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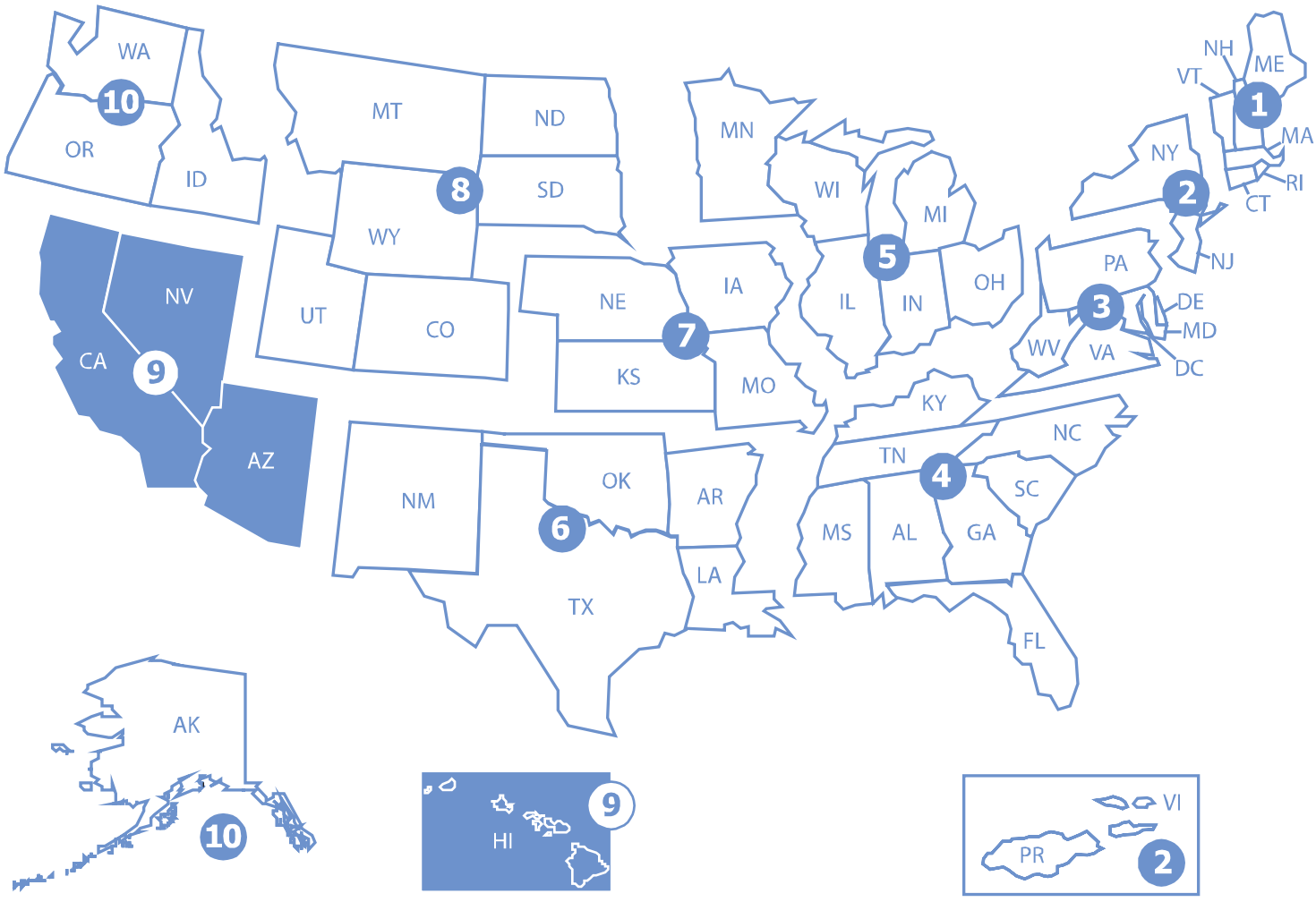
Office of Land and Emergency Management

Support Document for the Revised National Priorities List Final Rule – Orange County North Basin



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Executive Summary

Section 105(a)(8)(B) of CERCLA, as amended by SARA, requires that the EPA prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. An original National Priorities List (NPL) was promulgated on September 8, 1983 (48 FR 40658). CERCLA requires that EPA update the list at least annually.

This document provides responses to public comments received on the Orange County North Basin site, proposed on January 18, 2018 (83 FR 2576). This site is being added to the NPL based on an evaluation under EPA's Hazard Ranking System (HRS) in a final rule published in the *Federal Register* in September 2020.

Introduction

This document explains the rationale for adding the Orange County North Basin site in Orange County, California to the National Priorities List (NPL) of uncontrolled hazardous waste sites and provides responses to public comments received on this site listing proposal. The EPA proposed this site to the NPL on January 18, 2018 (83 FR 2576). A Notice of Data Availability (NODA) was added to provide additional data to the proposed HRS documentation record, published on August 13, 2018 (83 FR 39978). This site is being added to the NPL based on an evaluation under the Hazard Ranking System (HRS) in a final rule published in the *Federal Register* in September 2020.

Background of the NPL

In 1980, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. Sections 9601 *et seq*. in response to the dangers of uncontrolled hazardous waste sites. CERCLA was amended on October 17, 1986, by the Superfund Amendments and Reauthorization Act (SARA), Public Law No. 99-499, stat., 1613 *et seq.* To implement CERCLA, EPA promulgated the revised National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300, on July 16, 1982 (47 FR 31180), pursuant to CERCLA Section 105 and Executive Order 12316 (46 FR 42237, August 20, 1981). The NCP, further revised by EPA on September 16, 1985 (50 FR 37624) and November 20, 1985 (50 FR 47912), sets forth guidelines and procedures needed to respond under CERCLA to releases and threatened releases of hazardous substances, pollutants, or contaminants. On March 8, 1990 (55 FR 8666), EPA further revised the NCP in response to SARA.

Section 105(a)(8)(A) of CERCLA, as amended by SARA, requires that the NCP include

> criteria for determining priorities among releases or threatened releases throughout the United States for the purpose of taking remedial action and, to the extent practicable, take into account the potential urgency of such action, for the purpose of taking removal action.

Removal action involves cleanup or other actions that are taken in response to emergency conditions or on a short-term or temporary basis (CERCLA Section 101). Remedial action is generally long-term in nature and involves response actions that are consistent with a permanent remedy for a release (CERCLA Section 101). Criteria for placing sites on the NPL, which makes them eligible for remedial actions financed by the Trust Fund established under CERCLA, were included in the HRS. EPA promulgated the HRS as Appendix A of the NCP (47 FR 31219, July 16, 1982). On December 14, 1990 (56 FR 51532), EPA promulgated revisions to the HRS in response to SARA, and established the effective date for the HRS revisions as March 15, 1991. On January 9, 2017, EPA promulgated a further revision to the HRS that added a component for evaluating the threats posed by the intrusion of subsurface contamination into regularly occupied structures. These changes are consistent with, and comply with, the statutory requirements of SARA.

Section 105(a)(8)(B) of CERCLA, as amended, requires that the statutory criteria provided by the HRS be used to prepare a list of national priorities among the known releases or threatened releases of hazardous substances, pollutants, or contaminants throughout the United States. The list, which is Appendix B of the NCP, is the NPL.

An original NPL of 406 sites was promulgated on September 8, 1983 (48 FR 40658). At that time, an HRS score of 28.5 was established as the cutoff for listing because it yielded an initial NPL of at least 400 sites, as suggested by CERCLA. The NPL has been expanded several times since then, most recently on November 8, 2019 (84 FR 60339). The Agency also has published a number of proposed rulemakings to add sites to the NPL. The most recent proposal was on November 8, 2019 (84 FR 60357).

Development of the NPL

The primary purpose of the NPL is stated in the legislative history of CERCLA (Report of the Committee on Environment and Public Works, Senate Report No. 96-848, 96th Cong., 2d Sess. 60 [1980]).

> The priority list serves primarily informational purposes, identifying for the States and the public those facilities and sites or other releases which appear to warrant remedial actions. Inclusion of a facility or site on the list does not in itself reflect a judgment of the activities of its owner or operator, it does not require those persons to undertake any action, nor does it assign liability to any person. Subsequent government actions will be necessary in order to do so, and these actions will be attended by all appropriate procedural safeguards.

The NPL, therefore, is primarily an informational and management tool. The identification of a site for the NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of the human health and environmental risks associated with the site and to determine what CERCLA-financed remedial action(s), if any, may be appropriate. The NPL also serves to notify the public of sites EPA believes warrant further investigation. Finally, listing a site may, to the extent potentially responsible parties are identifiable at the time of listing, serve as notice to such parties that the Agency may initiate CERCLA-financed remedial action.

CERCLA Section 105(a)(8)(B) directs EPA to list priority sites among the known releases or threatened release of hazardous substances, pollutants, or contaminants, and Section 105(a)(8)(A) directs EPA to consider certain enumerated and other appropriate factors in doing so. Thus, as a matter of policy, EPA has the discretion not to use CERCLA to respond to certain types of releases. Where other authorities exist, placing sites on the NPL for possible remedial action under CERCLA may not be appropriate. Therefore, EPA has chosen not to place certain types of sites on the NPL even though CERCLA does not exclude such action. If, however, the Agency later determines that sites not listed as a matter of policy are not being properly responded to, the Agency may consider placing them on the NPL.

Hazard Ranking System

The HRS is the principle mechanism EPA uses to place uncontrolled waste sites on the NPL. It is a numerically based screening system that uses information from initial, limited investigations -- the preliminary assessment and site inspection -- to assess the relative potential of sites to pose a threat to human health or the environment. HRS scores, however, do not determine the sequence in which EPA funds remedial response actions, because the information collected to develop HRS scores is not sufficient in itself to determine either the extent of contamination or the appropriate response for a particular site. Moreover, the sites with the highest scores do not necessarily come to the Agency's attention first, so that addressing sites strictly on the basis of ranking would in some cases require stopping work at sites where it was already underway. Thus, EPA relies on further, more detailed studies in the remedial investigation/feasibility study that typically follows listing.

The HRS uses a structured value analysis approach to scoring sites. This approach assigns numerical values to factors that relate to or indicate risk, based on conditions at the site. The factors are grouped into three categories. Each category has a maximum value. The categories are:

- likelihood that a site has released or has the potential to release hazardous substances into the environment;
- characteristics of the waste (e.g., toxicity and waste quantity); and
- targets (e.g., people or sensitive environments) affected by the release.

Under the HRS, four pathways can be scored for one or more components and threats as identified below:

- Ground Water Migration (S_{gw})
  - population

- Surface Water Migration (S_{sw})
  The following threats are evaluated for two separate migration components, overland/flood migration and ground water to surface water.
  - drinking water
  - human food chain
  - sensitive environments

- Soil Exposure and Subsurface Intrusion (S_{sessi})
  - Soil Exposure Component:
    - resident population
    - nearby population
  - Subsurface Intrusion Component
    - population

- Air Migration (S_a)
  - population

After scores are calculated for one or more pathways according to prescribed guidelines, they are combined using the following root-mean-square equation to determine the overall site score (S), which ranges from 0 to 100**:**

$$S = \sqrt{\frac{S_{gw}^2 + S_{sw}^2 + S_{sessi}^2 + S_a^2}{4}}$$

If all pathway scores are low, the HRS score is low. However, the HRS score can be relatively high even if only one pathway score is high. This is an important requirement for HRS scoring because some extremely dangerous sites pose threats through only one pathway. For example, buried leaking drums of hazardous substances can contaminate drinking water wells, but -- if the drums are buried deep enough and the substances not very volatile -- not surface water or air.

Other Mechanisms for Listing

There are two mechanisms other than the HRS by which sites can be placed on the NPL. The first of these mechanisms, authorized by the NCP at 40 CFR 300.425(c)(2), allows each State and Territory to designate one site as its highest priority regardless of score. The last mechanism, authorized by the NCP at 40 CFR 300.425(c)(3), allows listing a site if it meets the following three requirements:

- Agency for Toxic Substances and Disease Registry (ATSDR) of the U.S. Public Health Service has issued a health advisory that recommends dissociation of individuals from the release;
- EPA determines the site poses a significant threat to public health; and
- EPA anticipates it will be more cost-effective to use its remedial authority than to use its emergency removal authority to respond to the site.

Organization of this Document

The following section contains EPA responses to site-specific public comments received on the proposal of the Orange County North Basin site on January 18, 2018 (83 FR 2576) and the additional data provided in the NODA published on August 13, 2018 (83 FR 39978). The site discussion begins with a list of commenters, followed by a

site description, a summary of comments, and Agency responses to each comment. A concluding statement indicates the effect of the comments on the HRS score for the site.

Glossary

The following acronyms and abbreviations are used throughout the text:

µg/l	Micrograms per liter
3DVA	Three-dimensional visualization and analysis
Agency	U.S. Environmental Protection Agency
amsl	Above mean sea level
AR	Aerojet Rocketdyne, Inc.
ATSDR	Agency for Toxic Substances and Disease Registry
bgs	Below ground surface
CBS	CBS Broadcasting, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. Sections 9601 *et seq.*, also known as Superfund
CFR	Code of Federal Regulations
CLP	EPA Contract Laboratory Program
COC	Contaminants of concern
CRQL	Contract-required quantitation limit
1,1-DCE	1,1-dichloroethylene
DTSC	California Department of Toxic Substances Control
EPA	U.S. Environmental Protection Agency
FR	Federal Register
FS	Feasibility study
HRS	Hazard Ranking System, Appendix A of the NCP
HRS score	Overall site score calculated using the Hazard Ranking System; ranges from 0 to 100
MCL	Maximum contaminant level
MDL	Method detection limit
msl	Mean sea level
MWD	Metropolitan Water District of Southern California
NCP	National Contingency Plan
NOCC	North Orange County Chamber
NODA	Notice of data availability
NPL	National Priorities List, Appendix B of the NCP

OCBC	Orange County Business Council
OCNB	Orange County North Basin
OCWD	Orange County Water District
OLEM	EPA Office of Land and Emergency Management
OSWER	Office of Solid Waste and Emergency Response
PA	Preliminary assessment
PCE	Tetrachloroethylene
PRP	Potentially responsible party
RDL	Reporting detection limit
RI	Remedial investigation
RI/FS	Remedial investigation/feasibility study
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SQL	Sample quantitation limit
SSPA	S.S. Papadopulos & Associates
TCE	Trichloroethylene
TDL	Target distance limit
VOC	Volatile organic compounds

1. List of Commenters and Correspondence

EPA-HQ-OLEM-2017-0603-0004	Correspondence, dated June 28, 2017, from Matthew Rodriguez of California Environmental Protection Agency, Secretary for Environmental Protection.
EPA-HQ-OLEM-2017-0603-0005	Comment, submitted January 22, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0006	Comment, submitted January 22, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0007	Comment, submitted January 29, 2018, by Sharon Kennedy of the Fullerton Observer Community Newspaper.
EPA-HQ-OLEM-2017-0603-0008	Comment, submitted February 13, 2018, by Samuel Kim, P. E., Water Services Manager, City of Garden Grove.
EPA-HQ-OLEM-2017-0603-0008.1	Comment attachment, submitted February 13, 2018, by Samuel Kim, P. E., Water Services Manager, City of Garden Grove.
EPA-HQ-OLEM-2017-0603-0009	Comment, submitted February 13, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0010	Comment, submitted February 13, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0011	Comment, submitted February 14, 2018, by Nabil Saba, P. E., Water Resources Manager, Water Resources Division, City of Santa Ana.
EPA-HQ-OLEM-2017-0603-0011.1	Comment attachment, submitted February 14, 2018, by Nabil Saba, P. E., Water Resources Manager, Water Resources Division, City of Santa Ana.
EPA-HQ-OLEM-2017-0603-0012	Comment, submitted February 22, 2018, by Hye Jin Lee, PE, Water System Manager/Assistant City Engineer, Public Works Department - Engineering Division, City of Fullerton.
EPA-HQ-OLEM-2017-0603-0012.1	Comment attachment, submitted February 22, 2018, by Hye Jin Lee, PE, Water System Manager/Assistant City Engineer, Public Works Department - Engineering Division, City of Fullerton.
EPA-HQ-OLEM-2017-0603-0013	Comment, submitted February 27, 2018, by K. Linker.
EPA-HQ-OLEM-2017-0603-0014	Comment, submitted February 27, 2018, by an anonymous public commenter.

EPA-HQ-OLEM-2017-0603-0015	Comment, submitted March 1, 2018, by Lucy Dunn, President and Chief Executive Officer, Orange County Business Council (OCBC).
EPA-HQ-OLEM-2017-0603-0015.1	Comment attachment, submitted March 1, 2018, by Lucy Dunn, President and Chief Executive Officer, Orange County Business Council (OCBC).
EPA-HQ-OLEM-2017-0603-0016	Comment, submitted March 5, 2018, by Josh Newman, Senator, 29th District, California State Senate.
EPA-HQ-OLEM-2017-0603-0016.1	Comment attachment, submitted March 5, 2018, by Josh Newman, Senator, 29th District, California State Senate.
EPA-HQ-OLEM-2017-0603-0017	Comment, submitted March 5, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0018	Comment, submitted, March 6, 2018, by Marwan Youssef, Public City of Westminster/ Works Director/ City Engineer, City of Westminster.
EPA-HQ-OLEM-2017-0603-0018.1	Comment attachment, submitted, March 6, 2018, by Marwan Youssef, Public City of Westminster/ Works Director/ City Engineer, City of Westminster.
EPA-HQ-OLEM-2017-0603-0019	Comment, submitted March 8, 2018, by Al Murray, Mayor, The City of Tustin.
EPA-HQ-OLEM-2017-0603-0020	Memorandum, submitted March 9, 2018, for EPA-HQ-OLEM-2017-0603 (Orange County North Basin) Comment period extension.
EPA-HQ-OLEM-2017-0603-0021	Comment period extension letter, submitted March 12, 2018, Orange County North Basin.
EPA-HQ-OLEM-2017-0603-0022	Comment, submitted March 13, 2018, by Theresa Harvey, President and Chief Executive Officer, North Orange County Chamber (NOCC).
EPA-HQ-OLEM-2017-0603-0022.1	Comment attachment, submitted March 13, 2018, by Theresa Harvey, President and Chief Executive Officer, North Orange County Chamber (NOCC).
EPA-HQ-OLEM-2017-0603-0023	Comment, submitted March 13, 2018, by Alan Lowenthal, 47th District, California, Congress of the United States.
EPA-HQ-OLEM-2017-0603-0023.1	Comment attachment, submitted March 13, 2018, by Alan Lowenthal, 47th District, California, Congress of the United States.
EPA-HQ-OLEM-2017-0603-0024	Comment, submitted March 13, 2018, by Carol Moore, Mayor, City of Laguna Woods.

EPA-HQ-OLEM-2017-0603-0024.1	Comment attachment, submitted March 13, 2018, by Carol Moore, Mayor, City of Laguna Woods.
EPA-HQ-OLEM-2017-0603-0025	Comment, submitted March 13, 2018, by Denis Bilodeau, President, Orange County Water District (OCWD).
EPA-HQ-OLEM-2017-0603-0025.1	Comment attachment, submitted March 13, 2018, by Denis Bilodeau, President, Orange County Water District (OCWD).
EPA-HQ-OLEM-2017-0603-0026	Comment, submitted March 13, 2018, by Mark Lewis, Director of Public Works, City of Fountain Valley, California.
EPA-HQ-OLEM-2017-0603-0026.1	Comment attachment, submitted March 13, 2018, by Mark Lewis, Director of Public Works, City of Fountain Valley, California.
EPA-HQ-OLEM-2017-0603-0027	Comment, submitted March 13, 2018, by Steven S. Choi, PhD, Assemblyman for California's 68th District.
EPA-HQ-OLEM-2017-0603-0027.1	Comment attachment, submitted March 13, 2018, by Steven S. Choi, PhD, Assemblyman for California's 68th District.
EPA-HQ-OLEM-2017-0603-0028	Comment, submitted March 13, 2018, by Noel Hatch, Council Member, City of Laguna Woods, California.
EPA-HQ-OLEM-2017-0603-0028.1	Comment attachment, submitted March 13, 2018, by Noel Hatch, Council Member, City of Laguna Woods, California.
EPA-HQ-OLEM-2017-0603-0029	Comment, submitted March 13, 2018, by Robert Collacott, Mayor, City of Villa Park, California.
EPA-HQ-OLEM-2017-0603-0029.1	Comment attachment, submitted March 13, 2018, by Robert Collacott, Mayor, City of Villa Park, California.
EPA-HQ-OLEM-2017-0603-0030	Comment, submitted March 13, 2018, by J. Rainey.
EPA-HQ-OLEM-2017-0603-0030.1	Comment attachment, submitted March 13, 2018, by J. Rainey.
EPA-HQ-OLEM-2017-0603-0031	Comment, submitted March 14, 2018, by C. DeMaio.
EPA-HQ-OLEM-2017-0603-0032	Comment, submitted March 15, 2018, by Michael R. Markus, General Manager, Orange County Water District (OCWD).

EPA-HQ-OLEM-2017-0603-0032.1	Comment attachment, submitted March 15, 2018, by Michael R. Markus, General Manager, Orange County Water District (OCWD).
EPA-HQ-OLEM-2017-0603-0033	Comment, submitted March 15, 2018, by James D. Herberg, General Manager, Orange County Sanitation District (OCSD).
EPA-HQ-OLEM-2017-0603-0033.1	Comment attachment, submitted March 15, 2018, by James D. Herberg, General Manager, Orange County Sanitation District (OCSD).
EPA-HQ-OLEM-2017-0603-0034	Comment, submitted March 15, 2018, by Al Murray, Mayor, City of Tustin.
EPA-HQ-OLEM-2017-0603-0034.1	Comment attachment, submitted March 15, 2018, by Al Murray, Mayor, City of Tustin.
EPA-HQ-OLEM-2017-0603-0035	Comment, submitted March 16, 2018, by Gerard Geodhart, Mayor, City of La Palma.
EPA-HQ-OLEM-2017-0603-0035.1	Comment attachment, submitted March 16, 2018, by Gerard Geodhart, Mayor, City of La Palma.
EPA-HQ-OLEM-2017-0603-0036	Comment, submitted by March 16, 2018, William P. Brough, Assembly Member, 73rd District, Assembly California Legislature.
EPA-HQ-OLEM-2017-0603-0036.1	Comment attachment, submitted by March 16, 2018, William P. Brough, Assembly Member, 73rd District, Assembly California Legislature.
EPA-HQ-OLEM-2017-0603-0037	Comment, submitted March 20, 2018, by Doug Chaffee, Major, City of Fullerton, California.
EPA-HQ-OLEM-2017-0603-0037.1	Comment attachment, submitted March 20, 2018, by Doug Chaffee, Major, City of Fullerton, California.
EPA-HQ-OLEM-2017-0603-0038	Comment, submitted March 26, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0039	Comment, submitted March 28, 2018, by Jon Peat, Major, City of Cypress, California.
EPA-HQ-OLEM-2017-0603-0039.1	Comment attachment, submitted March 28, 2018, by Jon Peat, Major, City of Cypress, California.
EPA-HQ-OLEM-2017-0603-0040	Comment, submitted April 3, 2018, by Phillip Chen, Assemblyman, 55th Assembly District, Assembly California Legislature.

