meet the requirements in §300.435(c)(2)(i), including public participation requirements. Documents have been added to the Administrative Record in accordance with §300.825(a)(2) of the NCP.

## ANNOUNCEMENT:

# AGREEMENT REACHED FOR DESIGN, CONSTRUCTION AND OPERATION OF GROUNDWATER CLEANUP FACILITIES

In April 2016, EPA reached final agreement with 66 “Potentially Responsible Parties” (PRPs) to spend an estimated \$70 million to implement the majority of EPA’s 2011 Record of Decision. The agreement, a Federal Consent Decree, is awaiting approval by the Federal District Court. See the U.S. Department of Justice webpage at <https://www.justice.gov/enrd/consent-decrees> for a copy of the agreement and information on the public comment process. The comment period began on the day the notice was published in the Federal Register, April 27, 2016, and ends on May 27, 2016.

Design work on the new water treatment systems, groundwater extraction wells, and pipelines is expected to begin later this year after court approval of the agreement and continue in 2017, with construction expected to begin in 2018. During the design process, final decisions will be made on groundwater extraction locations and rates, water treatment technologies, and end-use of the treated groundwater.

EPA has identified more than 500 companies as PRPs for the Omega cleanup. PRPs are also paying for cleanup work occurring as part of OU1 and OU3.

## Site Background

The Omega Chemical Corporation Site includes soil contamination at the former Omega Chemical facility in Whittier, California and an area of groundwater contamination extending at least four miles to the south and west. The Site is located in the coastal plain of Los Angeles County, California in the Central Groundwater Basin. The groundwater contamination is believed to result from spills, leaks, and poor chemical handling practices at the Omega Chemical facility and at other industrial operations in the area.

Omega Chemical operated a refrigerant and solvent recycling facility in Whittier, California from 1976 to 1991. Other industrial operations believed to have contributed to the groundwater contamination include dry cleaners, metal plating facilities, solvent and chemical distributors, and waste recyclers.

Contaminants present in the soil and/or groundwater at the Site include perchloroethyne (PCE), trichloroethene (TCE), 1,1-dichloroethene, 1,2-dichloroethane, Freon 11, Freon 113, 1,4-dioxane, and hexavalent chromium. The depth to groundwater (the “water table”) varies across the site from about 20 to 110 feet below ground. Contaminated groundwater extends to a depth of 200 feet or more below ground.

In 1999, EPA added the site to the Superfund National Priorities List. In 2001, EPA began its “remedial investigation” into the sources, nature, and extent of contamination at the site. The investigation has included the installation of more than 60 groundwater monitoring wells, the periodic collection and analysis of groundwater samples from new and

existing monitoring wells, and other testing. The remedial investigation also made use of additional groundwater data collected as part of investigations of contaminated properties in Whittier, Santa Fe Springs, and Norwalk overseen by two State agencies, the Los Angeles Regional Water Quality Control Board and the Department of Toxic Substances Control (DTSC).

In 2010, EPA completed a feasibility study to evaluate six possible cleanup actions known as “remedial alternatives.” One of remedial alternatives was to take no-action. Another provided limited remediation of the contamination. The other four alternatives called for more aggressive “plumewide” groundwater pump-and-treat systems to prevent the spread of the contaminated groundwater into less contaminated or uncontaminated areas. They differ primarily in the end-use of the water. Table 1 provides cost estimates for the no-action alternative, the limited remedial alternative, and the four “plumewide” remedial alternatives.

Also in 2010, EPA published a proposed cleanup plan that described EPA’s preferred remedial alternative. After considering public comments on the plan, EPA selected a remedy that combined elements of two of the remedial alternatives (Alternatives #4 and #6). EPA’s selected remedy was a groundwater pump and treat system that includes the following components:

- Construction and operation of one or more groundwater extraction wells to pump contaminated groundwater to the surface;

- Construction and operation of water treatment facilities to remove PCE, TCE, and other contaminants from the groundwater;
- Construction of pipelines and other conveyance systems to transport groundwater to the water treatment facilities;
- Delivery of the treated groundwater to one or more drinking water purveyors or reinjection of the treated water into the aquifer;
- Administrative or legal controls (“Institutional Controls”) to minimize the risk that future pumping from other groundwater wells in the area would interfere with the cleanup; and
- Construction of new groundwater monitoring wells and monitoring of new and existing wells.