EPA-HQ-OLEM-2017-0603-0040.1	Comment attachment, submitted April 3, 2018, by Phillip Chen, Assemblyman, 55th Assembly District, Assembly California Legislature.
EPA-HQ-OLEM-2017-0603-0041	Comment, submitted April 3, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0041.1	Comment attachment, submitted April 3, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0042	Comment, submitted April 10, 2018, by M. King.
EPA-HQ-OLEM-2017-0603-0042.1	Comment attachment, submitted April 10, 2018, by M. King.
EPA-HQ-OLEM-2017-0603-0043	Comment, submitted April 16, 2018, by Alan Lowenthal, Member of Congress, 47th District, California, Congress of United States House of Representatives.
EPA-HQ-OLEM-2017-0603-0043.1	Comment attachment, submitted April 16, 2018, by Alan Lowenthal, Member of Congress, 47th District, California, Congress of United States House of Representatives.
EPA-HQ-OLEM-2017-0603-0044	Comment, submitted April 17, 2018, by Mike Posey, Mayor, City of Huntington Beach, California.
EPA-HQ-OLEM-2017-0603-0044.1	Comment attachment, submitted April 17, 2018, by Mike Posey, Mayor, City of Huntington Beach, California.
EPA-HQ-OLEM-2017-0603-0045	Comment, submitted April 17, 2018, by Glenn Parker, Mayor, City of Brea.
EPA-HQ-OLEM-2017-0603-0045.1	Comment attachment, submitted April 17, 2018, by Glenn Parker, Mayor, City of Brea.
EPA-HQ-OLEM-2017-0603-0046	Comment, submitted April 17, 2018, by Doug Chaffee, Mayor, City of Fullerton, California.
EPA-HQ-OLEM-2017-0603-0046.1	Comment attachment, submitted April 17, 2018, by Doug Chaffee, Mayor, City of Fullerton, California.
EPA-HQ-OLEM-2017-0603-0047	Comment, submitted April 17, 2018, by Mark Pulone, City Manager, City of Yorba Linda, California.
EPA-HQ-OLEM-2017-0603-0047.1	Comment attachment, submitted April 17, 2018, by Mark Pulone, City Manager, City of Yorba Linda, California.
EPA-HQ-OLEM-2017-0603-0048	Comment, submitted April 18, 2018, by Chad P. Wanke, Mayor, City of Placentia, California.

EPA-HQ-OLEM-2017-0603-0048.1	Comment attachment, submitted April 18, 2018, by Chad P. Wanke, Mayor, City of Placentia, California.
EPA-HQ-OLEM-2017-0603-0049	Comment, submitted May 1, 2018, by J. La Tour.
EPA-HQ-OLEM-2017-0603-0049.1	Comment attachment, submitted May 1, 2018, by J. La Tour.
EPA-HQ-OLEM-2017-0603-0050	Comment, submitted May 1, 2018, by Sharon Quirk-Silva, Chair, Assembly member, 65th Assembly District, Assembly California Legislature.
EPA-HQ-OLEM-2017-0603-0050.1	Comment attachment, submitted May 1, 2018, by Sharon Quirk-Silva, Chair, Assembly member, 65th Assembly District, Assembly California Legislature.
EPA-HQ-OLEM-2017-0603-0051	Comment, submitted May 3, 2018, by S. Kennedy.
EPA-HQ-OLEM-2017-0603-0052	Comment, submitted May 3, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0053	Comment, submitted May 3, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0054	Comment, submitted May 3, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0055	Comment, submitted May 7, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0056	Comment, submitted May 7, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0057	Comment, submitted May 7, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0058	Comment, submitted May 7, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0059	Comment, submitted May 7, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0060	Comment, submitted May 7, 2018, by Chad P. Wanke, Mayor, City of Placentia, Orange County.
EPA-HQ-OLEM-2017-0603-0060.1	Comment attachment, submitted May 7, 2018, by Chad P. Wanke, Mayor, City of Placentia, Orange County.
EPA-HQ-OLEM-2017-0603-0061	Comment, submitted May 8, 2018, by an anonymous public commenter.

EPA-HQ-OLEM-2017-0603-0062	Comment, submitted May 9, 2018, by Denise Stanley, Ph.D.
EPA-HQ-OLEM-2017-0603-0063	Comment, submitted May 9, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0064	Comment, submitted May 9, 2018, by K. and R. Batiste.
EPA-HQ-OLEM-2017-0603-0065	Comment, submitted May 9, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0066	Comment, submitted May 9, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0067	Comment, submitted May 9, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0068	Comment, submitted May 9, 2018, by R. Beverage et al.
EPA-HQ-OLEM-2017-0603-0069	Comment, submitted May 10, 2018, by J. Fullerton.
EPA-HQ-OLEM-2017-0603-0070	Comment, submitted May 10, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0071	Comment, submitted May 11, 2018, by Matthew Harper, Assembly Member, Seventy - Fourth District, Assembly California Legislature.
EPA-HQ-OLEM-2017-0603-0071.1	Comment attachment, submitted May 11, 2018, by Matthew Harper, Assembly Member, Seventy - Fourth District, Assembly California Legislature.
EPA-HQ-OLEM-2017-0603-0072	Comment, submitted May 14, 2018, by G. J. Mankiewicz.
EPA-HQ-OLEM-2017-0603-0073	Comment, submitted May 14, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0074	Comment, submitted May 14, 2018, by L. D. Adames, Chief Science Officer, FREYTECH Inc.
EPA-HQ-OLEM-2017-0603-0075	Comment, submitted May 15, 2018, by E. Hansburg.
EPA-HQ-OLEM-2017-0603-0076	Comment, submitted My 15, 2018, by R. and E. Jones.
EPA-HQ-OLEM-2017-0603-0077	Comment, submitted May 16, 2018, by L. Olmos.
EPA-HQ-OLEM-2017-0603-0077.1	Comment attachment, submitted May 16, 2018, by L. Olmos.
EPA-HQ-OLEM-2017-0603-0078	Comment, submitted May 17, 2018, by an anonymous public commenter.

EPA-HQ-OLEM-2017-0603-0079	Comment, submitted May 17, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0079.1	Comment attachment, submitted May 17, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0080	Comment, submitted May 17, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0081	Comment, submitted May 17, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0082	Comment, submitted May 17, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0083	Comment, submitted May 21, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0084	Comment, submitted May 21, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0085	Comment, submitted May 21, 2018, by M. C. Waters.
EPA-HQ-OLEM-2017-0603-0086	Comment, submitted May 21, 2018, by C. Sepulveda.
EPA-HQ-OLEM-2017-0603-0087	Comment, submitted May 22, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0088	Comment, submitted May 22, 2018, by C. Hanhart.
EPA-HQ-OLEM-2017-0603-0089	Comment, submitted May 22, 2018, by D. Botts.
EPA-HQ-OLEM-2017-0603-0090	Comment, submitted May 22, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0091	Comment, submitted May 22, 2018, by J. Waters.
EPA-HQ-OLEM-2017-0603-0092	Comment, submitted May 22, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0093	Comment, submitted May 22, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0094	Comment, submitted May 23, 2018, by Lucy Dunn, President and Chief Executive Officer, Orange County Business Council (OCBC) et al.
EPA-HQ-OLEM-2017-0603-0094.1	Comment attachment, submitted May 23, 2018, by Lucy Dunn, President and Chief Executive Officer, Orange County Business Council (OCBC) et al.
EPA-HQ-OLEM-2017-0603-0095	Comment, submitted May 23, 2018, by Lawrence Ramsey, CBS Broadcasting, Inc.

EPA-HQ-OLEM-2017-0603-0095.1	Comment attachment, submitted May 23, 2018, by Lawrence Ramsey, CBS Broadcasting, Inc.
EPA-HQ-OLEM-2017-0603-0096	Comment, submitted May 23, 2018, by Matthew McCullough, Principal Engineer, AC Products, Inc.
EPA-HQ-OLEM-2017-0603-0096.1	Comment attachment, submitted May 23, 2018, by Matthew McCullough, Principal Engineer, AC Products, Inc.
EPA-HQ-OLEM-2017-0603-0097	Comment, submitted May 23, 2018, by G. Cisneros.
EPA-HQ-OLEM-2017-0603-0097.1	Comment attachment, submitted May 23, 2018, by G. Cisneros.
EPA-HQ-OLEM-2017-0603-0098	Comment, submitted May 23, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), The Arnold Engineering Company and Pitney Bowes, Inc.
EPA-HQ-OLEM-2017-0603-0098.1	Comment attachment, submitted May 23, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), The Arnold Engineering Company and Pitney Bowes, Inc.
EPA-HQ-OLEM-2017-0603-0099	Comment, submitted May 23, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0100	Comment, submitted May 25, 2018, by Joe Odencrantz, Ph.D., P.E., Tri-S Environmental, Newport Beach.
EPA-HQ-OLEM-2017-0603-0100.1	Comment attachment, submitted May 25, 2018, by Joe Odencrantz, Ph.D., P.E., Tri-S Environmental, Newport Beach.
EPA-HQ-OLEM-2017-0603-0101	Comment, submitted May 25, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0101.1	Comment attachment, submitted May 25, 2018, by an anonymous public commenter.
EPA-HQ-OLEM-2017-0603-0102	Comment, submitted May 29, 2018, by William E. Hvidsten, Assistant General Counsel, Aerojet Rocketdyne, Inc. (AR).
EPA-HQ-OLEM-2017-0603-0102.1	Comment attachment, submitted May 29, 2018, by William E. Hvidsten, Assistant General Counsel, Aerojet Rocketdyne, Inc. (AR).
EPA-HQ-OLEM-2017-0603-0103	Comment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic

	Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.1	Comment attachment, attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.2	Comment attachment, attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.3	Comment attachment, attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.4	Comment attachment, attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.5	Comment attachment, attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.6	Comment attachment, attachment, submitted May 31, 2018, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.7	Comment attachment, attachment, submitted May 31, 2018, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.8	Comment attachment, attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).

EPA-HQ-OLEM-2017-0603-0103.9	Comment attachment, attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.10	Comment attachment, attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.11	Comment attachment, attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.12	Comment attachment, attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.13	Comment attachment, attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.14	Comment attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.15	Comment attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.16	Comment attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.17	Comment attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).

EPA-HQ-OLEM-2017-0603-0103.18	Comment attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.19	Comment attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0103.20	Comment attachment, submitted May 31, 2018, by David Sadwick, Tatro Tekosky Sadwick LLP et al. on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), Arnold Engineering Company and Pitney Bowes, Inc. Part 2 (Exhibits).
EPA-HQ-OLEM-2017-0603-0104	Comment, submitted June 6, 2018, by Joe Odencrantz, PhD, P. E., Principal Tri-S Environmental.
EPA-HQ-OLEM-2017-0603-0104.1	Comment attachment, submitted June 6, 2018, by Joe Odencrantz, PhD, P. E., Principal Tri-S Environmental.
EPA-HQ-OLEM-2017-0603-0104.2	Comment attachment, submitted June 6, 2018, by Joe Odencrantz, PhD, P. E., Principal Tri-S Environmental.
EPA-HQ-OLEM-2017-0603-0104.3	Comment attachment, submitted June 6, 2018, by Joe Odencrantz, PhD, P. E., Principal Tri-S Environmental.
EPA-HQ-OLEM-2017-0603-0104.4	Comment attachment, submitted June 6, 2018, by Joe Odencrantz, PhD, P. E., Principal Tri-S Environmental.
EPA-HQ-OLEM-2017-0603-0104.5	Comment attachment, submitted June 6, 2018, by Joe Odencrantz, PhD, P. E., Principal Tri-S Environmental.
EPA-HQ-OLEM-2017-0603-0104.6	Comment attachment, submitted June 6, 2018, by Joe Odencrantz, PhD, P. E., Principal Tri-S Environmental.
EPA-HQ-OLEM-2017-0603-0104.7	Comment attachment, submitted June 6, 2018, by Joe Odencrantz, PhD, P. E., Principal Tri-S Environmental.
EPA-HQ-OLEM-2017-0603-0105	Comment, submitted June 6, 2018, by Joe Odencrantz, PhD, P. E., Principal Tri-S Environmental.
EPA-HQ-OLEM-2017-0603-0105.1	Comment attachment, submitted June 6, 2018, by Joe Odencrantz, PhD, P. E., Principal Tri-S Environmental.
EPA-HQ-OLEM-2017-0603-0105.2	Comment attachment, submitted June 6, 2018, by Joe Odencrantz, PhD, P. E., Principal Tri-S Environmental.

EPA-HQ-OLEM-2017-0603-0105.3	Comment attachment, submitted June 6, 2018, by Joe Odencrantz, PhD, P. E., Principal Tri-S Environmental.
EPA-HQ-OLEM-2017-0603-0105.4	Comment attachment, submitted June 6, 2018, by Joe Odencrantz, PhD, P. E., Principal Tri-S Environmental.
EPA-HQ-OLEM-2017-0603-0105.5	Comment attachment, submitted June 6, 2018, by Joe Odencrantz, PhD, P. E., Principal Tri-S Environmental.
EPA-HQ-OLEM-2017-0603-0105.6	Comment attachment, submitted June 6, 2018, by Joe Odencrantz, PhD, P. E., Principal Tri-S Environmental.
EPA-HQ-OLEM-2017-0603-0106	Comment, submitted June 26, 2018, by Judith (surname illegible).
EPA-HQ-OLEM-2017-0603-0107	U.S. Environmental Protection Agency, Orange County North Basin Notice of Data Availability - Well Log Data, August 13, 2018.
EPA-HQ-OLEM-2017-0603-0109	Comment, submitted September 13, 2018, by Matthew McCullough, Principal Engineer, AC Products, Inc.

2. Site Description

The Orange County North Basin (OCNB) site (the Site) consists of a comingled volatile organic compound (VOC) groundwater plume. The plume resulted from the releases of chlorinated solvents. Chlorinated organic solvents are common industrial chemicals that are typically associated with cleaning and degreasing operations. The plume scored for HRS purposes includes observed release concentrations of tetrachloroethylene (PCE), trichloroethylene (TCE) and 1,1-dichloroethylene (1,1-DCE). Multiple facilities have been identified in the vicinity of the OCNB plume that are possible contributors to the comingled plume; however, because of the proximity of these facilities to each other and because the facilities may be releasing similar substances, there is not enough information to attribute at least part of the significant increase in contamination in the plume to any individual source. Under the HRS, a contaminated groundwater plume can be evaluated as a source when the origin(s) of hazardous substances that have contributed to the plume cannot be reasonably identified.

The subsurface beneath the Site consists of a complex series of interconnected sand and gravel deposits, with discontinuous lower-permeability clay and silt lenses that do not hydraulically isolate these water-bearing zones from each other. The hydraulic gradient is locally amplified by production wells extracting water from the deeper portion of the aquifer. A downward hydraulic gradient allows VOC-impacted groundwater to migrate both laterally and vertically downward, largely in response to pumping-induced gradients. Generalized geologic references for the Orange County Groundwater Basin describe the subsurface as being divided into Shallow, Principal, and Deep aquifers. However, the generally-defined Shallow and Principal aquifers are not hydraulically separate aquifers in the Site vicinity. That is, lower-permeability clay and silt lenses are present at discrete locations in the shallow aquifer but are not sufficiently thick or laterally continuous within two miles of the Site to create a boundary for groundwater migration. The shallow aquifer essentially lies interconnected on top of the principal aquifer with no intervening, confining (or low-permeability) layer fully separating the two aquifers. In addition, observed releases of VOC contamination in the principal aquifer demonstrate that contamination has migrated vertically from the shallow aquifer into the principal aquifer. Therefore, for HRS scoring purposes, the Shallow and Principal aquifers beneath the OCNB site are evaluated as a single Interconnected Sand and Gravel Aquifer.

The Orange County Water District (OCWD) identified the area of VOC contamination in the northern portion of Orange County in the cities of Fullerton and Anaheim. Groundwater contamination in this area is primarily found in shallower monitoring wells screened at less than 200 feet below ground surface (bgs); however, VOC-impacted groundwater has migrated downward into the deeper portion of the aquifer tapped by drinking water production wells. Two of the City of Fullerton's and one of the City of Anaheim's production wells were removed from service and destroyed due to VOC contamination. An additional City of Fullerton well was placed on inactive status in February 2015 due to VOCs exceeding Maximum Contaminant Levels (MCLs). Contamination continues to migrate, both laterally and vertically, threatening downgradient production wells. The plume as scored includes observed release concentrations in 15 shallow monitoring wells, 10 deep monitoring wells, and 6 municipal/drinking water production wells. Of the contaminated municipal/drinking water production wells, Level I concentrations of TCE are documented in the City of Fullerton municipal wells F-5 and F-6 exceeding the related HRS benchmark screening concentration. Level II concentrations are documented by observed release levels of 1,1-DCE in the City of Anaheim municipal well A-47, TCE and PCE in the City of Fullerton municipal wells F-4 and F-8, and TCE in the Page Avenue Mutual Water company wells PAGE-F. Numerous additional drinking water/production wells within the four-mile target distance limit are scored for HRS purposes as subject to potential contamination.

The California Department of Toxic Substances Control (DTSC) and Regional Water Quality Control Board (RWQCB) have investigated and initiated remedial activities at several of the facilities identified as possible contributors to the plume. Sampling results during investigation and remedial activity document the presence of VOCs in soils, soil gas, and groundwater. Under a Cooperative Agreement with EPA, DTSC completed Pre-CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) Screening Assessments at eleven facilities in the vicinity of the plume. EPA determined that eight of these facilities qualified for further assessment under CERCLA.

3. Summary of Comments

The Site was proposed to be added to the National Priorities List (NPL) on January 18, 2018 (83 FR 2576), and the initial 60-day comment period following proposal of the Site was to close March 19, 2018. In comments on proposal, North Orange County Chamber (NOCC) and the Orange County Business Council (OCBC) requested a 60-day extension to the comment period of the Orange County North Basin, claiming the comment period is too short to allow a thorough review of the documentation. On March 8, 2018, the EPA granted a 60-day extension of the comment period until May 18, 2018, to allow all interested parties additional time to submit comments. One commenter (the Joint Commenters identified below) questioned the EPA's use of a reference in the HRS documentation record (HRS Reference 110—the 3DVA Technical Memorandum) to support aquifer interconnection and contaminant migration; the commenter stated that the EPA cites to HRS Reference 110 and presents conclusions in the HRS documentation record based on the model in the reference that used well borehole and lithology data that was not available to the public to review to confirm the reliability of the reference. On August 13, 2018, EPA released a notice of data availability (NODA) to provide the relevant documentation used to develop the content presented in the reference. This information includes well logs and lithology reports for the wells which were used to produce HRS Reference 110—the 3DVA Technical Memorandum. The comment period for the NODA closed on September 12, 2018.

Seventy-five commenters expressed support for the proposed listing: the State of California as represented by the California Environmental Protection Agency (CalEPA); the Orange County Water District; the Orange County Sanitation District; U.S. Representative Alan Lowenthal; California State Senator Josh Newman; California Assemblymembers Steven Choi, William Brough, Phillip Chen, Sharon Quirk-Silva, and Matthew Harper; mayors of several cities in the vicinity of the OCNB site including the Cities of Tustin, Laguna Woods, Villa Park, La Palma, Fullerton, Cypress, Huntington Beach, Brea, and Placentia; representatives of several individual local municipal public works/water utility agencies in the vicinity of the OCNB site including the Cities of Garden Grove, Santa Ana, Fullerton, Westminster, and Fountain Valley; Laguna Woods City Councilmembers Noel Hatch and Joe Rainey; Yorba Linda City Manager Mark Pulone; Candidate for U.S. Congressional District 39 Gil Cisneros; FREYTECH, Inc.; editor of the Fullerton Observer Community Newspaper Sharon Kennedy;

numerous citizens; and 23 anonymous commenters. Commenters in support of listing presented various reasons for their support, including: protecting public health, the environment and the reliability of safe drinking water are State priorities; the sheer number of people that could be affected by this Site if it is not addressed; protecting resources of ever-increasing scarcity; and the need for further action to stop the migration of contaminants.

Twelve commenters opposed the listing, including Ms. Lucy Dunn and Ms. Theresa Harvey writing on behalf of NOCC; Ms. Lucy Dunn also on behalf of OCBC; Mr. Lawrence Ramsey on behalf of CBS Broadcasting, Inc. (CBS); Mr. William Hvidsten on behalf of Aerojet Rocketdyne, Inc. (AR); Mr. Matthew McCullough on behalf of AC Products; Mr. David Sadwick on behalf of Arconic Global Fasteners & Rings, Inc. (AGFI), The Arnold Engineering Company, and Pitney Bowes, Inc., herein referred to as the Joint Commenters; S.S. Papadopulos & Associates (SSPA) (as part of Exhibit 1 of the Joint Commenters comments); Dr. Joe Odencrantz; Dr. Denise Stanley; and an anonymous commenter.

Several commenters submitted comments stating that ongoing remediation at the Site makes it unnecessary to place the Site on the NPL. The OCBC, CBS, AR and the Joint Commenters stated that there is no need to list the North Basin as a Superfund site as concerns about the groundwater are being addressed, and appropriate remediation efforts at numerous locations within the plume area are occurring without being listed on the NPL. Per the commenters, the listing will lead to a duplication of efforts, an increase in oversight cost, complicate and delay the cleanup by adding new layers of review/bureaucracy and more "stakeholders." The Joint Commenters and CBS stated that the listing should not be the result of political lobbying and "closed-door meetings" by OCWD nor "based on inaccurate and incomplete assumptions"; the listing should be based on scientific facts and good policy.

OCBC, CBS, AC Products, the Joint Commenters, SSPA, and AR stated that cleanup actions at the OCNB site should be deferred to State agencies or private businesses to address the contamination. OCBC commented that private businesses have an important history of cooperatively working with state regulatory agencies to address the contamination. The Joint Commenters and an anonymous commenter stated that groundwater contamination in the North Basin has been thoroughly reviewed by the California Superior Court; the court found that a regional groundwater remedy is unnecessary, since it would not change the long-term decreasing trend in VOC concentrations and is not necessary to protect drinking water sources. According to the Joint Commenters, "a number of interested parties" retained SSPA to evaluate recent data on groundwater conditions, and found the data confirmed the court findings. The Joint Commenters requested that EPA specifically review and address all substantive content of the SSPA Report.