EPA’s selected remedy is an interim action, meaning that EPA intends to adopt a final remedy after the cleanup facilities described in the 2011 ROD have been constructed, operated, and evaluated for some period of time. The selected remedy is described in more detail in the 2011 ROD.

## Description of Significant Differences

### Additional Options for Use of Treated Groundwater

The remedy selected in the 2011 ROD calls for the delivery of treated water to one or more water purveyors for use as drinking water if agreements with the water purveyors could be reached in a timely manner. If agreements could not be reached, the ROD allows for the reinjection of the treated water into the groundwater basin.

Two other end-uses of the treated water were considered in EPA’s 2010 feasibility study but not included as part of the selected remedy. The two alternative uses were: 1) delivery of the water to an existing recycled or reclaimed water system

that supplies non-potable water for irrigation and industrial use; and 2) delivery to an existing “spreading basin” in or near the San Gabriel River to return the treated water to the groundwater basin. Spreading basins are abandoned pits or other areas managed to promote the percolation of water into groundwater basins. These end-use options correspond to Alternatives #3 and #5 in the 2011 ROD.

In the 2011 ROD, delivery of water to an existing reclaimed water system was found to be as effective as delivering water for drinking water use or reinjection, but less implementable and more expensive. The demand for reclaimed water was, at the time the ROD was completed, reported to be too low to use all of the water to be produced by the cleanup, particularly during wetter winter periods.

Delivery to an existing groundwater spreading basin was found to be as effective and implementable as drinking water use or reinjection, but higher in cost.

Recent discussions with potential end-users of the treated groundwater suggest that spreading and reclaimed use, the two options not included in the ROD, may be less expensive and/or more implementable than described in the ROD.

Reclaimed use and spreading now appear likely to be similar in cost to drinking water and reinjection. The higher costs of spreading and reclaimed use estimated in the 2010 feasibility study were due to an assumption that a higher level of treatment would be needed for these end-use options compared to drinking water use or injection. This assumption added more than \$10 million (as a present value estimate) to the 2010 cost estimates. (Most of the difference was for periodic replacement of ion exchange resin and chemicals to adjust the pH of the treated water.) This assumption reflected the absence, at the time the estimate was prepared (2010), of a Federal or State drinking water standard for hexavalent chromium. This changed following completion of the feasibility study when the State of California established an MCL of 10 µg/L for hexavalent chromium in July 2014. With the adoption of

## Omega Chemical Site “Operable Units”

EPA divides large or complicated cleanups into multiple “operable units” (“OUs”). EPA manages the Omega Site as three OUs, designated OU1, OU2, and OU3. Cleanup efforts are underway or planned at all three. OU1 addresses contaminated soil and groundwater at and near the former Omega Chemical property in Whittier, CA. OU2, the subject of this ESD, addresses groundwater contamination generally downgradient (south and west) of OU1. OU3 addresses “vapor intrusion” (the movement of volatile contaminants from contaminated soils or groundwater into overlying structures). Groundwater cleanup and soil vapor extraction systems began operating as part of OU1 and/or OU3 in 2009. They have removed more than 9,000 pounds of contaminants from the soil and groundwater and reduced vapor intrusion into overlying buildings.