OCBC, AC Products, and the Joint Commenters submitted comments stating that, because the EPA is already involved in overseeing the groundwater contamination, the Site should not be placed on the NPL until after the OCWD remedial investigation/feasibility study (RI/FS) is complete. The Joint Commenters and CBS additionally stated that there is no compelling reason to circumvent the RI process with a premature listing. OCBC and the Joint Commenters asserted that the EPA and the OCWD stated they would not make any recommendation for the North Basin to be listed until after the completion of the RI/FS for the Site, which was originally intended for 2016 and is now not expected to be complete until 2021.

Commenters submitted several comments related to the definition and extent of the Site. The Joint Commenters referred to the Site as having precisely defined boundaries in the HRS documentation record and equated these boundaries of the Site with the groundwater plume. AC Products commented that "[t]he area shown for the groundwater model and potential NPL site listing is too broad and should be narrowed and subdivided because the area as defined is overly broad and complex" to be efficiently remediated as a single unit.

OCBC, CBS, the Joint Commenters, and AR submitted comments expressing concern regarding the economic impacts, stigma, and costs associated with listing the Site on the NPL. OCBC noted that it is dedicated to protecting drinking water in the region as well as promoting the Orange County economy, and the NPL listing would impact its goals. OCBC asserted that listing a portion of the county's drinking water basin as a Superfund site or "federal environmental disaster area" would have a significant negative impact on property values and the

local economy and on the confidence in the safety of the County's drinking water supply. CBS, the Joint Commenters, and AR expressed concern about increase in oversight and cleanup costs.

OCBC, CBS, AC Products and AR submitted comments related to the liability associated with Site groundwater. OCBC commented that in settlements related to a 2004 lawsuit filed by OCWD against several businesses in the region, more than 21 million dollars were paid to OCWD to perform cleanup related to the Site; however, they stated that no cleanup was performed by OCWD over the past 10 years until very recently. OCBC stated that there are "relevant facts, technical data and analysis contained in the thousands of pages of court discovery, expert opinion, and trial record in OCWD's state court litigation," providing several related points for EPA to consider. OCBC commented that it perceives that OCWD is attempting to circumvent these court results and asserted that EPA should not be part of OCWD's "closed planning processes."

CBS, AC Products, the Joint Commenters, and AR submitted comments related to remedy selection for the Site. CBS commented that VOC concentrations within the plume area are decreasing and listing the Site would ignore the benefits from natural attenuation, shown to be effective in reducing VOC concentrations. AC Products commented that the area is too broad and complex to be efficiently remediated, citing characteristics such as the scale, geologic heterogeneity that would affect contaminant transport and remedy selection, variability in hydraulic conductivity and hydraulic zones. Dr. Odencrantz suggested that, in general, "[t]he large amount of groundwater pumping that is going on near a known source(s) of PCE contaminated soil [and] groundwater could be contributing to the problems in the North Basin."

OCBC questioned the risk posed by the Site stating, "the drinking water in the North Basin area is NOT being threatened," and that groundwater contamination, if any, is contained at the source sites and is already being addressed. SSPA commented that the OCNB site conditions are well characterized; remediation is nearly completed; and concentrations in groundwater are declining. Joint Commenters further commented, "recent data shows groundwater contamination, if any, is contained at the source sites." SSPA challenged, "the human population that might be considered at risk under a HRS scoring process is really not at risk because the water purveyors are aware of the situation and will take the necessary steps to prevent exposure." SSPA characterized the HRS evaluation as a "meaningless exercise," and a "snapshot" that "fails to grasp the reality that VOC levels have declined dramatically, will continue to decline, and do not pose a threat to drinking water." SSPA commented that applying HRS scoring to the groundwater contamination "inaccurately characterizes the nature and degree of hazard" at the Site.

AC Products and the Joint Commenters submitted comments questioning the severity of contamination given contaminant levels below regulatory maximum contaminant levels (MCLs) and suggesting that the EPA improperly considered releases below MCLs in the HRS site evaluation. AC Products asserted that "[t]he area of their plume is almost entirely at or below the MCLs for groundwater and therefore would not score in the Hazard Ranking System sufficiently to warrant listing under the NPL."

OCBC, AC Products, CBS, and SSPA submitted comments questioning whether the data contained in the HRS documentation record at proposal adequately reflects the Site conditions. AC Products commented that an accurate HRS site score should include evaluation of RI/FS data to properly acknowledge current levels of groundwater contamination rather than the data in the HRS documentation record at proposal, which represent historical maximums. SSPA asserted that the HRS evaluation "implementation relies on data assumptions and estimates that reflect a preliminary screening process rather than a detailed analysis using the plethora of historical data available throughout the OCNB." The Joint Commenters questioned the HRS documentation record at proposal statements that multiple city production wells and a private well in the area of the Site were closed or deactivated due to VOC contamination, and stated that the "record contains arbitrary, inaccurate or capricious information". AC Products commented on the information supplied in the NODA, asserting that it included insufficient data to "form the basis for a broad and complex groundwater flow model."

CBS and the Joint Commenters submitted comments questioning statements in the HRS documentation record at proposal including whether the contaminant plume continues to migrate and whether stated reasons for well closure are accurate.

The Joint Commenters, CBS, SSPA, and Dr. Odencratz submitted comments that questioned the identification of the sources of contamination in the groundwater plume area. SSPA commented that source attribution was not properly evaluated and asserted that there may be additional "potential sources external to the site." SSPA added that some wells outside of the HRS-delineated area of observed release have higher contaminant concentrations but that EPA did not evaluate or identify other potential sources outside this area. Dr. Odencrantz expressed concerns that the Johnson Controls was not listed as part of the Site or thoroughly investigated despite being known to be a user of large amounts of chlorinated solvents. SSPA commented that there are a number of facilities within the defined area of observed release that have been identified as sources of contamination, therefore, scoring the Site as a contaminated groundwater plume is not appropriate.

SSPA submitted comments on the background wells and the observed release concentrations. SSPA asserted that the background well selection and background levels determination were inappropriate based on well screen depth, given that production wells with deep screen intervals were used in identifying background levels for shallower production wells. SSPA stated that the selection of background levels in documenting an observed release does not take into consideration the contribution that degrading upgradient substances may have on degradation product levels downgradient. SSPA contended the detection of a compound could actually be due to the degradation of a parent and not due to an independent observed release, resulting in a possible "double-counting." SSPA also commented that it identified a statistical high bias in the May 2016 EPA groundwater sample results relative to OCWD results.

The Joint Commenters and CBS commented on the presence of an allegedly continuous aquitard underlying the Site that separates the shallow and principal aquifers. They both commented that an aquitard is specifically present in the central and western portions of the study area where nearly all of the contamination is located and asserted that this layer prevents contaminant migration. The Joint Commenters stated that data for all but one well borehole identified in the study area contain "fine-grained or clay layers of varying thickness" indicating that a continuous aquitard that covers nearly all of the combined VOC plume exists in the central and western parts of the study area. Commenting on the well borehole lithologies for more than 150 wells at the Site included in the NODA, AC Products stated that the proposed geographic area is heterogeneous geologically with thin layers of silt that inhibit vertical migration of contaminants, and that drilling techniques and logs may not be sensitive enough to detect silt layers that inhibit vertical migration.

SSPA expressed that the plume delineated in the HRS documentation record at proposal is non-scientific and not realistic given the amount of data available, and it "essentially serves as a surrogate for the actual VOC plume in groundwater." SSPA criticized the HRS approach for delineating a plume based on observed release samples, stating "[t]he HRS makes no attempt to reach conclusions on the basis of a realistic representation of the contaminant distribution in the aquifer, or considering a plume migration based on historical conditions in the aquifer." According to SSPA, these inconsistencies of the EPA HRS analysis illustrate how previously published and reported analyses of the vast quantities of available site data are either unused or used only in a very limited sense.

SSPA and Dr. Stanley questioned the target population evaluated in scoring the Site. SSPA commented that the HRS does not consider whether target wells are upgradient or downgradient of sources and claimed that if only the population that is "reasonably affected by the contamination" were evaluated, the Site score would be lower. Dr. Stanley questioned statements made regarding drinking water supply sources in the EPA summary factsheet for the Site and asserted that the City of Anaheim and parts of Fullerton obtain most of their drinking water from outside sources such as the Colorado River and California Aqueduct.

Twelve commenters (EPA-HQ-OLEM-2017-0603-0005, -0006, -0010, -0014, -0017, -0038, -0041, -0053, -0054, -0055, -0063, and -0084) submitted comments not relevant to the listing.

3.1 Support for Listing and Other Non-opposition Comments

EPA received 76 comments from 75 individual commenters that expressed support for the proposed listing. Those commenters in support of listing include: the State of California as represented by the California Environmental Protection Agency (CalEPA); the Orange County Water District; the Orange County Sanitation District; U.S. Representative Alan Lowenthal; California State Senator Josh Newman; California Assemblymembers Steven Choi, William Brough, Phillip Chen, Sharon Quirk-Silva, and Matthew Harper; mayors of several cities in the vicinity of the OCNB site including the Cities of Tustin, Laguna Woods, Villa Park. La Palma, Fullerton, Cypress, Huntington Beach, Brea, and Placentia; representatives of several individual local municipal public works/water utility agencies in the vicinity of the OCNB site including the Cities of Garden Grove, Santa Ana, Fullerton, Westminster, and Fountain Valley; Laguna Woods City Councilmembers Noel Hatch and Joe Rainey; Yorba Linda City Manager Mark Pulone; Candidate for U.S. Congressional District 39 Gil Cisneros; FREYTECH, Inc.; editor of the Fullerton Observer Community Newspaper Sharon Kennedy; and numerous citizens.

3.1.1 General Support

Comment: CalEPA concurred with EPA's decision to proceed with placing the Site on the NPL on behalf of the office of Governor Edmund G. Brown Jr. CalEPA indicated that protecting public health, the environment and the reliability of safe drinking water are State priorities, and the contaminated plume in the North Basin must be remediated. In addition, CalEPA and multiple other commenters in support of NPL placement cited various other specific reasons for their support including those summarized below:

- Candidate for U.S. Congressional District 39 Gil Cisneros and three residents stated it is essential that everyone should have access to clean drinking water and that clean water was a basic right/need.
- Numerous commenters focused on the sheer number of people who could be affected by this Site if it is not addressed. Commenters including Orange County Water District; Orange County Sanitation District; U.S. Representative Alan Lowenthal; California State Senator Josh Newman; California Assemblymembers Steven Choi, William Brough, Philip Chen, Sharon Quirk-Silva, Matthew Harper; Fullerton Observer Community Newspaper editor Sharon Kennedy; the Cities of Garden Grove, Santa Ana, Fullerton, Westminster, Tustin, Laguna Woods, Fountain Valley, Villa Park, La Palma, Cypress, Huntington Beach, Brea, Yorba Linda, and Placentia; candidate for U.S. Congressional District 39 Gil Cisneros; and 32 citizens emphasized the importance of cleaning and protecting the Orange County North Basin aquifer because it is relied upon by millions of people for a significant portion of their water.
- California State Senator Josh Newman and California Assemblymembers William Brough and Sharon Quirk-Silva indicated that they support placement on the NPL because it will allow for an orderly process with opportunity for public review and comment.
- Fullerton Observer Community Newspaper editor Sharon Kennedy and a citizen commented that cleaning up this basin would be a sign that the EPA under the current administration is still protective of ordinary citizens.
- One commenter supported this listing because the EPA will "conduct a proper investigation."
- Fullerton Observer Community Newspaper editor Sharon Kennedy commented that Federal help in getting the job done is needed because local efforts have not been successful to date.
- One resident also expressed displeasure in the situation stating that "this should not have happened in the first place," and "[w]e should not have to wait for things like this to occur before we step in and do something about it."
- One citizen commented that he supported listing because it would allow the Groundwater Replenishment System operated by Orange County Sanitation District (OCSD) and OCWD to continue to increase its

reclamation and reuse of treated sewage to replenish the aquifer without exacerbating the transport of the existing contaminants. This commenter also discussed that the sooner contamination is removed the sooner storm water too could be captured and infiltrated into the aquifer rather than allowing it to release to the ocean. He explained that currently storm water capture and infiltration is prohibited because contributing water to the subsurface could increase the transport of the plume.

Many commenters emphasized the risks to human health that may continue and increase if this Site is not placed on the NPL and addressed.

- Candidate for U.S. Congressional District 39 Gil Cisneros and 25 citizens expressed concern for the current risk to human health that will persist or possibly become worse if the OCNB site is not listed on the NPL and the contaminant plume associated with the OCNB is not cleaned up. To emphasize the point, one Fullerton resident indicated that her water "tastes terrible." Another anonymous local resident commented that, "[t]he health of the residents in North County should be a driving force in itself to fund the cleanup operation."
- In related comments about health risks, three citizens expressed alarm that levels of certain contaminants in the groundwater are above SDWA maximum contaminant levels (MCLs) and California MCLs.
- One Placentia resident pointed out that contaminants such as TCE and PCE "are known carcinogens and contributors to respiratory illnesses among other illnesses." This same Placentia resident gave an account of personal health issues that heighten her concern about the contamination documented at this Site.
- Another local resident explained that he and his family have gone to great lengths to reduce their exposure to possible carcinogens in manufactured goods, drinking water, and agricultural products only to be dismayed to find out that risks remains high due to exposure to unfiltered water (e.g., from the water used to brush teeth, wash dishes, etc.).
- An anonymous commenter in discussing drought conditions stated, "[a]s the water levels of this basin drop there is a chance that a higher percentage of contaminants will invade the water threatening public health."
- One "concerned Anaheim taxpayer" implored the EPA to escalate the cleanup of OCNB before it becomes another "Hinkley" (i.e., presumably referring to the groundwater contamination in Hinkley, California, that was the subject of the film *Erin Brockovich*). Four commenters invoked the drinking water issues in Flint, Michigan as an example of what they do not want to see happen in Orange County.

Numerous commenters discussed how clean affordable drinking water is essential to the economy and general vitality of their communities.

- The Cities of Garden Grove, Santa Ana, Fullerton, and Westminster commented that the water's quality, volume, and affordable cost represents much more than a simple commodity. They continued to comment that their water supply constitutes a "central element of the community itself." The City of Fullerton expanded on this comment by stating that this water supply "drives our City's thriving, dynamic, and diverse economy."
- Two residents commented that this Site should be placed on the NPL because of the need to protect, remediate, and return to beneficial use a valuable local source of drinking water.
- Fullerton Observer Community Newspaper editor Sharon Kennedy and three citizen commented that the economy of Orange County will be harmed if this Site is not addressed.
- One commenter reflected on the negative impacts on people living in the affected area that would occur if Orange County loses its main source of water and has to purchase water from another region of the state. This commenter went on to say that "[i]f more water needs to be brought down south, it can have a lasting impact on California agriculture. The water that could have been used to grow crops and raise cattle

would now be redirected to an area where the water supply had been abused and carelessly contaminated."

- One resident commented that lawsuits have already added to the cost of cleaning up this Site.
- Another citizen explained that costs, including health care costs, will rise for individuals who reside in this water district as healthy water sources decline.
- One resident commented that "[o]nce, the North OC Basin is included into the Superfund slowly the local economy will bloom as well."

Several commenters discussed protecting resources of ever-increasing scarcity as a rationale for support of NPL listing.

- Five residents pointed to recent drought conditions in California as a reason to place this Site on the NPL, highlighting the value of the groundwater at the Site given these conditions.
- U.S. Representative Alan Lowenthal also commented along a similar theme writing, "[a]s water resources become increasingly scarce across our country, especially in California, we must protect and improve our existing sources of drinking water."

Some commenters expressed their desire that the entities responsible for creating the pollution should finance the cleanup of contamination at this Site.

- CalEPA and five citizens commented the polluters should pay to clean up contamination.
- CalEPA also commented that listing this Site will provide the parties responsible for the contamination in the North Basin with "added incentive to develop and fund a cleanup plan for this site."
- California State Senator Josh Newman and California Assemblymembers William Brough and Sharon Quirk-Silva commented that formal listing on the NPL "would allow the cleanup of the site to proceed with cooperation from potentially responsible parties."
- Two residents commented that they support placing this Site on the NPL because they are concerned that the polluting companies do not wish to take responsibility for the "mess and danger they created."
- One resident commented that adding this Site to the NPL would "be an example to polluters to not do things like this or there will be consequences," and this same commenter went on to state that "[w]e should not let innocent people suffer and be affected by pollution that is caused by others and their wrong doings."

Response: The Site has been added to the NPL. Listing makes a site eligible for remedial action funding under CERCLA, and EPA will examine the Site to determine what response, if any, is appropriate. Actual funding may not necessarily be undertaken in the precise order of HRS scores, however, and upon more detailed investigation, may not be necessary at all in some cases. EPA will determine the need for using Superfund monies for remedial activities on a site-by-site basis, taking into account the NPL ranking, State priorities, further site investigation, other response alternatives, and other factors as appropriate.

3.1.2 Support with Requests for Further Actions

Comment: As summarized below, some of the commenters in support of NPL listing also provided comments related to EPA's future actions for the OCNB site.

- FREYTECH, Inc. expressed interest in working with EPA to purchase and remediate affected properties.
- In response to the OCBC's request for an extension of the comment period, the OCWD commented that the "technical analysis provided by EPA staff in support of the listing recommendation is robust and solid

as it stands"; therefore, it requested that the comment period not be extended but be based on the existing documentation in the official record. OCWD commented that most of the potentially responsible parties (PRPs) that OCBC represents in the North Basin are no longer doing business in the region or have gone out of business. It opined that because this proposal to the NPL has been publical anticipated for years, the OCBC's request [for an extension of the comment period] was "disingenuous." OCWD commented further that instead, the request for an extension of the comment period is "a plea for time to muster political support for the idea that OCWD should pay for the cleanup while letting the PRPs go without remediation accountability."

Many of the comments received were related to requests that the EPA should stop delaying and work quickly to halt the spread of contamination and cleanup existing contamination in the groundwater before it becomes a bigger problem.

- Candidate for U.S. Congressional District 39 Gil Cisneros and six residents made general requests that this Site be given high priority and be addressed quickly.

- One resident commented that the OCWD and the EPA should stop "pointing fingers and suing everyone," which, in this commenter's opinion, is delaying cleanup action and work together with the community to find solutions to fix this problem and save more money.

- Along similar lines, a sense of urgency for the EPA to address the OCNB site was expressed by California State Senator Josh Newman, California Assemblymembers William Brough and Sharon Quirk-Silva, Candidate for U.S. Congressional District 39 Gil Cisneros, the mayor of the City of Placentia, and 25 local residents in commenting that several drinking water wells have already been taken out of service due to the arrival of contaminants, and additional wells are threatened.

- U.S. Representative Alan Lowenthal, Candidate for U.S. Congressional District 39 Gil Cisneros and eight residents asked the EPA to control the contaminant plume in the North Basin before additional drinking water wells are impacted. One commenter indicated that the end goal should be to "completely stop the vertical and horizontal migration [of the contamination]." Another anonymous commenter pointed out that it would be less expensive and easier to address this site quickly before the plume expands to other wells. This same commenter felt it was "selfish to not address the issue with the plume and then make it a larger problem."

Several commenters expressed dismay concerning the level of communication the community has received regarding this Site to date, and many commenters requested improved communication with the public.

- Three residents expressed disappointment in the local government's handling of this issue with respect to transparency with the public about possible public health concerns, and they asked that the EPA do a better job in this regard.

- Two residents were "deeply concerned" to find out about the contaminant plume 15 years after the fact and to find out that knowledge of the contaminant concerns is not common knowledge among their neighbors.

- Two other residents recommended in general that the public be made more aware of the situation, and one of these two residents suggested some ways that the public might get involved improving their environment and working together and find solutions instead of blaming others.

- One resident commented that it is important to address the community's concerns so that they feel included on making decisions that affect their "safety, health, and environment."

- The Fullerton Observer Community Newspaper editor and local resident Sharon Kennedy requested that the EPA provide updates on this issue and the EPA's decision and the reason for the decision.

Response: Regarding commenters in support of NPL listing that expressed concern for the timing and pace of cleanup and suggestions for remediation actions, consistent with CERCLA, a procedure is in place for identifying sites where releases of substances addressed under CERCLA have occurred or may occur, placing such sites on the NPL, evaluating the nature and extent of the threats at such sites, responding to those threats, and deleting sites from the NPL. The purpose of the initial two steps is to develop the NPL, which identifies for the States and the public those sites that appear to warrant remedial action (56 FR 35842, July 29, 1991). The evaluation or RI/FS phase involves on-site testing to assess the nature and extent of the public health and environmental risks associated with a site and to determine what CERCLA-funded remedial actions, if any, may be appropriate. (As noted in section 3.3, Purpose of Listing, of this support document, for this Site, the RI/FS is proceeding in parallel with NPL listing.) After a period of public comment, the EPA responds to those threats by issuing a Record of Decision which selects the most appropriate alternative. The selected remedy is implemented during the remedial design/remedial action phase (and selection of contractors to perform remediation would take place during this phase). Finally, a site may be deleted from the NPL when the EPA determines that no further response is appropriate. This process allows progress at a site to continue moving forward while also allowing opportunities for public involvement.

Further, regarding commenters requesting that the EPA maintain transparent lines of communication with the public and all stakeholders interested in the cleanup of the Site, the listing process encourages and relies on the participation of the public at several steps in the Superfund process, and the Superfund program offers numerous opportunities for public participation at NPL sites. For example, the public can comment during the comment period (typically 60 days) after a site is proposed for listing.

Additionally, pursuant to 40 CFR 300.430, the EPA Regional Office develops a Community Relations Plan (CRP) before RI/FS field work begins. The CRP is the "work plan" for community relations activities that the EPA will conduct during the entire cleanup process. In developing a CRP, Regional staff interview State and local officials and interested citizens to learn about citizen concerns, site conditions, and local history. This information is used to formulate a schedule of activities designed to keep citizens apprised and to keep the EPA aware of community concerns. Typical community relations activities include:

- Public meetings at which the EPA presents a summary of technical information regarding the site and citizens can ask questions or comment.
- Small, informal public sessions at which EPA representatives are available to citizens.
- Development and distribution of fact sheets to keep citizens up-to-date on site activities.

For each site, an "information repository" is established, usually in a library or town hall, containing reports, studies, fact sheets, and other documents containing information about the site. The EPA Regional Office continually updates the repository and must ensure that the facility housing the repository has copying capabilities.

After the RI/FS is completed and the EPA has recommended a preferred cleanup alternative, the EPA Regional Office sends to all interested parties a Proposed Plan outlining the cleanup alternatives studied and explaining the process for selection of the preferred alternative. At this time, the EPA also begins a public comment period during which citizens are encouraged to submit comments regarding all alternatives. Once the public comment period ends, the EPA develops a Responsiveness Summary, which contains EPA responses to public comments. The Responsiveness Summary becomes part of the Record of Decision (ROD), which provides official documentation of the remedy chosen for the site. Further, if private parties commit to conduct remedial action under a consent decree between the EPA and the parties, the consent decree is also subject to public comment.

In addition to meeting these specific Federal requirements, community relations is a continuing activity and the EPA makes every attempt to ensure that it is designed to meet the specific needs of the community. Anyone wanting information on a specific site should contact the Community Relations staff in the appropriate EPA Regional Office. The EPA believes that the above process offers the public sufficient opportunity to present facts and opinions germane to its decision-making.

Regarding OCWD's appeal that the EPA *not* extend the public comment period as requested by the OCBC, please see section 3.2, Request for Extension, of this support document for the EPA's response to this issue.

3.2 Request for Extension

Comment: NOCC and OCBC requested that a 60-day extension to the comment period for the Orange County North Basin site be granted to allow for public comments to be submitted until May 18, 2018. NOCC and OCBC commented that due to the size of the documentation for the proposed listing the comment period is too short to permit a thorough review of the documentation. NOCC and OCBC asserted that factual errors in the record detected in its initial review, the need to compare the record to relevant litigation results, and potential economic impact of NPL listing are among reasons to allow more time for a complete review.

Response: On March 8, 2018, the EPA granted a 60-day extension of the comment period until May 18, 2018, to allow all interested parties additional time to submit comments. The extension was documented in a memorandum to the docket from James Woolford, Director of the EPA Office of Superfund Remediation and Technology Innovation, dated March 8, 2018 (docket ID EPA-HQ-OLEM-2017-0603-0021) and from Terry Jeng, Office of Superfund Remediation and Technology Innovation, on March 8, 2018 (docket ID EPA-HQ-OLEM-2017-0603-0020).

It is the EPA's general policy to only extend the comment period on a site-specific basis to address any procedural errors, such as incomplete or missing references in the public docket. While no procedural errors were identified for the Site and all documentation supporting the proposed NPL listing was made available to the public at the time of proposal, giving all interested parties ample time to review the information and prepare comments, the EPA nevertheless allowed an extra 60 days for the public to prepare comments.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.3 Purpose of Listing

Comment: Several commenters submitted comments stating that ongoing remediation at the Site makes it unnecessary to place the Site on the NPL. The OCBC, CBS Broadcasting, Inc. (CBS) and the Joint Commenters stated that there is no need to list the North Basin as a Superfund site as concerns about the groundwater are being addressed and appropriate remediation efforts are already occurring without being listed on the NPL. Aerojet Rocketdyne, Inc. (AR) commented that EPA's proposed listing of the Orange County North Basin site is unwarranted and unnecessary and does not pertain to any actions at the former AR facility because remediation they are performing is controlling the contamination. AC Products commented that NPL listing is unnecessary because the contamination is already being addressed by the State of California.

The Joint Commenters and CBS stated that the listing should not be the result of political lobbying and "closed-door meetings" by OCWD and any listing should be based on scientific facts and good policy. The Joint Commenters asserted that OCWD's lobbying efforts and an overreliance on OCWD's contractors, rather than good science, are the reasons the Site is being listed on the NPL. CBS further commented that EPA should make its determinations based on a thorough analysis of the factual record. CBS questioned OCWD's analysis of the contamination at the Site and OCWD's "advocating the urgent need for NPL listing." CBS characterized OCWD's efforts following pre-trial settlements as "inaction" and asserted that "lessening contamination readings have instead been the result of the actions of individual companies . . . as well as due to monitored natural attenuation." CBS commented that the OCWD omitted perchlorate contamination in its submission to EPA. CBS

asserted that nearby perchlorate contamination was found to be the responsibility of OCWD by the Orange County Superior Court. CBS concluded that OCWD must consider perchlorate to have been effectively addressed through natural attenuation because CBS asserts OCWD has apparently not referenced perchlorate in submissions to EPA.

CBS commented that the Site was solely scored on the groundwater pathway score and that this "single factor HRS scoring" doesn't account for the finding by the trial court judge in *Orange County Water Dist. v. Alcoa Global Fasteners, Inc*. (2017) 12 Cal.App.5th 252, which CBS asserts found CBS, Arnold, Alcoa, and Crucible to not have contributed to groundwater contamination.

Response: Listing the Site on the NPL is an appropriate step in the Superfund process for this Site, and it is based on the facts in the HRS documentation record, CERCLA and SARA, and EPA guidance regarding site listing. The Site received an HRS site score of 50.00. Sites receiving an HRS site score above 28.50 represent the EPA's determination that based on existing information the site poses a significant relative risk compared to other sites evaluated under the HRS and warrants further investigation.[1] The EPA's evaluation of the Site using the HRS and listing of the Site are consistent with the requirements of CERCLA and SARA, and also with the statutory purpose of the NPL, which is to inform the public of possible threats and identify those sites that warrant further investigation and/or remediation. At this Site, chlorinated solvent contamination of groundwater has been detected over a large area (see Figure 1 of the HRS documentation record at proposal) with the potential to affect the drinking water supply for multiple municipalities. (Indeed, as noted by page 27 of the HRS documentation record at proposal, multiple drinking water wells have been closed based on contamination potentially associated with the Site.) The need for remedial action to address the contaminant plume will be assessed during later stages of the Superfund process, and the effects of natural attenuation, if any, and any facility cleanups carried out will be taken into account at that point. Scoring a site based on a single HRS pathway is consistent with the HRS, and here the HRS site score based on the ground water migration pathway is sufficient to qualify the Site for the NPL. Finally, because the Site was evaluated as a groundwater plume with no identified source, the specific contributions of any given facility to the groundwater contamination do not affect the HRS site score. Facilities discussed in the HRS documentation record Attribution section were identified due to evidence of contaminants detected in soil, soil gas, and/or groundwater at the facility, and thus each is reasonably considered as possibly contributing to the groundwater plume, however they are not a scored aspect of the Site HRS evaluation. State court findings related to cost recovery by the water district under state statutes do not have bearing on the HRS scoring analysis.

General Purpose of NPL Listing

The NPL is generally intended to be a "rough list" of prioritized hazardous sites; a "first step in a process—nothing more, nothing less." *Eagle Picher Indus. v. EPA*, 759 F.2d 922, 932 (D.C. Cir. 1985) (Eagle Picher II). The HRS is the mechanism used to evaluate the relative risk of a site. If a site scores 28.50 or greater using the HRS, then it may be added to the NPL.

The purpose of NPL listing is explained in the Federal Register Notice of February 21, 1990 (Volume 55, Number 35) excerpted below.

> The purpose of the NPL, therefore, is primarily to serve as an informational and management tool. The initial identification of a site for the NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of the public health and environmental risks associated with the site and to determine what CERCLA-financed remedial action(s), if any, may be appropriate. The NPL also serves to notify the public of sites EPA believes warrant further investigation.

[1] See related discussion of the 28.50 cutoff score provided at 48 FR 40659, 53 FR 51965-51966, and 55 FR 51569.

Addition of the Site to the NPL thus indicates further investigation is warranted to fully assess the extent of risk posed by the Site (and remedial actions may be selected based on the findings of that complete assessment).

Basis for Listing

The Site qualifies for addition to the NPL because it has achieved an HRS score greater than 28.50, as is demonstrated in the HRS documentation record and this support document. This score is based on the facts presented in the HRS documentation record and this support document. Achieving a site score of 28.50 or greater indicates that the Site is eligible for inclusion on the NPL and therefore warrants further investigation. Placing a site on the NPL allows EPA to more effectively prioritize sites and manage possible future site investigations; it also notifies the public that the release at a site is of concern to the Agency. The addition of the Site to the NPL is an appropriate next step in this instance. This determination was made consistent with the purpose of the NPL and is supported by the HRS evaluation. All remediation decisions are determined at a later stage in the Superfund process and are not considered during the NPL evaluation. The HRS score for the Site is based on the release of contamination documented in the groundwater, the contaminants present, and the targets subject to actual and potential contamination, consistent with the HRS. Effects of natural attenuation and any facility cleanups being carried out are taken into account during site characterization and remedial alternative assessments during later steps of the Superfund process, including assessment of the potential risks posed by other contaminants such as perchlorate.

Remedial Actions

Regarding comments questioning the need for further actions that occur after a site is placed on the NPL given existing/ongoing cleanup efforts, consistent with CERCLA, the EPA has a procedure for identifying sites where releases of substances addressed under CERCLA have occurred or may occur, placing such sites on the NPL, evaluating the nature and extent of the threats at such sites, responding to those threats, and deleting sites from the NPL. The purpose of the initial two steps is to develop the NPL, which identifies for the States and the public those sites that appear to warrant remedial action (56 FR 35842, July 29, 1991). The evaluation or RI/FS phase involves on-site testing to assess the nature and extent of the public health and environmental risks associated with the site and to determine what CERCLA-funded remedial actions, if any, may be appropriate. After a period of public comment, the EPA responds to those threats by issuing a Record of Decision that selects the most appropriate alternative. The selected remedy is implemented during the remedial design/remedial action phase. Finally, the site may be deleted from the NPL when the EPA determines that no further response is appropriate.

While these steps are distinct, they can be conducted in parallel. For the OCNB site, the site was screened using the HRS process and received an HRS score of 50.00; because the HRS score is over 28.50, and the State of California concurred, EPA proposed the Site for NPL listing and is now placing the Site on the NPL. At the same time, to address the Site in a more timely manner and to address the Site's most significant hazards first, EPA has been overseeing the conduct of an RI/FS to evaluate the Site in more depth to characterize site contamination and to analyze interim remedial alternatives to address the most pressing threats at the Site. As a matter of policy, however, EPA does not delay NPL listing of a site to incorporate any new data or to score new pathways if the ultimate listing decision is not affected.

As further discussed in section 3.4, Deferral, of this support document, the EPA is aware of existing cleanup efforts, such as those carried out at the specific facilities that may have contributed to the overall groundwater contamination. However, those efforts are not comprehensively addressing the greater groundwater contamination associated with the Site.

Scoring a Single HRS Pathway

Regarding CBS's comment that the Site scoring is deficient due to scoring only a single pathway, the HRS does not require scoring more than one pathway. The HRS is a screening model that uses limited resources to

determine whether a site should be placed on the NPL for possible Superfund response. To the extent practicable, the EPA attempts to score all pathways that pose significant threats.

However, as a matter of policy, the EPA does not delay listing a site to incorporate new data or score additional pathways if the listing decision would not be affected. The HRS does not require scoring all four pathways if scoring those pathways does not change the listing decision. For instance, for some sites, data for scoring a pathway are unavailable and obtaining these data would be time-consuming or costly. In other cases, data for scoring additional pathways may be available, but that data would only have a minimal effect on the site score. In yet other cases where data on other pathways could substantially add to a site score, it may not affect the ultimate listing decision. If the contribution of a pathway is minimal to the overall score, in general, that pathway will not be scored. Where contribution of a pathway would not impact an overall score, the HRS documentation record may include a brief qualitative discussion to present a more complete picture of the conditions and hazards at the site. It is in the remedial investigation (RI) phase of the CERCLA process where conditions and hazards at the site are assessed comprehensively.

The EPA must balance the need to fully characterize a site with the limited resources available to collect and analyze site data at the initial stages of site development. For this reason, the EPA generally will not score additional pathways upon receiving new data as long as the site still meets the HRS cutoff score. Any additional data that characterizes site conditions could provide useful information during the RI phase of site evaluation. As noted above, the NPL is intended to be a "rough list" of prioritized hazardous sites; a "first step in a process—nothing more, nothing less." The EPA would like to investigate each possible site completely and thoroughly prior to evaluating them for proposal for the NPL, but it must reconcile the need for certainty before action with the need for inexpensive, expeditious procedures to identify potentially hazardous sites. The D.C. Circuit Court of Appeals has found the EPA's approach to solving this conundrum to be "reasonable and fully in accord with Congressional intent." *Eagle Picher Industries, Inc. v. EPA*, (759 F.2d 905 (D.C. Cir. 1985) Eagle Picher I).

Facilities Referenced in Attribution Section

In its comments, CBS incorrectly asserted that the EPA has neglected state court findings that several facilities named in the HRS documentation record at proposal as possible sources of the Site contamination are not the cause of present or future threats to groundwater contamination.

First CBS is unclear in its comment that scoring only the ground water migration pathway does not adequately consider these court findings. That is, CBS does not propose how scoring additional HRS pathways would have captured such court findings as part of an HRS evaluation and Site score.

Further, the facilities cited in the Attribution section of the HRS documentation record at proposal, including the Arnold, Alcoa, CBS, and Crucible facilities, are facilities for which an EPA preliminary assessment (PA) or other state investigation had been conducted and from which released contamination may have contributed to the groundwater plume being assessed in the HRS scoring. However, this Site listing is not being attributed to any individual source. Page 42 of the HRS documentation record at proposal explains that as follows:

> The plume at this site cannot be attributed to a single source. Multiple facilities have been identified in the vicinity of the OCNB plume that are **possible** contributors to the comingled plume (Ref. 22, pp. 32, 171; Ref. 110, p. 40). DTSC and RWQCB [California Department of Toxic Substances Control and Regional Water Quality Control Board] have been conducting investigations and remedial activities at many of these facilities. **Sampling results from these activities show the presence of VOCs in soils, soil gas, and groundwater beneath these facilities**. DTSC and RWQCB requested EPA assistance in evaluating the plume and contamination at facilities in the vicinity of the plume (Ref. 113; Ref. 114). EPA has conducted PAs at eight of these facilities, summarized below (Ref. 106). EPA considers that these facilities have sources that **may be contributing** to the plume. **However, there is not enough information to attribute at least part of the significant increase in contamination in the**

> **plume to any individual source**, because these facilities may be releasing similar substances, and are located too close together for background sampling. These conditions make it impossible to collect sufficient samples between each facility to determine the individual contribution from each location. [emphasis added]

Regarding other area facilities that may be under California state investigation, page 45 of the HRS documentation record at proposal explains that, "DTSC and RWQCB are conducting remedial activities at the facilities in the vicinity of the OCNB plume listed below . . . However, these facilities have not been evaluated by EPA." The entry for each facility discussed in the Attribution section of the HRS documentation record at proposal notes evidence of contaminants associated with the facility detected in soil, soil gas, and/or groundwater, and thus each is reasonably considered as <u>possibly</u> contributing to the groundwater plume evaluated for HRS scoring; but again, the Attribution section does not concretely or quantitatively link any of the facilities with a specific contribution to the plume. As the HRS documentation record explains, this information is offered as part of the explanation as to why the HRS evaluation is considering the groundwater contamination as a plume with no identified source.

Commenters also reference the trial court decision from a state court matter, Orange County Superior Court, No. 04CC00715. The decision and the appeal in that case regard cost recovery by the water district under state statutes, and do not have bearing on the HRS scoring analysis. The court in that case considered mixed legal and equitable issues under the state Hazardous Substances Account Act (HSAA) and common law claims of negligence, nuisance and trespass. The court did not consider a listing under the NPL, and the court's decision does not impact the present NPL listing. A decision in a state court case regarding the implementation of a state CERCLA program is not binding on EPA's determination whether to list a site on the NPL. See also section 3.9, Liability, of this support document which further explains that liability is not a matter evaluated in the HRS scoring and is not imposed by the NPL listing action.

Finally, although DTSC and RWQCB are addressing facility-specific contamination, the overall regional groundwater contamination is not being addressed.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.4 Deferral to State and Private Entities

<u>Comment</u>: OCBC, CBS, AC Products, the Joint Commenters, SSPA, and AR commented that the cleanup actions at the OCNB site should be deferred to State agencies or private businesses to address the contamination at the Site. Commenters stated that the EPA should defer cleanup actions to those cited by the trial judge in Orange County Superior Court, No. 04CC00715.

Defer to State and Private Companies:
OCBC commented that private businesses have a history of working with state regulatory agencies to address contamination in the North Basin. The Joint Commenters commented that contamination is being effectively remediated under the supervision of the Santa Ana Region Water Quality Control Board (SARWQCB). The Joint Commenters also commented that Pitney Bowes and the DTSC signed an administrative agreement to remediate contamination in the soil and groundwater that represents a comprehensive solution that does not necessitate an NPL listing. OCBC, CBS, and the Joint Commenters commented that there is a history showing that contamination is being addressed with the state agencies and there is no need to list the Site on the NPL.

AC Products commented that it had historically released PCE to the soil and groundwater but that NPL listing is unnecessary because it has nearly completely remediated the contamination with oversight by the State of California. AC Products further stated that the State of California is "overseeing 14 remedial actions within the study zone." AC Products stated that groundwater contamination is now below the MCLs in the "area of the AC Products plume" and it would now not qualify for NPL listing if considered separately. Additionally, AC Products commented that "NPL listing should be deferred while the State completes its response actions in accordance with

OSWER Directive 9375.6-11 'Guidance on Deferral of NPL Listing Determination While States Oversee Response Actions.'" Further, AC Products stated that EPA should develop a Memorandum of Agreement with the State to memorialize agreements to ensure actions are similar to those under CERCLA and the NCP.

OCBC commented that thousands of pounds of contamination have already been removed from the soil and groundwater and stated that OCWD "wants the public to believe that the companies responsible for the contamination have been sitting on their hands." OCBC stated that OCWD ignored several past and present successful cleanups in the North Basin under oversight from experienced state regulators. OCBC further stated that this "momentum is in stark contrast to the failure and inaction of OCWD" to clean up the contamination.

The Joint Commenters stated that numerous locations have undergone removal and remedial actions to reduce the sources of contamination at the Site and listing on the NPL is therefore unnecessary. The Joint Commenters, SSPA, and AR commented that the groundwater remediation is working and that additional regional cleanup projects would not have a demonstrative positive impact compared to continuing measures and natural attenuation.

CBS and the Joint Commenters expressed concern that, in light of existing cleanup actions already undertaken and planned investigation, NPL listing will likely lead to a duplication of efforts and an increase in oversight costs associated with the Site and with cleanup associated with specific facilities that were the focus of these comments (for CBS, the former Chicago Musical Instruments facility at 350 South Raymond, Fullerton; for the Joint Commenters, the former Chicago Musical Instruments facility and the former Northrop Y-12 facility at 301 East Orangethorpe Avenue, Anaheim).

The Joint Commenters asserted that the centralized groundwater remediation system proposed by OCWD "may not only be unnecessary, but it may be counterproductive because it will cause the spread of contaminants, be a wasteful expenditure of resources, and require enormous input of energy."

AR expressed concern that NPL listing with respect to the former AR facility is not warranted. AR asserted that, rather than resulting in a benefit to the AR site or community, "listing will result in duplication of effort and increased investigation, cleanup and oversight costs with respect to individual sites where investigation and remediation activities are well under way or are nearly complete."

Defer Based on the California Court Findings:
The Joint Commenters and an anonymous commenter stated that the groundwater contamination in the North Basin already has been thoroughly reviewed by the California Superior Court. The anonymous commenter asserted that listing is not necessary. The Joint Commenters asserted that the California Superior Court determined that there was no need for a regional groundwater treatment system as it would be unlikely to have an appreciable impact on the drinking water aquifer, would not change the long-term decreasing trend in VOC concentrations, and is not necessary to protect drinking water sources.

The Joint Commenters stated that "a number of interested parties" retained SSPA to evaluate more recent data on the groundwater conditions at the Site, and SSPA concluded that the data confirmed the California Superior Court findings. The Joint Commenters stated that SSPA's report confirms the Court's findings and shows continuing improvement in water quality over time making consideration for NPL "ill-advised." Specifically, SSPA asserted that the California Superior Court found that groundwater contamination present in the OCNB is naturally attenuating and that an extensive pump-and-treat remedy would not significantly accelerate the time it would take for groundwater to be remediated at the OCNB site.

Response: On June 28, 2017, the State of California requested that the EPA list the OCNB groundwater contamination to access resources to address the parts of the contamination that individual facility remediation has not been able to address. Assessing the contamination through HRS scoring and listing on the NPL, while individual facilities continue to be addressed under State oversight, is consistent with EPA's 1995 guidance, "Guidance on Deferral of NPL Listing Determinations While States Oversee Response Actions." An HRS score

equal to or above 28.50 qualifies for listing on the NPL; this Site scored over 28.50, representing EPA's assessment of the relative risk posed by the Site based on the data included in the HRS evaluation. While existing cleanup efforts at specific facilities under state oversight contribute to remediation of localized contamination (including some ground water cleanup such as that performed by AC Products and work performed under the Pitney Bowes/DTSC agreement), these efforts do not comprehensively address all of the contamination associated with the greater commingled groundwater plume that is the subject of the HRS evaluation. Finally, listing on the NPL indicates that the Site warrants further investigation, and it is during that further investigation stage – during the RI/FS process - that the effects of facility-specific cleanups and natural attenuation are assessed.

In its letter dated June 28, 2017, the State of California requested the Site be placed on the NPL (docket ID EPA-HQ-OLEM-2017-0603-0004). Mr. Matthew Rodriguez, Secretary for Environmental Protection, California Environmental Protection Agency, wrote:

> Governor Brown's Office asked me to respond to your letter of May 17, 2017, requesting the State of California's position on the proposed listing of the North Orange County Groundwater Basin (North Basin) on the Superfund National Priorities List (NPL).
>
> Protecting public health, the environment and the reliability of safe drinking water are State priorities and we agree with the United State [sic] Environmental Protection Agency (U.S. EPA) that threats posed by the contaminated plume in the North Basin must be remediated. The State also supports the principle that polluters should pay to clean up contamination. Listing this site will provide the parties responsible for the contamination in the North Basin with added incentive to develop and fund a cleanup plan for this site. For these reasons, the State concurs with U.S. EPA's proposal to list the site on the NPL.
>
> As you are aware, state and local agencies, including the California Department of Toxic Substances Control, the Santa Ana Regional Water Control Board and the Orange County Water District, have been working independently and in cooperation with U.S. EPA on remediation of the North Basin contamination. These efforts include the Department's remediation of three of the contaminated sites, the Santa Ana Water Board's oversight of remediation at six other contaminated sites, and the Water District's administrative settlement agreement with U.S. EPA to conduct a remedial investigation and feasibility study to address the contamination. The State looks forward to working cooperatively with U.S. EPA to continue these efforts, in conjunction with efforts to compel the responsible parties to conduct and fund a comprehensive remediation of contaminated groundwater in the North Basin site.

At this site, the State of California continues as the lead on overseeing facility-specific investigation and cleanups. The state efforts have not addressed the contamination in the deeper regional groundwater plume. Listing the Site on the NPL will enable EPA to oversee the regional groundwater cleanup and conduct attendant enforcement. The EPA and the State of California will continue to share data from these activities.

The EPA's May 3, 1995 "Guidance on Deferral of NPL Listing Determinations While States Oversee Response Actions" was developed to enhance states' roles in addressing sites. The deferral program is an administrative tool that can enable states and tribes, under their own laws, to respond to sites that the EPA would otherwise not soon address. Because of the great differences in State and Tribal capabilities, the EPA implements the guidance in a flexible manner. In this case, consistent with guidance and in light of the request by the State of California, deferral to the State of California or other parties is not appropriate.