**Table 1. Omega Chemical OU2 Cost Estimates**

Alternative	Description	Cost Estimates in 2011 ROD <sup>1</sup> (millions)			Revised (2016) Cost Estimates (millions)		
		Capital <sup>6</sup>	Annual O&M <sup>2</sup>	Present Value <sup>3</sup>	Capital <sup>6</sup>	Annual O&M <sup>2</sup>	Present Value <sup>3</sup>
1	No-Action Alternative	\$0	\$0	\$0	\$0	\$0	\$0
2	Limited Extraction with Drinking Water End-use	\$29.2	\$2.0	\$53.6	\$33.5	\$2.2	\$60.7
3	Plume-wide Extraction with Reclaimed Water End-use <sup>5</sup>	\$40.1	\$3.7	\$86.6	\$43.0	\$3.0	\$80.8
4	Plume-wide Extraction with ReInjection <sup>5</sup>	\$41.4 <sup>4</sup>	\$2.6 <sup>4</sup>	\$73.2 <sup>4</sup>	\$45.0	\$2.6	\$77.6
5	Plume-wide Extraction with Discharge to Spreading Basins <sup>5</sup>	\$41.6	\$3.3	\$82.9	\$45.2	\$2.6	\$77.6
6	Plume-wide Extraction with Drinking Water End-use <sup>5</sup>	\$38.4	\$2.5	\$69.2	\$43.2	\$2.6	\$75.0

**Notes for table**

1. ROD = Record of Decision
2. O&M = operation and maintenance costs
3. Present value estimates assume 30 years of operation and a discount rate of 7%.
4. There was an error in the cost estimate for Alternative 4 presented in the 2010 feasibility study and 2011 ROD. The corrected estimate is \$77.6 million (i.e., the estimated cost of Alternative 4 has not increased).
5. The 2011 ROD, as modified by this update, allows implementation of Alternatives 3 – 6.
6. Capital costs are one-time labor, equipment, and material costs associated with the cleanup.

**Table 2: Summary of Changes to EPA’s Omega Chemical OU2 Remedy**

Remedy Component	Changes made by this Explanation of Significant Differences (ESD), if any
Remedial Objectives	Same as in 2011 Record of Decision (ROD)
Groundwater Extraction and Treatment	Same as in 2011 ROD
Use of the Treated Water	ROD allows potable use or reinjection. ESD adds reclaimed and spreading as other possible uses of the treated groundwater.
Preference for Use of the Treated Water	ROD includes preference for potable use. ESD removes preference.
“Applicable or Relevant and Appropriate Requirements” (“ARARs”)	ESD adds the 10 microgram per liter State of California Maximum Contaminant Level (MCL) for hexavalent chromium as a new ARAR.
Project Costs	This ESD revises the cost estimate for the drinking water end-use upward to reflect the new standard for hexavalent chromium and the 1 ug/L Notification Limit for 1,4-dioxane. (The 1 ug/L Notification Limit is described in the 2011 ROD but not reflected in the 2011 cost estimates.) The ESD also provides a higher cost estimate for Alternative 4 resulting from correction of an error in the 2010 feasibility study and 2011 ROD. Finally, the ESD revises the cost estimates for the reclaimed and spreading uses downward to reflect new water treatment requirements and technology assumptions.

the MCL, it is likely that all of the end-use options will need a comparable level of treatment. EPA has revised the cost estimates, resulting in similar estimates for injection, spreading, and drinking water uses. See Table 1. The cost estimate for reclaimed use is still higher, reflecting the assumption that replenishment fees would need to be paid for reclaimed use but not for the other end-uses.

Reclaimed use also appears to be more implementable than described in the 2010 feasibility study and 2011 ROD due to projected increases in the demand for reclaimed water. The Central Basin Municipal Water District (CBMWD), the owner of the reclaimed water system, projects that the demand for reclaimed water will increase by an average of about 1,000