The HRS site score of greater than or equal to 28.50 represents the EPA's assessment that the relative risk posed by the Site demonstrates that the Site qualifies for placement on the NPL and warrants further investigation under the Superfund program. The EPA recognizes that ongoing cleanup efforts are underway at individual facilities as noted by the commenters and that there has been progress made in these instances, addressing some soil and groundwater contamination. However, such actions have not comprehensively addressed all of the contamination

associated with the contaminated groundwater plume identified as the Site. As explained in the Attribution section on pages 43-46 of the HRS documentation record at proposal, the HRS site score for this Site was evaluated as a contaminated groundwater plume resulting from contaminant releases from multiple facilities, not as the release from any individual facility. The HRS documentation record section lists several facilities possibly associated with the plume based on location in relation to the plume and historical use and releases of the same solvents found in the groundwater; at page 43 it explains that "EPA considers that these facilities have sources that may be contributing to the plume. However, there is not enough information to attribute at least part of the significant increase in contamination in the plume to any individual source." The HRS documentation record Attribution section explains that cleanup activities have begun at some of these facilities, but the activities are generally local to the facility and do not address the entirety of the contamination released into the groundwater that constitutes the greater commingled groundwater plume. For other facilities, though state investigations/remedial activities have begun, these actions have not yet been evaluated by the EPA. Therefore, further investigation of the contaminated plume is warranted, and comprehensive remedial efforts may be needed to address the contamination.

Regarding the need for specific remedies, such as those that were the topic of court proceedings noted by the commenter, specific remedy decisions are made at a later stage in the Superfund process. As further discussed in section 3.3, Purpose of Listing, of this support document, following NPL listing, the evaluation or remedial investigation/feasibility study phase involves assessment of the nature and extent of the public health and environmental risks associated with the Site and to determine what CERCLA-funded remedial actions, if any, are appropriate.

Also, regarding ongoing cleanup, as further explained in section 3.6, Delay Cleanup, of this support document, the response actions currently underway at individual facilities may continue and any cleanup occurring or performed (including any effects of natural contaminant attenuation) will be considered in the Superfund remedial investigation/feasibility study stage, where appropriate, and are not expected to result in any duplication of efforts.

On comments expressing concern related to duplicative remedial activity efforts and the associated costs, the EPA notes that the discussion of costs in NPL rules in the Federal Register clearly states that including a site on the NPL does not cause the EPA necessarily to undertake remedial action; it does not require any action by a private party, nor does it assign liability for site response costs (56 FR 21462, May 9, 1991). The cost discussion outlines the EPA's perception of average potential costs per site that may occur in association with events generally following the proposed listing of a site. Any EPA actions that may impose costs on responsible parties are based on discretionary decisions and are made on a case-by-case basis. Also, responsible parties may bear some or all the costs of the RI/FS and subsequent work, or the costs may be shared by the EPA and the States. Therefore, expenditures cited by the commenter are associated with events that generally follow listing the site, not with the listing itself. The EPA has not allocated costs for this Site at this time.

Regarding contaminant levels falling below the regulatory limits such as the MCL near specific facilities being remediated, see section 3.13, Consideration of Releases below Regulatory Levels, of this support document, which further explains that the existence of some contaminant concentrations below drinking water standards does not eliminate the associated releases from consideration when evaluating a site using the HRS.

Finally, regarding the comment that EPA should develop a Memorandum of Agreement with the State to memorialize agreements to ensure actions are similar to those under the NCP, EPA is conducting its activities at the Site under the NCP. The state of California operates under different authorities. EPA is focused on the larger Regional groundwater plume affecting the drinking water zone and contamination contributing to that plume. The state is overseeing investigations and cleanups, primarily of surface (soil and shallow ground water) at individual facilities. Both the State of California and EPA retain their individual authorities to investigate, cleanup, and perform enforcement activities at the Site and continue to share data from these activities.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.5 Delay Listing Until RI/FS is Completed

Comment: OCBC, AC Products, and the Joint Commenters submitted comments stating that the Site should not be placed on the NPL until after the RI/FS is complete The Joint Commenters and CBS additionally stated that there is no compelling reason to circumvent the RI process with a premature listing. The Joint Commenters stated that because the EPA is already involved in overseeing the groundwater contamination at the Site there is no reason to propose the Site to the NPL before the studies are completed.

OCBC and the Joint Commenters claimed that the EPA and the OCWD stated they would not make any recommendation for the North Basin to be listed until after the completion of the RI/FS for the Site[2] The Joint Commenters added that the OCWD missed the intended completion in 2016 of the RI/FS and it is now not expected to be complete until 2021.

Response: There is no need to delay NPL listing to wait for the results of the OCNB Interim RI/FS investigation. The available information presented in the HRS documentation record at proposal establishes an HRS site score exceeding the 28.50 threshold and qualifying the Site for NPL listing. Other ongoing investigations do not negate the need for listing. The results of the OCWD RI/FS will be taken into account as part of later stages of the Superfund process for the Site.

As previously noted, consistent with CERCLA, the EPA has in place a procedure for identifying sites where releases of substances addressed under CERCLA have occurred or may occur, placing such sites on the NPL, evaluating the nature and extent of the threats at such sites, responding to those threats, and deleting sites from the NPL. The purpose of the initial two steps is to develop the NPL, which identifies for the States and the public those sites that appear to warrant remedial action. The evaluation or remedial investigation/feasibility study phase involves on-site testing to define the nature and extent of the threat posed by the contamination and to identify alternatives for remedial action. (As noted in section 3.3, Purpose of Listing, of this support document, for this Site, the RI/FS is proceeding in parallel with NPL listing.) After a period of public comment, following issuance of the RI/FS and the identification of a preferred alternative, the EPA responds to the identified threats by issuing a Record of Decision, which selects the most appropriate alternative. The selected remedy is implemented during the remedial design/remedial action phase. Finally, the site may be deleted from the NPL when the EPA determines that no further response is appropriate.

The EPA makes decisions during all stages of the Superfund process. Potentially responsible parties (PRPs) may affect remedy selection, as can any other member of the public, through public comment at a number of junctures in the process. PRPs may also undertake the RI/FS and/or remedial design/remedial action stages under EPA oversight, pursuant to appropriate agreements under enforcement authorities of CERCLA. And, newly available information, along with the results of the RI/FS for an interim remedy, will be taken into consideration during remedy selection and remedial design phases of the Superfund process.

Thus, the purpose of NPL listing is to identify sites warranting further investigation to fully assess the extent of risk posed by the site (and ultimately to evaluate and determine what CERCLA-financed remedial actions, if any, may be appropriate). The RI/FS identifies the extent of contamination and possible remedies to address that contamination. In this case both steps are being done concurrently, as there is a party willing to conduct/fund the RI/FS and, at the same time, there is sufficient information available to justify NPL listing. Although the original schedule may have included NPL listing at the same time as completion of the RI/FS (as shown in the 2015 presentation cited by the Joint Commenters), the schedule has changed, and the anticipated timeframe for the RI/FS should not have bearing on that of NPL listing.

[2] OCBC and the Joint Commenters point to 2015 EPA community outreach on the Site, specifically noting that Region 9 staff made this statement in at least two of the public meetings. The Joint Commenters also point to a December 16, 2015, USEPA Presentation to OCWD, included as Exhibit 19 to their comments (docket ID EPA-HQ-OLEM-2017-0603-0103).

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.6 Delay Cleanup

Comment: AR, OCBC, CBS, the Joint Commenters, and AC Products commented that placing the Site on the NPL would result in a delay to the current and future cleanup actions that are occurring at facilities associated with the OCNB site.

AR commented that its primary concern is that NPL listing will result in duplication of effort at facilities where investigation and remediation are well underway or nearly complete. CBS and the Joint Commenters stated that an NPL listing is certain to complicate and delay the cleanup by adding new layers of review and more "stakeholders" and is likely to create a duplication of efforts.

OCBC commented that the NPL listing process will slow down cleanup with "more bureaucratic red tape and delays" and stated that listing is unnecessary because the soil and groundwater contamination is already being aggressively cleaned up. AC Products commented that additional agency oversight, from an NPL listing would slow activities at facilities that have existing regulatory oversight by adding an additional layer of bureaucracy.

Response: Placement of a site on the NPL should not in and of itself lead to delay of planned response actions or associated negotiations. All Site investigation work, as well as any remediation undertaken by PRPs performed to date and that which is currently proceeding will be considered in evaluation of the Site. The EPA and the State are working together to minimize duplication of effort in work at the facilities and in the Site-wide plume. Work being conducted by the PRPs at their individual facilities should not be delayed due to parallel work to clean-up the regional plume. Certain activities, such as performance of a risk assessment for the Site, can be consolidated and thus make the overall cleanup more efficient.

As previously noted, the EPA makes decisions during all stages of the Superfund site response procedure. PRPs may affect remedy selection, as can any other member of the public, through the public comment process. PRPs may undertake the RI/FS and/or remedial design/remedial action stages under EPA supervision and pursuant to appropriate agreements under enforcement authorities of CERCLA. The listing process does not encumber or preclude PRPs from entering into these agreements or from making or implementing plans for redevelopment of the property. The EPA has entered into many such agreements (under enforcement authorities of CERCLA or those of other statutes), before and after a site's promulgation to the NPL, and such an alternative is available here.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.7 Extent of Site/Site Boundaries

Comment: Commenters submitted several comments related to the Site definition and extent of the Site. The Joint Commenters referenced the Site in their comments as having precisely defined boundaries in the HRS documentation record and equated these boundaries of the Site with the groundwater plume. Also, the Joint Commenters and AC products discussed that there are numerous locations within the area that defines the Site where groundwater is actively being remediated or the groundwater is uncontaminated. AC Products asserted that those areas should not be considered part of the Site. Ms. Stanley commented that the "total area" should not be listed as a Superfund site and only the area "immediately adjacent to the original polluting factory" should be included as part of the Site. AC Products commented that the historical release at its facility is not located within the OCNB site and stated that if the AC Products facility is to be included, it should be considered a separate operable unit. Similarly, SSPA commented that contamination in some of the wells identified in the groundwater plume could be originating from "sources external to the site." Finally, AC Products commented that the area is too extensive to be efficiently remediated as a single unit.

In its comments on the NODA, AC Products commented that "[t]he area shown for the groundwater model and potential NPL site listing is too broad and should be narrowed and subdivided because the area as defined is overly broad and complex." AC Products listed several reasons:

- The area includes both remediated and unremediated areas.
- The groundwater model area should be subdivided, recognizing aspects such as geographic areas, issues requiring actions, smaller units over which flow can be modelled, similar transport properties, hydraulic conductivity, and hydraulic zones.

Response: The OCNB site is scored for HRS purposes as a comingled groundwater plume with no single identified source. Precise boundaries of a site are not set at this stage of the Superfund process. Placing a site on the NPL is based on an evaluation, in accordance with the HRS, of a release or threatened release of hazardous substances, pollutants, or contaminants. However, the fact that the EPA initially identifies and lists the release based on a review of contamination at a certain parcel of property—or in this case a contaminated groundwater plume with no identified source—does not necessarily mean that the site boundaries are limited to that area.

CERCLA Section 105(a)(8)(A) requires the EPA to list national priorities among the known "releases or threatened releases" of hazardous substance, focused on the release, not precisely delineated boundaries. Further, CERCLA Section 101(a) defines a "facility" as the "site" where a hazardous substance has been "deposited, stored, placed, or otherwise come to be located." The "come to be located" language gives the EPA the necessary broad authority to clean up contamination when it has spread from the original source. On March 31, 1989 (54 FR 13298), the EPA stated:

> HRS scoring and the subsequent listing of a release merely represent the **initial** determination that a certain area may need to be addressed under CERCLA. Accordingly, EPA contemplates that the preliminary description of facility boundaries at the time of scoring will need to be refined and improved as more information is developed as to where the contamination has come to be located; this refining step generally comes during the RI/FS [remedial investigation/feasibility study] stage. [emphasis added]

The revised HRS (55 FR 51587, December 14, 1990) elaborates in its definition of "site" as "area(s) where a hazardous substance has been deposited, stored, disposed, or placed, or has otherwise come to be located. Such areas may include multiple sources and may include the area between the sources."

Until the site investigation process has been completed and a remedial action (if any) is selected, the EPA can neither estimate the extent of contamination at the NPL site nor describe the ultimate dimensions of the site. Even during a remedial action, the EPA may find that the contamination has spread further than previously estimated, and the site definition may be correspondingly expanded.

The Site Description section of the HRS documentation record at proposal at page 19 explains that "[f]or HRS scoring purposes, the Orange County North Basin (OCNB) site consists of a single, comingled volatile organic compound (VOC) groundwater plume with no single identified source." Although the initial listing of this Site uses information from specific wells and releases from individual facilities, the listing as a comingled groundwater plume with no single identifiable source does not limit the site to be addressed to those identified wells or facilities.

The Attribution section of the HRS documentation record at proposal provides information on several possible sources of the plume contamination, but clarifies at page 43 that:

> EPA considers that these facilities have sources that may be contributing to the plume. However, there is not enough information to attribute at least part of the significant increase in contamination in the plume to any individual source, because these facilities may be releasing similar substances, and are located too close together for background sampling. These conditions

make it impossible to collect sufficient samples between each facility to determine the individual contribution from each location.

Therefore, the Site being listed is focused on the plume of contamination in the groundwater. Based on this understanding:

- Whether more local contamination associated with any individual facility is eventually subject to remedial action as part of the Site remedy will be determined during later stages of the Superfund process following additional investigation.
- Without delineation of the Site by sources, assignment of which sources are part of the Site and which are "sources external to the site" is premature. As the Site is more fully characterized in later stages of the Superfund process, source facilities found to be contributing to the groundwater contamination will be identified, and they may differ from those presented in the Attribution section of the HRS documentation record at proposal. See also section 3.16, Source Identification, of this support document on the evaluation of other potential sources outside the area of the delineated groundwater plume.
- Regarding designation of operable units and which facilities may be involved in those units, this is also a decision that is not addressed at listing. Division of larger sites or sites with multiple contaminated media is considered in future stages in the Superfund process.
- Regarding the request to limit the Site to the area near the facilities that were the origin of the groundwater contamination, this is not appropriate because the focus of the HRS evaluation is where the contamination has come to be located; in this case the contamination being scored is the groundwater plume, not the possible originating facilities.
- Regarding the comment that the area is too extensive to be efficiently remediated as a single unit, this is again a matter for future Superfund stages when division of operable units occurs, once the extent of the contamination is better understood based on data acquired during the RI/FS. Further, operating units can vary greatly in size and are based on a variety of factors, including media addressed and remedy applied. Thus, while smaller operating units are appropriate for some sites, fairly large operating units can be more suitable when addressing widespread groundwater contamination.
- Regarding comments suggesting refinement of the groundwater model based on various characteristics, such refinements might be carried out in the future based on needs of the RI/FS. However, the extent of the site for HRS purposes is based on where the Site contamination has come to be located, established by observed release samples in the HRS documentation record at proposal. (For further discussion on the limited use of the 3DVA groundwater model in the HRS evaluation for this Site, see also sections 3.11, Impacts of Ongoing Remediation, 3.12, Risk to Human Health and the Environment and 3.20, Validity of Plume Area, of this support document.)

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.8 Economic Impact/Stigma of Listing

Comment: OCBC, CBS, the Joint Commenters, AR, and Dr. Stanley submitted comments regarding the economic impacts, stigma, and costs that listing the Site on the NPL may have.

OCBC stated that it is dedicated to protecting drinking water in the region as well as promoting the Orange County economy and commented that NPL listing of the Site would impact its goals. OCBC asserted that listing a portion of the County's drinking water basin as a Superfund site or "federal environmental disaster area" would have a significant negative impact on property values and the local economy, on the confidence in the safety of the County's drinking water supply, and on "consumer confidence" in the process.

CBS and the Joint Commenters expressed concern that, in light of existing cleanup actions already undertaken and planned investigation, NPL listing will likely lead to a duplication of efforts and an increase in oversight costs associated with the Site and with cleanup associated with specific facilities that were the focus of these comments (for CBS, the former Chicago Musical Instruments facility at 350 South Raymond, Fullerton; for the Joint Commenters, the former Chicago Musical Instruments facility and the former Northrop Y-12 facility at 301 East Orangethorpe Avenue, Anaheim).

The Joint Commenters asserted that the centralized groundwater remediation system proposed by OCWD "may not only be unnecessary, but it may be counterproductive because it will cause the spread of contaminants, be a wasteful expenditure of resources, and require enormous input of energy."

AR expressed concern that NPL listing with respect to the former AR facility is not warranted. AR asserted that, rather than resulting in a benefit to the AR site or community, "listing will result in duplication of effort and increased investigation, cleanup and oversight costs with respect to individual sites where investigation and remediation activities are well under way or are nearly complete."

Dr. Stanley, in questioning the area encompassed by the proposed NPL listing, commented that "home values would fall needlessly."

Response: The economic impacts and stigma associated with listing suggested by the commenters, are not a consideration during the process to add a site to the NPL. Further, there are no costs imposed by the NPL listing action itself.

Economic factors such as those raised by the commenter are generally not considered in the assessment of whether a site belongs on the NPL. Inclusion of a site or facility on the NPL does not in itself reflect a judgment on the activities of the owner(s) or operator(s), but rather reflects the EPA's assessment that a significant release or threat of release has occurred and that the site is a priority for further investigation under CERCLA. The EPA notes that there are both costs and benefits that can be associated with listing a site. Among the benefits are increased health and environmental protection as a result of increased public awareness of potential hazards. In addition to the potential for Federally financed remedial actions, the addition of a site to the NPL could accelerate privately financed, voluntary cleanup efforts. Listing sites as national priority targets also can give States increased support for funding responses at particular sites. As a result of the additional CERCLA remedies, there will be lower human exposure to high-risk chemicals, and access to higher quality surface water, groundwater, soil, and air. Therefore, it is possible that any perceived or actual negative fluctuations in property values or development opportunities that may result from contamination may also be countered by positive fluctuations when a CERCLA investigation and any necessary cleanup are completed. For further information, see information in the September 2000 EPA fact sheet, *Superfund Today, How Can a Superfund Site Affect My Property?* (EPA 540-F-98-001, available at https://semspub.epa.gov/src/document/05/927384.pdf).

Assertions regarding costs associated with a perceived duplication in efforts/oversight are unfounded; as noted in section 3.6, Delay Cleanup, of this support document. All facility-specific investigation and cleanup work being undertaken at individual facilities at the OCNB site will be considered in the Superfund remedial investigation/feasibility study stage, where appropriate, and are not expected to result in any duplication of efforts.

Additionally on the commenter's concern for the impact of site listing on remedial activities and the attendant costs, as noted in section 3.4, Deferral to State and Private Entities, of this support document, the discussion of costs in NPL rules in the Federal Register clearly states that including a site on the NPL does not cause the EPA necessarily to undertake remedial action; it does not require any action by a private party, nor does it assign liability for site response costs (56 FR 21462, May 9, 1991). The cost discussion outlines the EPA's perception of average potential costs per site that may occur in association with events generally following the proposed listing of a site. Any EPA actions that may impose costs on responsible parties are based on discretionary decisions and are made on a case-by-case basis. Also, responsible parties may bear some or all the costs of the RI/FS and

subsequent work, or the costs may be shared by the EPA and the States. Therefore, expenditures cited by the commenter are associated with events that generally follow listing the site, not with the listing itself. The EPA has not allocated costs for this Site at this time.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.9 Liability

Comment: OCBC, CBS, AC Products, AR, Dr. Odencrantz, and Dr. Stanley submitted comments related to the liability associated with Site groundwater contamination.

OCBC commented on liability in light of lawsuits filed by OCWD. OCBC noted that, in settlements related to a 2004 lawsuit filed by OCWD against several businesses in the region, more than 21 million dollars were paid to OCWD to perform cleanup related to the Site; however, OCBC criticized that no cleanup was performed by OCWD over the past 10 years until very recently. OCBC commented that OCWD filed another suit in 2012 against another set of area businesses in an attempt to recover costs for a proposed centralized groundwater treatment system, but OCWD lost this suit. OCBC stated that the Orange County Superior Court found that the defendants in this case did not cause the contamination in the principal aquifer, and also that OCWD is responsible for contamination of perchlorate and nitrate in the North Basin; OCBC asserted this ruling identifies OCWD as a potentially responsible party (PRP) for any Superfund process to deal with perchlorate or nitrate in the North Basin. However, OCBC asserted that following this loss, in 2014/2015 meetings with EPA, OCWD gave EPA and state agencies a list of approximately 15 PRPs that should be responsible for the centralized remediation system. OCBC took issue with this list in that OCWD was not listed as a PRP, the prevailing defendants in the 2012 suit were listed, and "OCWD also lists as PRPs for its proposed North Basin Federal Superfund site three former state court defendants that settled out of the state court case before the 2012 trial and paid significant funds to OCWD to do so." OCBC further contended that the EPA should not let OCWD "make an end run around a state court decision after a full and fair trial on the merits that the water district sought, pursued vigorously, and lost;" and the EPA should not "subject private businesses that prevailed in the state court trial or settled out of it to federal superfund liability for the same remedial response costs that the state court already evaluated and found unnecessary."

CBS also commented that, in the State Court lawsuit (Orange County Superior Court, No. 04CC00715), the Orange County Superior Court made a finding that CBS at its 500 South Raymond Avenue location "did not release, threaten to release, or create a future threat of release of contaminants of concern into groundwater, including the shallow aquifer." CBS contended that the judgement was based on details of its ownership of the facility and based on then-recent data collected in cooperation with public agencies, including a site assessment conducted by CBS and OCWD. CBS further commented that the other defendants in this case were determined to have not contributed to a current or future threat of contamination to groundwater. CBS additionally noted that the Orange County Superior Court found OCWD responsible for perchlorate contamination in North Basin groundwater.

AC Products asserted that, based on the information contained in its comments on the proposed NPL listing, AC Products is not liable under CERCLA Section 107(a), 42 U.S.C. Section 9607(a). AC Products also commented that its historical release "is not within the Orange County North Basin Site," and that if AC Products is determined to be in the Site, it should be addressed as a separate operable unit.

AR submitted comments noting that it had reached a 2007 settlement with OCWD in its 2004 suit, paying 5.2 million dollars. These funds were committed under the terms of the settlement for the purpose of OCWD installing an extraction well, EW-1, at 637 S State College Drive in Fullerton; and this well was to contain the northeastern VOC contaminant plume. AR took issue with the delay of installation of the well by OCWD until September 2017.

Mr. Odencrantz asserted that a PCE source resides at the Johnson Controls facility and notes that while Johnson Controls may have made an agreement with a state regulatory agency, Johnson Controls should not be eliminated as a PRP at the Site.

Dr. Stanley commented that "it remains unclear if the existing homeowners would receive any compensation in this case for the fault of an old factory."

In comments on the NODA, AC Products discussed the 2004 suit filed by OCWD against AC Products and other parties to establish liability and recover costs. AC Products noted that a settlement was reached under which it paid $2 million to OCWD and agreed to operate specific extraction wells "until the AC Products contribution to the plume was at or below the MCL."