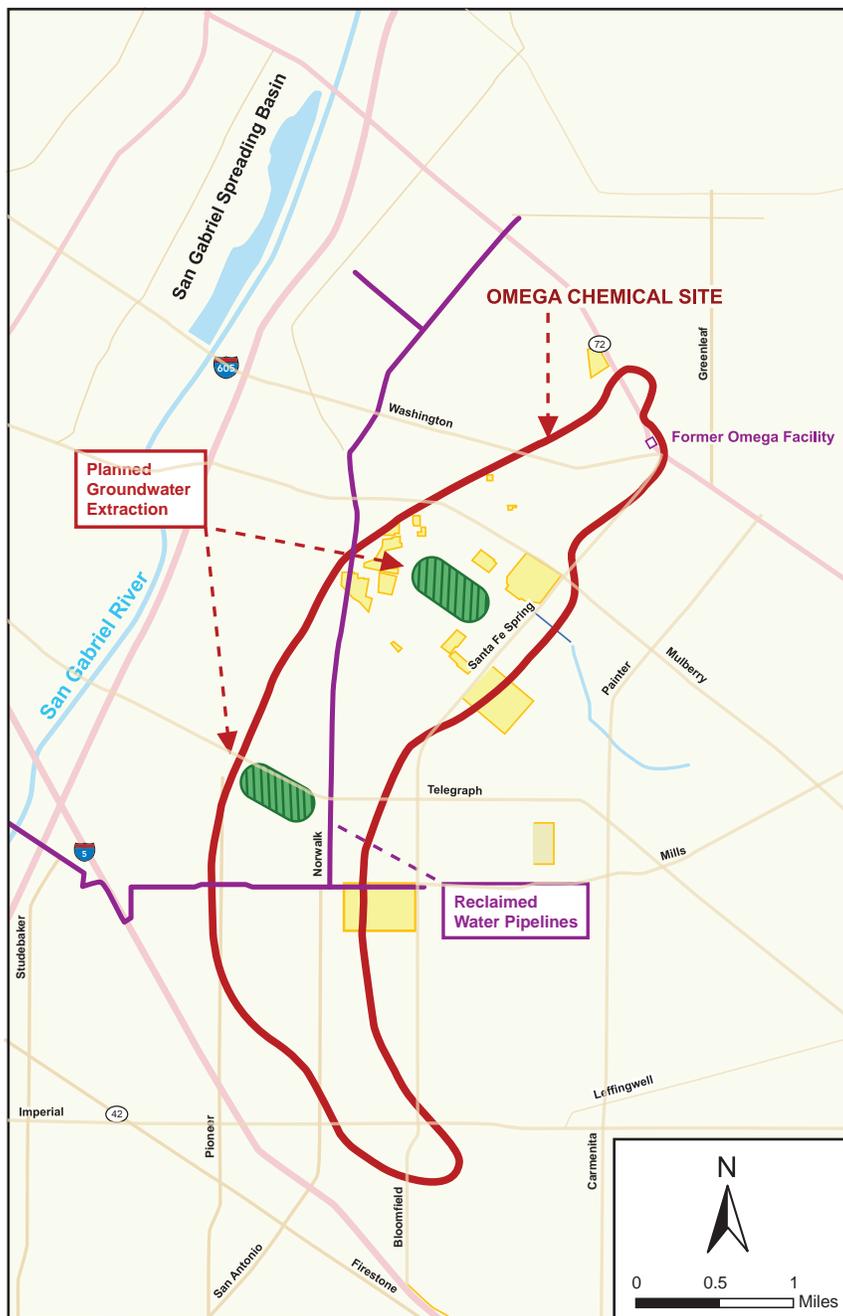
acre-feet per year over the next ten years from the current level of about 5,000 acre-feet per year. The cleanup is expected to produce about 1,800 acre-feet per year of treated groundwater. That means that all four end-use options are similar in implementability.

This ESD adds two potential uses of the groundwater after it has been pumped to the surface and the contaminants removed: reclaimed use and spreading. With the changes made in this update, the treated groundwater may be used for one or a combination of four end-use options: reclaimed, injection, spreading, or direct potable use. As shown in Table 1, the costs of the cleanup are now estimated to range from \$75 to \$81 million depending on the selected end-use.

### Removal of Preference for Drinking Water Use

The ROD includes a preference for use of the treated groundwater as drinking water. In the 2010 feasibility study, the estimated cost of drinking water end-use (\$69 million) was lower than the other end-uses (\$73 to \$87 million). The effectiveness and implementability of the drinking water end-use was found to be similar to the other end-use options with the one exception for reclaimed use noted above.