Response: Liability is not evaluated as a part of HRS scoring, and importantly, liability is not imposed by the NPL listing action. Liability is not considered in evaluating a site under the HRS. The NPL serves primarily as an informational tool for use by the EPA in identifying those sites that appear to present a significant risk to public health or the environment. Listing a site on the NPL does not reflect a judgment on the activities of the owner(s) or operator(s) of a site. It does not require those persons to undertake any action, nor does it assign any liability to any person. See the legislative history of CERCLA in the Federal Register at (48 FR 40674, September 8, 1983, and 53 FR 23988, June 24, 1988). See *Kent County v. EPA*, 963 F.2d 391 (D.C. Cir. 1992).

Also, commenters reference the trial court decision from a state court matter, Orange County Superior Court, No. 04CC00715. Judge Kim Dunning's decision regarding cost recovery by the county water district under state statutes does not have bearing on the HRS scoring analysis. A decision in a state court case regarding the implementation of a state CERCLA program would not be binding on EPA's determination of whether to list a site on the NPL.

Similarly, commenters cite to the trial court case for determination of PRPs for the Site. Listing of a site on the NPL is not a liability determination. Liability for a CERCLA site is evaluated through a separate PRP search process, which has no impact on the HRS listing of a site.

Finally, commenters reference prior settlements between the OCWD and individual facility owners or operators regarding contamination of the County's water resources. During litigation of Orange County Superior Court, No. 04CC00715, OCWD obtained approximately $21 million in settlements from defendants to the litigation. Listing of a site on the NPL does not make any liability determination, and prior settlements, including the amount of those settlements, have no bearing on the HRS assessment of the Site. As noted in Section 3.3, Purpose of Listing, of this support document, the state court decisions do not address an NPL listing.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.10 Remedy Decision

Comment: CBS, AC Products, the Joint Commenters, AR, and Dr. Stanley submitted comments related to remedy selection for the Site, with several comments pointing to other remedial actions completed or ongoing.

CBS commented that VOC concentrations within the plume area are decreasing and listing the Site on the NPL would ignore the benefits from natural attenuation. CBS asserted that existing data shows natural attenuation has been effective in reducing VOC concentrations in several wells and should be considered in the evaluation of the Site.

AC Products commented that the area for the Site is too broad and complex to be efficiently remediated, citing characteristics such as the scale, geologic heterogeneity that would affect contaminant transport and remedy selection, variability in hydraulic conductivity, and multiple hydraulic zones. AC Products expressed that the Site should be divided into smaller areas on the basis of geography, specific issues, or specific actions needed.

In comments on the NODA, AC Products further commented that the plume originating at its facility has been investigated and remediated for almost 25 years, including use of soil vapor extraction systems, and that this plume is approaching the relevant MCLs in concentration. AC Products discussed that in 2004 OCWD planned a groundwater spreading basin near the AC Products facility, and that it argued against this in the state court case based on the anticipated raising of water levels and possible mobilization of remaining local facility contamination as a result. AC Products commented that it restarted soil vapor extraction and received a determination from the Santa Ana Region of the California Regional Water Quality Control Board that no further action was needed for soil contamination associated with its facility. AC Products noted that it continues to perform groundwater treatment.

In asserting that OCWD's centralized remediation system is not needed as current efforts will address contamination, the Joint Commenters further argued that such a system will actually result in the spread of contamination.

AR commented that NPL listing "will result in duplication of effort and increased investigation, cleanup and oversight costs with respect to individual sites where investigation and remediation activities are well under way or are nearly complete." AR claimed that "activities typically required under the CERCLA process have already been addressed."

Ms. Stanley commented that the EPA should conduct a small demonstration project to test the impact of potential cleanup technology; Ms. Stanley commented that if a significant impact can be shown by such a project, controlling for background factors, an appropriate cost-effectiveness measure may be identified.

Response: The HRS evaluation and NPL listing process is part of the initial phase of site evaluation. Decision-making about necessary remediation and selection of a remedial approach are not part of the listing stage of the Superfund process but rather are assessed at the remedial investigation/feasibility study and remedy selection stage of the Superfund process. As discussed previously in this support document, consistent with CERCLA, the EPA has in place a procedure for identifying sites where releases of substances addressed under CERCLA have occurred or may occur, placing such sites on the NPL, evaluating the nature and extent of the threats at such sites, responding to those threats, and deleting sites from the NPL. The purpose of the initial two steps is to develop the NPL, which identifies for the States and the public those sites that appear to warrant remedial action (56 FR 35842, July 29, 1991). The evaluation or remedial investigation/feasibility study phase involves on-site testing to assess the nature and extent of the public health and environmental risks associated with the site and to determine what CERCLA-funded remedial actions, if any, may be appropriate (and cleanup carried out up to this point will be taken into account in remedy determinations). (As noted in section 3.3, Purpose of Listing, of this support document, for this Site, the RI/FS is proceeding in parallel with NPL listing.) After a period of public comment, the EPA responds to those threats by issuing a Record of Decision which selects the most appropriate alternative. The selected remedy is implemented during the remedial design/remedial action phase. Finally, the site may be deleted from the NPL when the EPA determines that no further response is appropriate.

Regarding the "area for the Site" referred to by AC Products, as explained in section 3.7, Extent of Site/Site Boundaries, of this support document, site boundaries are not established in this phase of the NPL listing process.

Regarding comments on the effects of natural attenuation and other current/ongoing investigation and cleanup activities, as discussed in section 3.5, Delay Listing Until RI/FS is Completed, of this support document, those investigations and the ongoing remedial work do not negate the need for listing the Site on the NPL, and listing the Site is consistent with the purpose of the NPL. Further, any site investigation or response work by the State or a PRP performed to date would be considered in separate, later stages of the Superfund process, not during NPL listing.

Finally, regarding the claim that the centralized groundwater remediation system would cause the spread of contamination, first, as with other remedial decisions, that evaluation is a matter for a later stage of the Superfund

process. Additionally, a centralized cleanup system would be designed to draw the contaminated water towards it, so that it can be extracted and contaminants may be removed. Locations of extraction wells for this type of system would be selected so that they are in the path of the contaminated plume. Short-term impacts of operating a system like this would be considered as part of the feasibility study.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.11 Impacts of Pumping

Comment: Dr. Odencrantz commented on the possible effects of groundwater pumping near areas of contamination causing spreading of groundwater contamination. Mr. Odencrantz suggested that, in general, "[t]he large amount of groundwater pumping that is going on near a known source(s) of PCE contaminated soil [and] groundwater could be contributing to the problems in the North Basin." Mr. Odencrantz cited the rising VOC contamination in historical Fullerton well F-KIM1 over the 1990s, eventually resulting in its closure. Mr. Odencrantz asked whether the large volume pumping of extraction wells EW-1 through EW-4 could have exacerbated contaminant migration by spreading VOCs, specifically PCE, across a deeper and wider volume than they would have otherwise occupied. Similarly, Mr. Odencrantz asked whether the last 11 years of pumping well F-KIM1 had the same effect given known sources of PCE near this well.

Response: An HRS evaluation for the purpose of determining an HRS site score does not specifically account for the possibility of pumping-induced contamination spread. The HRS evaluation at this Site concerns a release of hazardous substances to the aquifer likely contributed to by contamination from numerous sources, evaluated for HRS purposes as a groundwater plume with no identified source. The possible effects on the movement of that plume by pumping are not factors in the HRS evaluation and scoring of the Site.

The HRS documentation record at proposal acknowledges the possibility of pumping-induced contaminant migration gradients. Page 20 of the HRS documentation record notes that:

> The 3DVA shows that the OCNB plume consists of comingled contamination from sources at multiple facilities, that there is no continuous clay or fine-grained geologic unit to prevent downward contaminant movement, and the comingled plume is being pulled downward by drinking water production well pumping.

And page 28 of the HRS documentation record at proposal states:

> The hydraulic gradient is locally amplified by production wells extracting water from the deeper portion of the aquifer. A downward hydraulic gradient allows VOC-impacted groundwater to migrate both laterally and vertically downward, largely in response to pumping-induced gradients.

The HRS does in effect consider the general effects of contaminant migration, for example in the establishment of a target distance limit for groundwater within which uncontaminated drinking wells may be scored as subject to potential contamination. However, the HRS does not distinguish between the reasons for contaminant migration in groundwater (be they natural groundwater flow, pumping-induced flow, or otherwise). Such specific aspects of contaminant migration modelling are not a consideration in the HRS evaluation at the NPL listing stage of the Superfund process, but they may be studied and taken into account in future investigation in later Superfund stages such as during the remedial investigation.

In Dr. Odencrantz's comments, he asks several other questions related to specific details about well F-KIM1 (e.g., the depth of the original well, the purpose of the replacement well, funding of the replacement well). However, these topics are outside the scope of the NPL listing action.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.12 Risk to Human Health and the Environment

Comment: OCBC, CBS, the Joint Commenters, SSPA, and AR submitted comments questioning the risk presented by the Site.

OCBC stated in its comments:

> The drinking water in the North Basin area is NOT being threatened, contrary to what is being reported. Orange County water is safe to drink and will continue to be safe to drink. Yes, parts of the shallow groundwater (not where drinking water wells are located) are polluted. However, the facts show that the contamination is not moving toward any drinking water well. The monitoring data are clear, for more than a decade the groundwater plume has not moved laterally or vertically. If anything, the time series data shows a shrinking, not growing plume.

OCBC submitted comments that available data show that contamination is not spreading, but rather that it is shrinking and being in part addressed by natural attenuation. OCBC asserted that no drinking water is affected, and that soil contamination and groundwater contamination are already being addressed, "aggressively cleaned up under state direction, and the parties are making good progress."

CBS submitted comments questioning the adequacy of risk factors addressed by the HRS evaluation. CBS submitted multiple comments asserting that the contamination is no longer spreading (citing page 31 of the DVA memorandum, Reference 110 of the HRS documentation record at proposal), that it has become stable in shallow and principal aquifers, and that natural attenuation is at work. CBS further asserted that "the key listing documents do not contain any fate and transport analysis, such as diffusion and dilution, which are relevant risk factors to be evaluated under the HRS regulation."

The Joint Commenters commented that a regional remedy is not needed to protect drinking water and natural attenuation is likely to yield continued reductions in VOC concentrations over time. They asserted that, as shown by the SSPA report (Exhibit 1 to their comments), "the HRS 'snapshot' fails to grasp the reality that VOC levels have declined dramatically, will continue to decline, and do not pose a threat to drinking water." The Joint Commenters stated that an EPA reference, the DVA memorandum, concludes that "the distribution and morphology of the COC [contaminants of concern] plumes has not significantly changed in the five years examined;" they asserted that the overlay maps in the DVA memo show that there is no significant migration of contamination toward the productions wells. The Joint Commenters noted that SSPA showed that current cleanup actions for sources and natural attenuation are already addressing contamination in a manner protecting drinking water quality. The Joint Commenters cited a state superior court determination that "there is no threat to drinking water and the current and historical groundwater data." The Joint Commenters concluded that the Site does not constitute an environmental emergency.

SSPA commented that extensive information and data collected over decades of investigation and monitoring activities show that:

> the human population that might be considered at risk under a HRS scoring process is really not at risk because the water purveyors are aware of the situation and will take the necessary steps to prevent exposure. Indeed, as stated in the January 2018 U.S. EPA fact sheet "*EPA's Superfund program identifies sites that may pose actual or potential threats to public health or the environment*" . . . however, as also stated in the same fact sheet "*All drinking water currently served by water purveyors meets federal and state drinking water standards*." [emphasis added by SSPA]

SSPA contended the HRS score thus does not accurately characterize the hazard posed by the Site, arguing that "[t]he HRS is, at this time and stage in the process of investigation and remediation of OCNB contamination, the

wrong tool to evaluate conditions within the OCNB." SPA commented that applying HRS scoring to the groundwater contamination "inaccurately characterizes the nature and degree of hazard" at the Site.

AR commented that VOC concentrations detected in wells downgradient of its facility have markedly decreased between 2006/2007 sample collection and sampling performed in 2016-2018.

AC Products commented on the information supplied in the NODA that "[t]he [a]dditional [r]eference [d]ocuments are insufficient to form the basis for a broad and complex groundwater flow model," and that "[t]he groundwater model should be supported by a larger set of geologic data gathered in an appropriate manner which more effectively characterizes the area involved."

In other comments on the NODA, AC Products discussed other characteristics that should be considered, asserting that "[t]he area shown for the groundwater model and potential NPL site listing is too broad and should be narrowed and subdivided because the area as defined is overly broad and complex." AC Products listed several reasons including that:

- The area includes both remediated and unremediated areas.
- The groundwater model area should be subdivided, recognizing aspects such as geographic areas, issues requiring actions, smaller units over which flow can be modelled, similar transport properties, hydraulic conductivity, and hydraulic zones.

Response: Regarding questions of the level of risk posed by the Site, placing a site on the NPL is not based on a site-specific risk assessment. The HRS documentation record at proposal establishes that the Site poses a sufficient relative risk to human health or the environment as compared to other candidate sites evaluated using the HRS to warrant inclusion on the NPL and further investigation. Consistent with CERCLA and the NCP, this Site has been placed on the NPL based on an HRS evaluation of the relative risk posed by a release of VOCs to groundwater and the threat that these releases pose to drinking water in the area. The relative risk at this Site as evaluated for the listing decision includes the contamination in the aquifer. Also, an HRS evaluation does not consider some of the specific characteristics discussed by commenters, e.g., fate and transport factors or that the contamination may not be spreading or may be shrinking due to natural attenuation, or whether contamination may be managed to provide drinking water meeting appropriate standards. Those types of issues are addressed after NPL listing in later stages of the Superfund process.

During the site-specific risk assessment, conducted as part of the remedial investigation stage of the CERCLA process, sufficient information will be collected to conduct a complete quantification of the site-specific risk associated with the contaminated aquifer. Based on this information, the EPA will determine if and what response actions are warranted at the Site. However, the HRS is not a site-specific risk assessment. The HRS is a numerically based screening tool that the EPA uses to assess the relative degree of risk to human health and the environment posed by a site compared to other sites subject to review based on a screening-level knowledge of site conditions. The HRS score is used to determine whether a site is eligible for placement on the NPL. The NPL is intended primarily to guide EPA in determining which sites warrant further investigation to assess the nature and extent of public health and environmental risks associated with a release of hazardous substances, pollutants, or contaminants. See 83 FR 2576 (Proposed Rule, Orange County North Basin site, January 18, 2018); see also 55 FR 51532 (Final Rule, Hazard Ranking System, December 14, 1990). CERCLA § 105(a)(8)(a) requires EPA to determine NPL priorities based on the "relative risk or danger to public health or welfare, or the environment." The criteria the EPA applies to determine this relative risk or danger is codified in the HRS and is the EPA's primary tool for deriving a site score based on the factors identified in CERCLA. The HRS evaluation and score at or above 28.50 represents EPA's determination that the Site may pose a relative risk or danger to human health and the environment and warrants further investigation under CERCLA. Specific quantification of site-specific risk posed to human health or the environment is made at the RI stage of the Superfund process following listing.

Inasmuch as the comments challenge the adequacy of the HRS to identify sites for the NPL and further CERCLA attention (e.g., comments that the HRS is the "wrong tool" to assess the risk posed by the Site), such comments

are outside the scope of this rulemaking, which is limited to the placement of the Site on the NPL. The HRS and the process used in placing a site on the NPL were promulgated on December 14, 1990 (55 FR 51569) and revised January 9, 2017 (82 FR 2760), adding a subsurface intrusion component to the HRS. Comments directed at the HRS are not relevant to the proposal to place the Site on the NPL, nor do such comments affect the Site score.

Evaluation tools, such as fate and transport analysis risk factors, diffusion and dilution, the static/migrating nature of the plume, natural attenuation of contaminants, and the 3DVA Technical Memorandum (Reference 110 of the HRS documentation record at proposal, and the subject of the NODA materials), were taken into account to the extent specified under the HRS. For example, the HRS likelihood of release factor category value, the HRS mobility factor value, the HRS target distance limit, and the weighting of target wells subject to potential contamination all to some extent involve approximations of the migration of hazardous substances through the subsurface and their ability to impact specific target wells. Factors outside of those specified by the HRS are not part of its relative ranking system and are potentially parts of later site-specific assessments of actual risk posed by Site contamination. Further, any site investigation work and resulting available data, including any remediation by the State or a PRP performed to date, will be considered in separate, later stages of the Superfund process.

Regarding the comments that the County water is safe to drink and "water purveyors are aware of the situation and will take the necessary steps to prevent exposure," such measures to protect the public are not relevant to the HRS evaluation—they do not address the contamination in the groundwater identified in the established observed release to the aquifer for the Site and have no impact on the HRS score. And, consideration of such measures would artificially shield a contaminated aquifer from HRS evaluation. See also section 3.21.1, Consideration of Groundwater Flow Direction and Eligible Targets, of this support document, which explains that the HRS evaluation scored the target population associated with the contamination in the aquifer at the point of withdrawal from wells in the aquifer and not at a point of delivery or finished water, i.e. blended/served water, consistent with the HRS. Further, comments relying on the fact that water purveyors take required measures to deliver safe water meeting drinking water standards ignore the trigger for those measures—that the water extracted from the wells is contaminated (and may exceed drinking water standards at the point of extraction).

Regarding the comment questioning risk posed by the Site based on the assertion that contamination is mainly restricted to shallow groundwater away from drinking water wells, contamination in drinking water wells has been established at observed release wells per HRS requirements. The HRS documentation record at proposal shows that drinking water wells F-5 and F-6 exhibited contamination at HRS Level I observed release concentrations, and drinking water wells A-47, F-4, F-8, and PAGE-F exhibited contamination at HRS Level II observed release concentrations. In addition, several other municipal drinking water production wells within the target distance limit are scored as subject to potential contamination, consistent with the HRS. Additionally, the HRS documentation record at proposal (e.g., page 27) discusses that multiple drinking water wells not scored have been closed or placed on inactive status due to VOC contamination likely related to the Site (Fullerton wells F-FS13, F-KIM1, F-7; Anaheim well A-23; private well BAST-F).

Finally, the HRS process is part of the CERCLA remedial process. There is no HRS requirement that sites assessed present environmental contamination scenarios that might trigger emergency responses or EPA time-critical removal actions.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.13 Consideration of Releases below Regulatory Levels

Comment: AC Products and the Joint Commenters submitted comments questioning the severity of contamination and suggesting that the EPA improperly considered releases below MCLs in the HRS site evaluation.

AC Products asserted there is no need to list the Site on the NPL because the "area of the AC Products plume is almost entirely at or below the maximum contaminant levels for groundwater and therefore would not score in the Hazard Ranking System sufficiently to warrant listing under the NPL."

The Joint Commenters cited current remediation activities for soil contamination and monitoring well data at the EMD facility (500 East Orangethorpe Avenue, Anaheim—a former Northrop facility), noting that VOC concentrations in shallow groundwater below this site are less than State Drinking Water Maximum Contaminant Levels, "indicating that any impacts to the shallow groundwater from VOCs in the soil at this time are minimal."

SSPA criticized the identification of observed releases in the HRS documentation record at proposal. SSPA specifically took issue with production well samples used to establish observed releases where sample results were below the MCLs.

Response: Contaminant concentrations below drinking water standards such as maximum contaminant levels do not eliminate the associated releases from consideration when evaluating a site using the HRS. See section 3.19, Likelihood of Release, of this support document, for discussion on the HRS criteria for evaluating an observed release to an aquifer. For further discussion related to completed or ongoing remediation at specific facilities, see sections 3.3, Purpose of Listing, 3.4, Deferral to State and Private Entities, and 3.10, Remedy Decision of this support document.

On July 16, 1982, when responding to public comments on the proposed (original) HRS (47 FR 31188), and again on September 8, 1983 (48 FR 40665), the EPA rejected the idea that releases within regulatory limits should not be considered "observed releases" under the HRS. As the EPA noted in 1982:

> [E]mission or effluent limits do not necessarily represent levels which cause no harm to public health or the environment. These limitations are frequently established on the basis of economic impacts or achievability.

By contrast, an observed release represents a 100 percent likelihood that substances can migrate from the site (47 FR 31188, July 16, 1982).

Section 2.3 of the revised HRS (82 FR 2760, January 9, 2017) states that an observed release can be established either by direct observation or by chemical analysis. An observed release by chemical analysis has occurred when a contaminant is measured significantly above background level if some portion of the release is attributable to the site. Although contaminant levels may be lower than regulatory limits, an observed release is nevertheless considered to have occurred if the measured levels are significantly higher than background levels. The HRS does, however, consider whether releases are above regulatory limits in evaluating target populations, increasing by a factor of 10 the weight assigned populations exposed to contaminants above regulatory limits.

The observed release factor is not intended alone to reflect the hazard presented by the particular release. Instead, the hazard of a site is approximated by the total HRS score, which incorporates the observed release factors with other factors such as waste characteristics (including waste quantity, toxicity, and mobility) and targets. This total HRS score reflects the hazard of the site relative to the other sites that have been scored. A more comprehensive characterization of the contamination, associated releases, and the impacts thereof are fully determined during the remedial investigation that typically follows listing.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.14 Adequacy of Administrative Record

Comment: OCBC, AC Products, and SSPA submitted comments questioning whether the data contained in the HRS documentation record at proposal and forming the basis for the HRS evaluation adequately reflects the Site conditions.

OCBC commented that "[o]n February 20, 2018, OCBC and business stakeholders affected by the proposed listing met with USEPA Region IX officials to discuss the facts and issues. As the attendees at the meeting

explained, while USEPA's listing proposal is based upon technical data and analyses, much of it was not readily available."

AC Products commented that an accurate HRS site score should include evaluation of RI/FS data, to properly acknowledge current levels of groundwater contamination, rather than the data in the HRS documentation record at proposal, which represent historical maximums.

SSPA commented that the limited dataset used in the HRS evaluation ignores a significant portion of the available data. In arguing that the HRS process is not appropriate for this Site because the level of investigation data available surpasses that normally available at the listing phase, SSPA asserted that the HRS evaluation "implementation relies on data, assumptions and estimates that reflect a preliminary screening process rather than a detailed analysis using the plethora of historical data available throughout the OCNB." SSPA contended that the historical data could have yielded more relevant information related to fate and transport of Site contamination, and can show that natural attenuation is occurring in the Site plume.

AC Products commented on the NODA, asserting that "[t]he [a]dditional [r]eference [d]ocuments are insufficient to form the basis for a broad and complex groundwater flow model," and that "[t]he groundwater model should be supported by a larger set of geologic data gathered in an appropriate manner which more effectively characterizes the area involved."

Response: The HRS provides the requirements for identifying observed releases and criteria for their evaluation. All data used for HRS scoring of this Site were obtained directly by the EPA in May 2016, and the HRS evaluation was conducted in accordance with the criteria set forth by the HRS. This data reflects direct, current contamination and did not include historical data collected by OCWD. The information contained in the HRS documentation record at proposal references was sufficient to score the Site for HRS purposes, including identifying observed releases meeting HRS criteria, and the analysis is consistent with CERCLA and Congressional direction that the HRS be based on screening level information. Factors scored in the HRS evaluation for the Site have not been invalidated based on any data generated after the data included in the HRS documentation record at proposal.

As shown in the HRS documentation record at proposal and further supported in section 3.19, Likelihood of Release, of this support document and its subsections, observed releases of hazardous substances were documented consistent with the HRS.

As further explained in section 3.3, Purpose of Listing, of this support document, as a matter of policy, the EPA does not delay listing a site to incorporate new data or score new pathways, if the listing decision is not affected. Furthermore, although more investigation-generated information is available for this Site than other typical NPL sites at listing (including information from the RI being conducted concurrently with NPL listing), those data do not change any of the scoring factors assigned in the HRS documentation record at proposal. The HRS evaluation is a preliminary screening tool to determine NPL eligibility rather than a detailed analysis as would be conducted as part of a remedial investigation. The HRS is a screening model that uses limited resources to determine whether a site should be placed on the NPL for possible Superfund response. A separate stage of the Superfund process, the remedial investigation (RI), characterizes conditions and hazards at the site more comprehensively. The NPL is intended to be a "rough list" of prioritized hazardous sites; a "first step in a process--nothing more, nothing less." *Eagle Picher Indus. v. EPA*, 759 F.2d 922, 932 (D.C. Cir. 1985) (Eagle Picher II). The EPA would like to investigate each possible site completely and thoroughly prior to evaluating them for proposal for the NPL, but it must reconcile the need for certainty before action with the need for inexpensive, expeditious procedures to identify potentially hazardous sites. The D.C. Circuit Court of Appeals has found the EPA's approach to solving this conundrum to be "reasonable and fully in accord with Congressional intent." *Eagle Picher Industries, Inc. v. EPA*, (759 F.2d 905 (D.C. Cir. 1985) Eagle Picher I).

As further explained in sections 3.10, Remedy Decision, and 3.12, Risk to Human Health and the Environment, of this support document, more detailed assessment of the exact nature and extent of the risk posed by the

contamination is part of later stages of the Superfund process. While this may include the groundwater modelling details suggested by the commenter, such factors are not part of the HRS evaluation.

All references listed and cited in the HRS documentation record at proposal were made available in the EPA Region 9 docket at the time of proposal, as explained in the preamble to the proposed rule. Accordingly, this information was all available at the time of the referenced February 20, 2018 meeting. The public comment period was extended by 60 days to allow all interested parties time to comment on the listing. Following the posting of the NODA on August 13, 2018, the EPA made those support materials available and provided an additional 30-day comment period to allow the public time to comment on those materials.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.15 Non-Scoring HRS Documentation Record Accuracy

Comment: CBS and the Joint Commenters submitted comments challenging specific statements in the HRS documentation record at proposal, including challenging whether the contaminant plume continues to migrate and whether stated reasons for well closure are accurate.

Response: The issues identified in these comments have no effect on HRS scoring, and as shown in the following sections, the questioned statements in the HRS documentation record at proposal are accurate:

- 3.15.1 Continued Spreading of Groundwater Contamination
- 3.15.2 Reasons for Well Closure

3.15.1 Continued Spreading of Groundwater Contamination

Comment: The Joint Commenters and CBS commented that statements in the HRS documentation record at proposal regarding the continued vertical and lateral expansion of the plume are incorrect.

The Joint Commenters commented that the following statement regarding contaminant migration on page 19 of the HRS documentation record at proposal is not supported by cited references: "The contamination continues to migrate both laterally and vertically, threatening downgradient production wells (Figure 2) (Ref. 22, pp. 8, 32-34, 167-169; Ref. 23, pp. 180, 186)." The Joint Commenters asserted the following points: Reference 22 is "based on unsuccessful litigation positions of OCWD;" Reference 22 page 8 conclusions are made with no support; and Reference 22 pages 32-34 make relevant statements, citing OCWD VOC plume maps on pages 167-169 showing the plume in 2008, 2011, and 2011-2013.

Regarding the 2008 VOC map, the Joint Commenters questioned whether the figure is meaningful given the timeframe of samples included and number of possible substances involved, stating:

> The original 2008 composite VOC plume map was allegedly prepared based on averages from monitoring wells for a 3 year period from 2002 through 2005, groundwater grab samples and data of unspecified dates for facility monitoring wells. Thus, the document was allegedly prepared using data from a 36 month timeframe without any identification of when within that extended period any well was tested, how many times or whether the chemicals were the same or different.

The Joint Commenters challenged that the 2011 VOC map "has similar issues and lack of basis," and that the 2011 map is similar to the 2008 map and "if anything, shows a shrinking not growing plume."

Regarding the 2013 VOC map, the Joint Commenters asserted no plume migration is shown, and that this map appears to be a manipulation of the same data shown in the 2008 map, stating:

> Figure 6.5 is identified as a 2013 plume data map to apparently illustrate plume movement after the preparation of the 2011 plume map. But the maps do not show an increase in the size or movement of the plume. Further, the legend on Figure 6.5 states that the map refers to VOC concentrations "based on average from OCWD monitoring wells in Oct. 2002-Oct. 2005." The plume map which is represented to be newer data reflected in a 2013 document (Figure 6.5) is thus based on eight to eleven year old data which is the same time period as the plume map prepared in 2008 (Figure 6.3). Consequently, what is represented as a moving plume is actually a manipulation and different drawing based on the same data set. (Compare Figure 6.3 to Figure 6.5).

Regarding the accuracy of the 2008 map, the Joint Commenters commented that this map appears to be based on the same data/contours provided in a map, Exhibit 4, included as an exhibit in OCWD litigation, and that this exhibit was found by the state court to be flawed, stating:

> Figure 6.3 (2008 Plume Map) is based on and uses hand drawn contours prepared by OCWD employee David Mark in the Fall of 2008. This plume map, which forms the basis for the others and some of the contentions in the HRS support documentation, is not reliable or accurate for a number of reasons. Mr. Mark was deposed in the OCWD North Basin litigation over several days in 2011. He was asked about Deposition Exhibit 4 on July 11, 2011 which became Trial Exhibit 695 about which he testified in the trial of that same action on May 3 and May 8, 2012. Copies of portions of this testimony and the referenced deposition and trial exhibits are attached as Exhibit 15.
>
> A comparison of the contours within the alleged plumes in Figure 6.3 of Reference 22 with the deposition and trial exhibits reveals they are indistinguishable as they are all based on Mr. Mark's work for the litigation. The HRS documents and the legends of all of the plume maps fail to acknowledge that Mr. Mark included more than just groundwater data for the periods noted in the legend of each map, and instead based his drawings in part on "soil gas data" of indeterminate depth and location. May 8, 2012 Trial Transcript pages 3676-3677 (Exhibit 16). Also, while the legends describe the asserted time periods of the data averaging, if Mr. Mark did not have data for the specified time period, he simply used "the older data". May 3, 2012 Trial Transcript, page 3250, lines 12-14 (Exhibit 17). Mr. Mark also admitted on cross examination at trial that he did not consistently draw the plumes. See, e.g., May 8, 2012 Trial Transcript page 3679, lines 10-18 ("no I did not draw them in a similar manner.") (Exhibit 16).

The Joint Commenters conclude that:

> The plume maps relied upon for the location, size and alleged movement of the plume(s) include data of unknown dates, soil gas data (which cannot be discerned or distinguished) and are drawn inconsistently. Nonetheless, these unreliable plume maps are the basis on which listing the "North Basin" on the NPL is based.

The Joint Commenters asserted that comparison of the 2008 map and OCWD litigation Exhibit 4 shows that the contamination is not migrating. The Joint Commenters commented that the 2008 map is based on data from 2002-2005 and the Exhibit 4 map is based on 2006-2008 data. The Joint Commenters claim that "[s]ince the plumes are the same, the alleged contamination did not move between those two time frames. Alternatively, the contours were crafted to support the OCWD trial theory and cannot be trusted at all. Either way, the notion that the plume is migrating laterally and vertically is unsupported in the record." The Joint Commenters also cite SSPA comments at 4-1 to 4-5, which include a statistical analysis of available data performed by SSPA in which it concludes that natural attenuation is occurring, and long-term concentration trends are decreasing.

CBS stated that the proposed NPL listing of the Site is "based in part on the premise that VOC contamination plumes within the shallow and principal plumes are spreading and threatening more production wells." But CBS

argued that the information cited in the HRS documentation record at proposal actually shows the opposite, and that the areas of higher contamination are not spreading. CBS cited page 31 of the DVA memorandum, (Reference 110 of the HRS documentation record at proposal), and quotes it stating, "The distribution and morphology of the COC plumes has not significantly changed in the five years examined."

CBS challenged that more recent data supports that VOC contamination in the shallow and principal aquifer is not spreading or threatening more production wells. CBS points to the SSPA assessment, which CBS contended "establishes that current groundwater conditions are consistent with the trial court record and the Superior Court's judgment, and the presence of markedly improving trend over the past decade."

Response: All data used for HRS scoring were obtained directly by EPA in May 2016 and is listed in the SI report for the Site, and the HRS documentation record statement on plume migration has no effect on HRS scoring. As shown on pages 30-47 of the HRS documentation record at proposal and in this support document (e.g., section 3.19, Likelihood of Release, and its subsections, 3.20, Validity of Plume Area, and 3.21, Population Subject to Potential Contamination, and its subsections), contamination is present in groundwater at the Site and clearly has migrated from original source locations to wells drawing water from the principal aquifer, and this contamination has been shown to meet observed release criteria. Targets subject to actual and potential contamination due to the plume are assigned scores consistent with the HRS as shown on pages 51-56 of the HRS documentation record at proposal.

The HRS scoring does not evaluate whether a contaminant plume is expanding, contracting, or is static. And, as explained in sections 3.12, Risk to Human Health and the Environment, and 3.10, Remedy Decision, of this support document, more detailed assessment of the exact nature, extent, and risk posed by the contamination is part of later stages of the Superfund process.

Extensive references are provided for the statement in the HRS documentation record at proposal at page 19 that "[t]he contamination continues to migrate both laterally and vertically, threatening downgradient production wells (Figure 2) (Ref. 22, pp. 8, 32-34, 167-169; Ref. 23, pp. 180, 186)." Note that, as further explained in section 3.22, Revisions to the HRS Package, of this support document, figures in Reference 22 (including those cited in this HRS documentation record statement) have been corrected at promulgation. For Figures 6.2, 6.4, 6.5, and 6.6 of the Reference 22 report, information in the figure legends identifying the date of data used to generate the figures was incorrect; however, the dates in the titles of the figures were correct (Figures 6.2, 6.4, 6.5, and 6.6 are titled as showing data for 2008, 2013, 2013, and 2013 respectively; corrected figures show that Figure 6.2 used monitoring well data from October 2006-October 2008, and Figures 6.4, 6.5, and 6.6 used monitoring well data from October 2012-September 2013). These errors have been explained and corrected in updated copies of the figures attached to a memorandum included with Reference 22 at promulgation.

- The assertions made on page 8 of Reference 22 provides support for the HRS documentation record statement that "[d]ue to downward migration of shallow contaminated groundwater, deeper aquifers currently used for water supply have been impacted." Reference 22 is the Conceptual Model Refinement, North Basin Groundwater Modeling Project report, and page 8 is the *introduction* section to that report, which predictably contains summary information. Elsewhere in the document, other related points are made, e.g., Reference 22 pages 11, 12, 22, 30, and 33 discuss the downward gradient from the shallow to principal aquifers given the geological characteristics of the area, amplification by production well pumping, and hydraulic head data.

- Cited Reference 22 pages 32-34 discuss the movement of contamination in the aquifer, stating that:

  > Overall, groundwater VOC contamination has worsened in the North Basin area, which is evident from the expanding VOC plume, and increasing VOC concentration along the leading edges of the VOC plumes. VOC plume maps prepared by OCWD for 2008, 2011, and 2013 are shown in Figures 6.2 through 6.5). For 2013, OCWD prepared separate maps for the Shallow Aquifer/Perched groundwater and the Principal Aquifer (Figures 6.4 and 6.5, respectively). An overlay of these two maps is shown in Figure 6.6. OCWD's VOC plume maps are based on

samples collected in site monitoring wells, groundwater grab samples collected to investigate known and potential source areas, OCWD monitor wells, and production wells. OCWD has installed over 200 groundwater monitor wells in the North Basin area to aid in monitoring the migration and extent of VOC impacts in the Shallow and/or Principal aquifers. Groundwater samples are typically collected from OCWD monitor wells quarterly, on average.

Concentration plots were created to show the change in concentration over time for OCWD monitor wells in the North Basin area. Some wells show an increasing trend (Figure 6.7), some show a decreasing trend (Figure 6.8), some show an increase for one VOC and a decrease for another (Figure 6.9), and some do not show any trend (Figure 6.10).

. . .

Groundwater flow is generally to the west in the Shallow Aquifer, and west and southwest in the Principal Aquifer, as illustrated in the 2013 plume map (Figures 6.4 and 6.5) . Nearly all of the North Basin VOC plumes are located within the Forebay area, which is characterized by discontinuous aquitard lenses that do not hydraulically isolate the Shallow and Principal aquifers from each other. As shown in the hydrographs presented in Section 5, hydraulic heads are typically higher in the Shallow Aquifer and lower in the Principal Aquifer (i.e., there is a downward hydraulic gradient). Consequently, VOC-impacted groundwater in the North Basin area is able to migrate both laterally and vertically downward, largely in response to pumping-induced gradients. In addition, dissolved chlorinated solvents are denser than water and have a natural tendency to travel with groundwater with little retardation (Petrisor and Wells, 2008).

Historical groundwater analytical data suggests that there is VOC migration both laterally and vertically. The 200-plus monitoring wells include a series of clustered wells that were installed next to each other at different depths with screens in either the Shallow and/or Principal aquifers. In general, most clustered wells indicate VOC presence in both the shallow and deeper screened interval well, signifying vertical migration. In much of the North Basin area, higher VOC concentrations are observed in the Shallow Aquifer wells, compared to the concentrations in adjacent Principal Aquifer wells. However, there are areas where higher VOC concentrations are found in the deeper Principal Aquifer wells. Examples of adjacent OCWD monitoring wells, where one well is completed in the Shallow Aquifer and the other is completed in the Principal Aquifers, and that exhibit higher VOC concentrations in the deeper Principal Aquifer monitoring wells, are presented in Table 6.1.

. . .

VOC time-series plots for these wells are shown in Figure 6.11. The data shown in Figure 6.11, as well as the Principal Aquifer plume map shown in Figure 6.5 demonstrates that VOCs are migrating from the Shallow aquifer to the Principal Aquifer. In the North Basin area, there are considerably fewer monitoring wells completed in the Principal Aquifer. Consequently, the extent of VOC contamination in the Principal Aquifer may be more extensive than shown on Figure 6.5. As shown on the 2008, 2011, and 2013 composite VOC plume maps (Figures 6.2, 6.3, and 6.6, respectively), it is apparent that the concentrations are moving in a western/southwestern direction, following the known groundwater flow path.

- Cited Reference 22 pages 167-169 include Figures 6.2-6.4.

- Cited Reference 23 page 180 notes:

  The District's groundwater monitoring data indicate that the VOCs are migrating into the Principal Aquifer, which is used for drinking water supplies. Two of Fullerton's and one of

> Anaheim's production wells were removed from service and destroyed due to VOC contamination in the area. The North Basin Groundwater Protection Program, described in Section 8.9, was initiated in 2005 to minimize the spread of the contamination and clean up the groundwater in this portion of the basin.

- Cited Reference 23 page 186 states:

> Groundwater contamination, shown in Figure 8-13, is primarily found in the shallow-most aquifer, which is generally less than 200 feet deep; however, VOC-impacted groundwater has migrated downward into the Principal Aquifer tapped by production wells. The contamination continues to migrate both laterally and vertically threatening downgradient production wells operated by the cities of Fullerton and Anaheim and other agencies.

Thus, the HRS documentation record at proposal statement on migration is accurate, and the cited references supporting that statement are accurate. Further, on the 3DVA modelling pointed to by CBS, the EPA notes that the intention of that modeling was to show the extent of contamination in a small period of time. It only shows a snapshot of the extent of contamination, and was not intended to show migration.

Finally, commenters reference the trial court decision from a state court matter, Orange County Superior Court, No. 04CC00715. The trial court decision was appealed and in *OCWD v. Alcoa* (2017) 12 Cal.App.5th 229, 219 Cal.Rptr.3d 474, the appellate court found the trial court's statement of decision did not reflect the correct causation standard for OCWD's primary cause of action under the Carpenter-Presley-Tanner Hazardous Substance Account Act. Importantly, neither the trial court decision nor the appeal have bearing on the HRS scoring analysis. A decision in a state court case regarding the implementation of a state CERCLA program would not be binding on EPA's determination whether to list a site on the NPL. As noted in Section 3.3, Purpose of Listing, of this support document, the state court decisions do not address an NPL listing.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.15.2 Reasons for Well Closures

Comment: The Joint Commenters challenged the HRS documentation record at proposal statements that multiple city production wells and a private well in the area of the Site were closed or deactivated due to VOC contamination.

Specifically, the Joint Commenters commented on statements on pages 19 and 27 of the HRS documentation record at proposal. On page 19, the HRS documentation record at proposal states that "[t]wo of the City of Fullerton's and one of the City of Anaheim's production wells were removed from service and destroyed due to VOC contamination in the area (Ref. 23, pp,. 180, 186; Ref. 103; Ref. 109)." On page 27, it states that "[f]our drinking water production wells have been shut down and destroyed due to the contamination: Fullerton wells F-FS13 (2002), F-KIM1 (2002); Anaheim well A-23 (2001); and private well BAST-F (2013) (Ref. 23, p. 180; Ref. 103; Ref. 109)."

The Joint Commenters alleged that these statements are not supported in the HRS documentation record and are not completely accurate. The Joint Commenters make several related comments:

- The two City of Fullerton wells were "closed nearly twenty years ago and were decommissioned for several reasons, including their age and that they were insufficient for Fullerton's future needs."
- The sole reference support for the closure of these wells was not documentation provided by the cities, but rather an email from an OCWD employee "without any actual supporting facts," and argued that NPL listing "needs to be based on facts and supported by appropriate documentation, not biased emails created after the

fact." The Joint Commenters found this to be another example of the EPA's "over-reliance on, and improper alliance with OCWD."

- On cited Reference 23 (OCWD Groundwater Management Plan, 2015 Update), page 180 includes text similar to the HRS documentation record language but does not cite any supporting source information.
- On cited Reference 23, page 186 does not support the HRS documentation record language and also cites no supporting source information.
- On cited Reference 103, this reference includes statements on well closures in an email from David Mark of OCWD. However, Mr. Mark is an OCWD employee, not an employee of either associated city, and the closure actions occurred prior to his employment at OCWD. The Joint Commenters noted that although EPA contractors were in communication with the cities on other Site issues, they do not appear to have been contacted on this point.
- On cited Reference 109, another email from OCWD employee Mr. Mark, this document captures "OCWD's understanding" on the well closure but is not supported. The Joint Commenters challenge that "[n]o factual information is provided as to the privately owned well identified as BAST-F other than Mr. Mark's speculation in Reference 109."
- The two City of Fullerton wells were installed using construction methods (Cable Tool drilling) that do not allow use of cement annular seals and gravel packs that could have averted downward contaminant migration along the well casing. This shortcoming made the wells vulnerable to contaminant infiltration, and the well design itself is a partial cause of PCE found in the wells, evidenced by other differently designed nearby wells exhibiting no VOC contamination.
- The City of Fullerton replaced its two closed wells with the deeper F-KIM1A, which began operation in 2002 and is able to produce more than the previous two wells combined.
- Other City of Fullerton wells, F-KIM2 and F-Sunclipse 10, pump groundwater from the same zone without contamination.
- There is no documentation that private well BAST-F was used for drinking water purposes.

The Joint Commenters challenged statements in the HRS documentation record at proposal that Fullerton well F7 was placed on inactive status in February 2015 because of VOCs in excess of MCLs. The Joint Commenters point to cited Reference 127, which identifies that the well was inactivated due to contamination and poor production.

Response: The reason for closure of the subject wells has no effect on HRS scoring as these wells were not included among the wells scored as targets in section 3.3, Targets, of the HRS documentation record at proposal, nor were they included among the wells establishing an observed release to groundwater in section 3.1.1, Observed Release, of the HRS documentation record at proposal. Further, the HRS documentation record statements in question are supported by the following cited references.

The references cited include supporting information. Reference 23, an OCWD 2015 groundwater management plan, page 180 states: "The District's groundwater monitoring data indicate that the VOCs are migrating into the Principal Aquifer, which is used for drinking water supplies. Two of Fullerton's and one of Anaheim's production wells were removed from service and destroyed due to VOC contamination in the area."

Reference 103 is a May 18, 2016, email from Dave Mark, OCWD Principal Hydrogeologist to Kim Hoang, EPA Region 9 Superfund Division Site Assessment Manager, which lists last pumped dates and destroyed dates for these wells in a table:

Well	Last pumped	Destroyed
BAST-F	6/2003	8/23/13
F-KIM1	3/2001	1/18/02
F-FS13	10/1999	1/25/02
A-23	8/2001	~9/1/2001 (exact date not specified by producer)

Reference 109 consists of May-June 2017 email correspondences between Dave Mark, OCWD Principal Hydrogeologist and Kim Hoang, EPA Region 9, Superfund Division, Site Assessment Manager. The initial May 31, 2017, email from Ms. Hoang includes historical TCE concentration summaries for BAST-F and A-23, and PCE concentration summaries for F-KIM1 and F-FS13; this email also notes that the TCE concentrations in well A-23 were decreasing at the time of abandonment. The June 8, 2017, reply from Mr. Mark states:

> Regarding the destruction of Fullerton production wells F-KIM1 and F-FFS13 [sic], Anaheim production well A-23, and private well BAST-F; it is OCWD's understanding that these wells were destroyed due to the presence of VOCs. Some of these wells may have also been destroyed due to declining well efficiency. The Fullerton and Anaheim staff that were involved with closures and destructions of those wells are no longer employed with the respective cities. They have either retired or taken a job elsewhere. Privately owned well BAST-F was used for the manufacturing of bottled water and soda. Sometime after the well was taken out of service, the company closed, the property was sold, and the well was destroyed by the new property owner.