The updated cost estimates included in this ESD no longer support a preference for drinking water end-use. The updated cost estimate for the drinking water end-use is \$75 million, compared to updated estimates for the other three end-uses of \$78 to \$81 million. A drinking water use does not offer a clear cost savings considering the uncertainty in these estimates. In addition,



**Figure 2:** Planned Omega Chemical OU2 Groundwater Extraction Locations

## Statutory Determinations

The cleanup plan remains protective of human health and the environment and will continue to meet all applicable or relevant and appropriate requirements identified in the 2011 Record of Decision, as updated by this ESD and as required by CERCLA Section 121(d).

## Continued Groundwater Monitoring

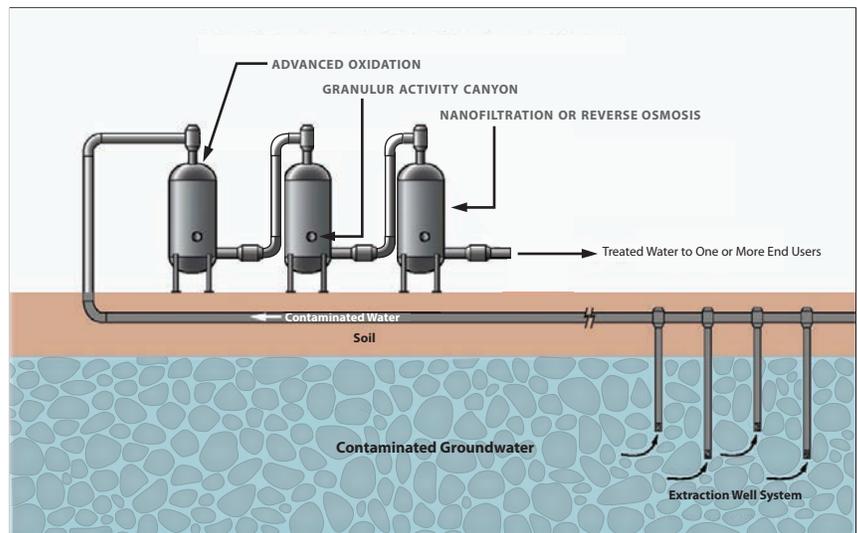
Since the cleanup plan was adopted in 2011, EPA has periodically collected and analyzed groundwater samples from an extensive network of monitoring wells to provide up to date data for the cleanup. Results for 2012, 2013, and 2014 are available in a Groundwater Monitoring Report available on the EPA site webpage (in the Documents and Reports section). In December 2015, a group of PRPs collected and analyzed groundwater samples. Those results are also available on the EPA site webpage.

the effectiveness and implementability of drinking water as an end use no longer appear to be superior to the reclaimed water end-use given the increased demand for reclaimed water.

In the absence of a clear advantage in the effectiveness, cost, or implementability of a drinking water use, EPA is removing the preference for drinking water use.

### Additional “Applicable or Relevant and Appropriate Requirement” (ARAR) and Performance Standards

The 2011 ROD identifies Federal and State MCLs as potential ARARs for the treatment of groundwater extracted as part of the remedy. An MCL is the maximum concentration of a chemical allowed in a public drinking water system. An ARAR is a Federal or State standard, requirement, criterion, or limitation that a Superfund cleanup must attain, unless EPA waives the requirement. See <http://www.epa.gov/superfund/applicable-or-relevant-and-appropriate-requirements-arars> for more information. A State MCL may be an ARAR if it is more stringent than the federal MCL for the same chemical or if no federal MCL exists. This ESD adopts the new State of California MCL of 10 µg/L for hexavalent chromium as potentially relevant and appropriate for the treatment of extracted groundwater. This hexavalent



**Figure 3:** Possible groundwater treatment technologies

chromium MCL was adopted by the State in 2014.

Federal MCLs are specified in CFR Part 141.61 and 40 CFR 141.62. California MCLs are specified in the California Code of Regulations (CCR) Title 22 §§ 64431, 64444.

The 2011 ROD includes a preliminary list of performance standards. They specify maximum chemical concentrations in the treated groundwater for the two end uses specified in the ROD (drinking water use and reinjection).

If the treated water is used as drinking water, performance standards are expected to be equal to or less than MCLs and, for 1,4-dioxane, equal to or less than the California Notification Level. Notification levels are health-



## Drinking Water Quality

Six water utilities provide tap water to homes and businesses in Whittier, Santa Fe Springs, and Norwalk. The water may be imported from the Colorado River or Northern California, or pumped from groundwater wells. Regardless of the source, all tap water is tested regularly prior to distribution to the public to ensure it meets State and Federal drinking water standards. Local water suppliers prepare annual Consumer Confidence Reports that provide information on the quality of the water supplied to homes and businesses in their service areas.

## Initial EPA Cleanup Efforts

In 1995 and 1996, EPA oversaw efforts to remove approximately 3,000 abandoned drums of hazardous waste and other potential sources of contamination left at its Whittier property when Omega Chemical Corporation stopped operating. After adding the site to the National Priorities List in 1999, EPA began efforts to clean up contaminated soil and groundwater at the site. The cleanup is expected to take decades to complete



based advisory levels established by the State Water Resources Control Board Division of Drinking Water (DDW) for chemicals in drinking water that lack MCLs. EPA adopted the Notification Level for 1,4-dioxane as a “To Be Considered” criterion in the 2011 ROD.

If the treated water is used for reinjection, reclaimed use, or spreading, performance standards may be more stringent than MCLs to comply with the Regional Water Quality Control Board’s “Water Quality Control Plan for the Los Angeles Region” (the “Basin Plan”). The Basin Plan, identified as an ARAR in the 2011 ROD, includes the State Water Resources Control Board Resolution 68-16 (“Statement of Policy with Respect to Maintaining High Quality Water in California”). Final performance standards for all end-uses will be established during design based on the end-use, water quality at the end-use location, and other factors.

### Updated Cost Estimates

The cost estimates in the ROD do not account for the new State drinking water standard for hexavalent chromium or the reduction in the Notification Level for 1,4-dioxane from 3 to 1 µg/L. Table 1 provides revised cost estimates for the each potential end-use to reflect the new hexavalent chromium MCL, the lower treatment goal for 1,4-dioxane, and to correct an error in the 2011 cost estimate for Alternative 4.

To reflect the adoption of the hexavalent chromium MCL, and facilitate comparisons of the estimated costs of each end-use option, the revised cost estimates assume the use of reverse osmosis for all end-uses. The 2010 feasibility study assumed the use of ion exchange and reverse osmosis for the reclaimed and spreading end-uses, reverse osmosis for reinjection, and nanofiltration for the drinking water end-use. The assumed

change in water treatment technology also eliminates the need for equipment to adjust the pH of the water.

To reflect the lower Notification Level for 1,4-dioxane, the revised cost estimates add additional 1,4-dioxane treatment capacity for all end-uses. This change increases both capital and operation and maintenance costs. Additional details on the revised cost estimates are provided in a January 2016 technical memorandum included in the Administrative Record.



## Support Agency Review

The California Department of Toxic Substances Control is the support agency for the Omega cleanup. DTSC has reviewed and concurs with the changes in this ESD.

## EPA Updates Cleanup Plan for the Omega Chemical Site Agreement Reached for Design, Construction, and Operation of Groundwater Cleanup Facilities

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Additional information about the Omega Chemical Superfund Site is available on the site web page located at: [www.epa.gov/superfund/omegachemical](http://www.epa.gov/superfund/omegachemical). The Administrative Record for the site is available at the Whittier Public Library  
 7344 S. Washington Avenue  
 Whittier, CA 90602  
 (562) 567-9900

**U.S. EPA Superfund Records Center**  
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