The Joint Commenters' criticisms are incorrect because:

- The fact that age or limited production may have been a factor in closure does not negate contamination as a contributing reason for deactivating the wells.
- The support for well destruction due to the presence of VOCs is established by Reference 109. This includes TCE/PCE concentration data for the wells, in addition to the statement by OCWD. OCWD explained that the city staff directly involved were no longer employed with the respective cities. The Joint Commenters accusation that this OCWD email is biased is without support. Further, the Joint Commenters statement that NPL listing "needs to be based on facts and supported by appropriate documentation" is also misplaced—as explained, these closed wells were mentioned in the HRS documentation record at proposal within the context of general descriptions of contamination in the area (in the Site Description section, section 3.0.1, General Considerations, and section 3.3.2, Population of the HRS documentation record at proposal), but were not scored and therefore did not contribute to the HRS site score qualifying the Site for NPL listing.
- Contrary to the commenters' assertion, cited Reference 23 *does* include references as part of a references list (pages 236-240 of that document).
- Cited Reference 23, page 186 (cited on page 19 of the HRS documentation record at proposal) is not intended to support the statement quoted by the commenter. Instead, it supports the statement on page 19 of the HRS documentation record at proposal that "[g]roundwater contamination in this area is primarily found in shallower monitoring wells screened at less than 200 feet below ground surface (bgs); however, VOC-impacted groundwater has migrated downward into the deeper portion of the aquifer tapped by drinking water production wells."
- Reference 103 provides the last pumped and destruction dates for the wells in question. Although Mr. Mark is not an employee of either city, he provides the OCWD understanding of the well closures, and explains in Reference 109 why more direct evidence from city employees regarding the reason for closure of city wells may not be available due to the involved individuals having left city employment.
- The fact that a replacement well for City of Fullerton closed wells is successfully pumping, or the fact that other nearby wells have encountered uncontaminated water does not negate the well closures or negate the contamination detected in the closed wells.

- Private well BAST-F was used for the manufacturing of bottled water and soda, as noted by Mr. Mark of OCWD in Reference 109.

Regarding Fullerton well F-7, the statement in question appears on pages 27 and 51 of the HRS documentation record at proposal, stating that "well F-7 was placed on inactive status in February 2015 due to VOCs exceeding MCLs, and is planned for destruction in the future (Ref. 126; Ref. 127; Ref. 131)." Reference 127 indicates that the well was made inactive due to both poor production and PCE contamination exceeding the MCL—the former does not negate the latter.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.16 Source Identification

Comment: The Joint Commenters, CBS, SSPA, AC Products, and Dr. Odencrantz commented on the identification of the sources of contamination in the groundwater plume area.

CBS made several statements related to its facility (500 South Raymond Avenue):

- "[I]t has been judicially determined that the activities of CBS at the 500 South Raymond Ave site did not release, threaten to release, or create a future threat of release of contaminants of concern into groundwater, including the shallow aquifer."
- In the California Superior Court's Statement of Decision in *Orange County Water Dist. v. Alcoa Global Fasteners, Inc.* (Case No. 04CC00715), "[t]he Court's Statement of Decision ("SOD") contains a factual finding that the 500 South Raymond Ave site formerly occupied by CBS-Fender does not pose a present or future threat to groundwater."
- On appeal, the California Court of Appeal issued a June 1, 2017 decision "substantially upholding the Superior Court's findings and specifically upholding findings with respect to the 500 South Raymond Ave Site." (*Orange County Water Dist. v. Alcoa Global Fasteners, Inc*. [12 Cal.App.5th 252])
- The court decision was based on various data, including the January 30, 2012 Daniel B. Stephens & Associates, Inc. Site Investigation Summary for the Former CBS/Fender Facility (included as Reference 66 of the HRS documentation record at proposal). That report "concludes that there was no impact to groundwater or threat thereof at 500 South Raymond Ave due to releases on that site or from soil contamination that emanated to 500 South Raymond Ave from any neighboring site."

Additionally, CBS commented that there are other facilities (i.e., CBS, Arnold, Alcoa and Crucible) that the court in that case found did not have any causal connection to past, present, or future groundwater contamination in the shallow aquifer. CBS pointed to the Statement of Decision at "Page 40, Line 6 through Page 71, Line 4; 12 Cal.App.5th at Page 314 through Page 318" in support of its comment.

The Joint Commenters and AC Products discussed that there are numerous locations[3] within the plume area involving active remediation of the soil and/or groundwater and AC Products asserted that those areas should not be considered part of the plume. Further, the Joint Commenters stated that the Superior Court adjudicated that no VOCs from "some of those locations" in the Plume have reached the aquifer. Specifically, the Joint Commenters commented that SARQWCB indicated that SARQWCB stated that remediation activities at the Northrop Grumman EMD site indicate that VOCs remaining in the soil at the Site do not appear to be at concentrations high enough to result in significant impact on water quality.

[3] After stating "numerous locations," the Joint Commenters go on to discuss the following facilities that are presumably the facilities being referenced: AC Products, Inc.; Aerojet Rocketdyne, Inc.; Chicago Musical Instruments; and the Northrop Grumman Corporation.

SSPA commented that source attribution was not properly evaluated and asserted that there may be additional "potential sources external to the site." SSPA stated that comparing long-term contaminant concentrations (i.e., TCE concentration data) at wells F-5 and F-6 to wells inside and outside the groundwater plume area, the contamination in those wells could be attributed to sources external to the Site. SSPA commented that some wells outside of the HRS-delineated area of observed release contain contaminant concentrations that are higher than some wells inside the HRS-delineated area, but EPA did not evaluate or identify other potential sources outside this area.

Dr. Odencrantz commented that he was concerned that the battery manufacturer, Johnson Controls, was not listed as part of the Site and was not thoroughly investigated; Dr. Odencrantz expressed that Johnson Controls is a known user of large amounts of chlorinated solvents and asserted that Johnson Controls should be considered a PRP at the Site.

Response: While there are many suspected sources of contamination contributing to the contamination identified in the groundwater plume, for HRS scoring at this Site there is no identifiable source of contamination causing a significant increase in contaminants for the entire comingled groundwater plume. Multiple studies have been completed to attempt to identify the source or sources of the contamination in the groundwater plume; however, while several possible sources have been identified, data currently available are not sufficient to reasonably identify the source(s) at the Site causing the significant increase in contamination for the entire plume. Consistent with the HRS, the source of the contamination for HRS scoring purposes is the groundwater plume. The facilities named as possible contributors to the comingled plume in the HRS documentation record at proposal are just that—possible sources of the scored contamination described as part of a discussion of attempts to identify the origin of the plume; these possible contributors are not scored as part of the HRS evaluation for the Site.

HRS Section 1.1, *Definitions*, defines a source as:

> Any area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated from migration of a hazardous substance. Sources do not include those volumes of air, groundwater, surface water, or surface water sediments that have become contaminated by migration, except: **in the case of either a groundwater plume with no identified source or contaminated surface water sediments with no identified source, the plume or contaminated sediments may be considered a source**. [emphasis added.]

Pages 21 and 43 of the HRS documentation record at proposal discuss the rationale for not identifying an individual source(s) of the contamination in the plume.

Page 21 of the HRS documentation record at proposal states:

> The rationale for the lack of an identifiable source for the plume (i.e., **that the significant increase in contaminant concentrations cannot be attributed to a release from any individual facility**) is presented in Section 3.1.1 Observed Release, under Attribution. [emphasis added]

Page 43 of the HRS documentation record at proposal where the attribution is discussed states, in relevant part:

> The OCNB site consists of a single comingled VOC-contaminated groundwater plume, which resulted from the releases of solvents from multiple facilities located in the vicinity of the OCNB plume. . . .
>
> In accordance with the HRS, a contaminated groundwater plume can only be evaluated as a source for HRS scoring purposes when the original source of hazardous substances contributing to the plume cannot be reasonably identified (Ref. 1, Sections 1.1, 3.1.1). **The plume at this site cannot be attributed to a single source. Multiple facilities have been identified in the vicinity**

> **of the OCNB plume that are possible contributors to the comingled plume** (Ref. 22, pp. 32, 171; Ref. 110, p. 40). DTSC and RWQCB have been conducting investigations and remedial activities at many of these facilities. Sampling results from these activities show the presence of VOCs in soils, soil gas, and groundwater beneath these facilities. DTSC and RWQCB requested EPA assistance in evaluating the plume and contamination at facilities in the vicinity of the plume (Ref. 113; Ref. 114). **EPA has conducted PAs at eight of these facilities**, summarized below (Ref. 106). EPA considers that these facilities have sources that may be contributing to the plume. However, there is not enough information to attribute at least part of the significant increase in contamination in the plume to any individual source, because these facilities may be releasing similar substances, and are located too close together for background sampling. These conditions make it impossible to collect sufficient samples between each facility to determine the individual contribution from each location. [emphasis added]

Regarding the comments calling into question whether contamination has been released from a particular facility, whether contamination from a particular facility has reached the aquifer scored, or asserting that remediation has removed contamination released from a facility, the Site as scored consists of a groundwater plume without an identified source; the facilities named in the Attribution section of the HRS documentation record at proposal as possible contributors to contamination do not constitute scored HRS sources. Whether more local contamination associated with any individual facility is definitively tied to the plume (or eventually subject to remedial actions) will be determined during later stages of the Superfund process, likely following additional (RI/FS) investigation. Pages 43 to 46 of the HRS documentation record at proposal discuss these facilities in the vicinity of the Site where solvents containing VOCs were used in various facility operations and where VOCs were documented in soil, soil gas, and/or groundwater beneath these facilities. Eight facilities where EPA investigations were performed were named in this discussion and seven additional facilities under California state investigations were also named and discussed. Despite previous/ongoing cleanup activities, there is sufficient reason to name those facilities as possible sources; that is, the contamination released prior to any cleanup performed *may* have contributed to the groundwater plume scored.

Regarding court proceedings pointed to by commenters, as noted in sections 3.3, Purpose of Listing, and 3.9, Liability, of this support document, the decision and appeal did not adjudicate a NPL listing and instead addressed issues under the state Hazardous Substances Account Act (HSAA) and common law claims of negligence, nuisance and trespass. The courts, however, did find that there were releases of hazardous substances at a number of locations, including the 500 South Raymond Avenue property.

Further, with regard to additional possible sources and other contaminated wells, as stated in section 3.7, Extent of Site/Site Boundaries, of this support document, that the EPA initially identifies and lists the release based on a review of contamination at certain wells to establish a groundwater plume does not necessarily mean that the Site boundaries are limited to those specific wells. See also section 3.17, Characterization of a Plume with No Identifiable Source, of this support document, for a discussion of the HRS criteria for evaluating a groundwater plume.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.17 Characterization of a Plume with No Identifiable Source

Comment: SSPA commented that there are a number of facilities within the defined area of observed release that have been identified as sources of contamination, therefore, scoring the Site as a contaminated groundwater plume is not appropriate.

Response: Consistent with the HRS, this Site was evaluated as a groundwater plume because, while several facilities are identified in the HRS documentation record as possible contributors to the plume of contamination, there is insufficient information to attribute the significant increase in contamination in the entire plume to any

individual source. Consistent with the HRS definition of a source, the plume itself was evaluated as the source for HRS scoring.

HRS Section 1.1, *Definitions*, definition of a source includes contaminated groundwater plumes with no identified source. It states in that section a source is:

> Any area where a hazardous substance has been deposited, stored, disposed, or placed, plus those soils that have become contaminated from migration of a hazardous substance. Sources do not include those volumes of air, groundwater, surface water, or surface water sediments that have become contaminated by migration, except: **in the case of either a groundwater plume with no identified source or contaminated surface water sediments with no identified source, the plume or contaminated sediments may be considered a source.** [emphasis added.]

Direction on how to evaluate a ground water plume is found in HRS Section 3.0.1, *General considerations*, and its subsection 3.0.1.1, *Ground water target distance limit.* HRS Section 3.0.1.1, *Ground water target distance limit*, states to determine the plume based on samples that meet observed release criteria, specifically:

> For sites that consist solely of a contaminated ground water plume with no identified source, . . . Determine the area of observed ground water contamination based on available samples that meet the criteria for an observed release.

In establishing an observed release for the ground water migration pathway, HRS Section 3.1.1, *Observed release*, states:

> Establish an observed release to an aquifer by demonstrating that the site has released a hazardous substance to the aquifer. Base this demonstration on either:
>
> • Direct observation—a material that contains one or more hazardous substances has been deposited into or has been observed entering the aquifer.
>
> • Chemical analysis—an analysis of ground water samples from the aquifer indicates that the concentration of hazardous substance(s) has increased significantly above the background concentration for the site (see section 2.3). Some portion of the significant increase must be attributable to the site to establish the observed release, except: when the source itself consists of a ground water plume with no identified source, no separate attribution is required.

Pages 21-22 of the HRS documentation record at proposal identify the plume as the source and state:

> The OCNB site is a single comingled groundwater plume with no identifiable source ("Source 1"). Under the HRS, a contaminated groundwater plume can be evaluated as a source when the origin of hazardous substances that have contributed to the plume cannot be reasonably identified (Ref. 1, Section 1.1). The area of the plume shown on Figure 1 is for HRS scoring purposes only, as defined below, and does not define the extent of all contamination in the area.
>
> For HRS scoring purposes, the area of the groundwater plume is based on available sample locations that meet the criteria for an observed release (Ref. 1, Section 3.0.1.1). The minimum standard to establish an observed release by chemical analysis is analytical evidence of a hazardous substance in the media significantly above the background level. Further, some portion of the release must be attributable to the site (Ref. 1, Section 2.3). . . .
>
> During a May 2016 SI field sampling event, EPA collected groundwater samples from monitoring wells and drinking water production wells in the vicinity of the OCNB plume.

> Analytical results indicated the presence of 1,1-dichloroethylene (DCE), TCE, and PCE at concentrations significantly above background. Background and contaminated monitoring well and drinking water production well locations are shown on Figure 1. Documentation of the observed release sample analyses is presented in Section 3.1.1 Observed Release, under Chemical Analysis. **The rationale for the lack of an identifiable source for the plume (i.e., that the significant increase in contaminant concentrations cannot be attributed to a release from any individual facility)** is presented in Section 3.1.1 Observed Release, under Attribution. [emphasis added]
>
> Based on monitoring and drinking water production wells that meet the criteria for an observed release, the following wells define the area of the OCNB plume, for HRS scoring purposes (See Section 3.1.1 and Figure 1 of this document):

Well Name	Well Type
PAGE-F	Drinking Water Production Well
A-47	Drinking Water Production Well
F-6	Drinking Water Production Well
F-4	Drinking Water Production Well
FM-16A	Shallow Monitoring Well
FM-16	Deep Monitoring Well
FM-8	Shallow Monitoring Well
FM-20A	Shallow Monitoring Well
FM-18A	Shallow Monitoring Well

The Attribution discussion on pages 43-46 of the HRS documentation record at proposal further discusses the lack of identification of a source to which the significant increase in contamination can be attributed. That is, multiple facilities with sources of VOCs have been identified, but the significant increase of contaminants in the plume being scored for HRS purposes could not be attributed to specific sources based on the available information. Page 43 of the HRS documentation record at proposal explains in the attribution section and it states:

> The OCNB site consists of a single comingled VOC-contaminated **groundwater plume, which resulted from the releases of solvents from multiple facilities located in the vicinity of the OCNB plume**. Chlorinated organic solvents such as TCE and PCE are common industrial chemicals that are typically associated with cleaning and degreasing operations (Ref. 22, p. 32; Ref. 23, p. 180; Ref. 101; Ref. 102). Hazardous substances associated with the OCNB plume include 1,1-DCE, TCE, and PCE, which were detected at concentrations significantly above background in monitoring wells and drinking water production wells located within the plume (See Section 3.1.1 Observed Release, Chemical Analysis of this document for documentation of concentrations significantly above background). Locations of contaminated monitoring and drinking water production wells where observed releases have been documented are presented in Figures 1 and 3. [emphasis added]
>
> In accordance with the HRS, a contaminated groundwater plume can only be evaluated as a source for HRS scoring purposes when the original source of hazardous substances contributing to the plume cannot be reasonably identified (Ref. 1, Sections 1.1, 3.1.1). The plume at this site cannot be attributed to a single source. **Multiple facilities have been identified in the vicinity of the OCNB plume that are possible contributors to the comingled plume** (Ref. 22, pp. 32, 171; Ref. 110, p. 40). **DTSC [California Department of Toxic Substances Control] and RWQCB [Santa Ana Regional Water Quality Control Board] have been conducting investigations and remedial activities at many of these facilities. Sampling results from these activities show the presence of VOCs in soils, soil**

> **gas, and groundwater beneath these facilities. DTSC and RWQCB requested EPA assistance in evaluating the plume and contamination at facilities in the vicinity of the plume** (Ref. 113; Ref. 114). **EPA has conducted PAs at eight of these facilities, summarized below (Ref. 106). EPA considers that these facilities have sources that may be contributing to the plume. However, there is not enough information to attribute at least part of the significant increase in contamination in the plume to any individual source, because these facilities may be releasing similar substances, and are located too close together for background sampling. These conditions make it impossible to collect sufficient samples between each facility to determine the individual contribution from each location**. The facility locations are shown on Figure 3. [emphasis added]

The EPA identified eight possible contributors of VOCs where it had performed investigations and seven facilities where the State of California is performing remedial activities. For each of the facilities identified as possible contributors, the HRS documentation record at proposal discussed VOC uses and included a brief explanation of the contamination identified at each facility (i.e., sampling results show the presence of VOCs in soils, soil gas, and/or groundwater beneath these facilities). On pages 43-45 of the HRS documentation record at proposal, the eight facilities in Fullerton, CA in the vicinity of the plume where the EPA performed investigations and possible contributors of VOCs are identified as follows: Arnold Engineering/Universal Molding, EPA ID NO.: CAN000900306, 1551 East Orangethorpe Avenue, Fullerton; Autonetics/Raytheon, EPA ID NO.: CAN000900337, 310 East Walnut Avenue, Fullerton; CBS Fender, EPA ID NO.: CAN000900352, 500 South Raymond Avenue, Fullerton; Fullerton Manufacturing, EPA ID NO.: CAN000900354, 311 South Highland Avenue, Fullerton; Khyber Foods, EPA ID NO.: CAN000900323, 1818 East Rosslynn Avenue, Fullerton; Northrop Y-19, EPA ID NO.: CAN000900325, 1401 East Orangethorpe Avenue, Fullerton; Orange County Metal Processing, EPA ID No.: CAN000909326, 1711 East Kimberly Avenue, Fullerton; and Vista Paint, EPA ID NO.: CAN000900358, 2020 East Orangethorpe Avenue, Fullerton.

On pages 45 to 46 of the HRS documentation record at proposal, an additional seven facilities in Anaheim and Fullerton, CA, in the vicinity of the OCNB plume where the EPA did not perform investigations but the State of California (DTSC and RWQCB) is conducting remedial activities are as follows: Former Aerojet (current Fullerton Crossings), 601-629 S. Placentia Avenue; Former Alcoa Fastening Systems (current Arconic), 800 S. State College Blvd., Anaheim; Former Monitor Plating (current R3 Contractors Inc.), 800 East Orangefair Lane, Anaheim; Former Northrop (Kester Solder), 1730 North Orangethorpe Park, Anaheim; Former Northrop (Y-12), 301 E. Orangethorpe Ave., Anaheim; Former Chicago Musical Instruments/F.E. Olds (current United Duralume Products, Inc.), 350 S. Raymond Avenue, Fullerton; and Former PCA Metal Finishing, 1726 E. Rosslynn Avenue, Fullerton.

As cited above from the attribution discussion in the HRS documentation record at proposal, the OCNB plume consists of commingled releases of solvents likely from multiple facilities and the close proximity of the possible contributors made it impossible to attribute the significant increase to any one source. Thus, the contamination was scored as a groundwater plume with no identified source.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.18 Aquifer Interconnection

Comment: The Joint Commenters and CBS commented on the presence of an allegedly continuous aquitard[4] underlying the Site that separates the shallow and principal aquifers. The Joint Commenters and CBS commented that the aquitard they contend is present in the central and western portions of the study area where nearly all of

[4] An aquitard for HRS purposes is a layer of geologic material with a hydraulic conductivity 2 or more orders of magnitude lower than the surrounding geologic material and sufficiently thick to impede all groundwater migration across the barrier. The layer must be consistently present and consistently meet these specifications throughout the 2-mile radius portion of TDL to qualify as an aquifer discontinuity which would impede groundwater migration across it.

the contamination is located and asserted that this layer prevents contaminant migration. The Joint Commenters stated that the well EW-1 borehole lithology data shows there is no aquitard present at that well location but commented that it was the only well log they could identify in the record as not having an aquitard present. The Joint Commenters stated that data for the remainder of the well boreholes they identified in the DVA study area contain "fine-grained or clay layers of varying thickness" present at a general depth of 190-220 feet bgs. The Joint Commenters stated that overall, the borehole lithology indicates that a continuous aquitard that covers nearly all of the combined VOC plume, exists in the central and western parts of DVA's study area.

Additionally, the Joint Commenters cited expert witness testimony to support their assertion that "in substantial portions" of the North Basin there is a low-permeability layer (aquitard) between the shallow and principal groundwater zones that prevents contaminants in the shallow zone from reaching the principal aquifer zone.

The Joint Commenters challenged a reference used in the HRS documentation record at proposal to support aquifer interconnection. They commented that the HRS documentation record cites the DVA Memo (Reference 110 of the HRS documentation record at proposal) to support aquifer interconnection and does not present any new data or analysis of its own. The Joint Commenters stated that the DVA Memo does not contain any well logs or representations of the wells' lithology to confirm the geology identified at those well locations.

On August 13, 2018, EPA released a NODA that contained the well borehole lithology for more than 150 wells at the Site. AC Products submitted comments on this data and stated that the proposed geographic area is heterogeneous geologically with thin layers of silt that inhibit vertical migration of contaminants. Additionally, AC Products commented that drilling techniques and logs may not be sensitive enough to detect silt layers that inhibit vertical migration.

Response: The hydrogeological conditions at the Site are appropriately evaluated in the HRS documentation record at proposal, and the shallow and principal aquifers underlying the Site are properly determined to be one interconnected hydrological unit for HRS purposes. The HRS documentation record at proposal identifies that discontinuous lower-permeability clay and silt lenses are present at discrete locations in the shallow aquifer but documented that these lenses are not sufficiently thick or laterally continuous within 2 miles of the Site to create a boundary for groundwater migration. As such, these lenses do not hydrologically separate the shallow and principal aquifers (the HRS documentation record refers to these combined aquifers as the interconnected sand and gravel aquifer). In addition, the EPA documented that multiple wells located within 2 miles of the Site have observed releases of VOC contamination in the principal aquifer, which demonstrates that contamination has migrated vertically from the shallow aquifer into the principal aquifer. Therefore, the shallow and principal aquifers are appropriately deemed interconnected as one hydrological unit for HRS purposes in the HRS documentation record at proposal.

The HRS provides the general considerations to include when evaluating the ground water migration pathway. HRS Section 3.0.1.1, *Ground water target distance limit*, first directs that a target distance limit (TDL) be defined. It states:

> The target distance limit defines the maximum distance from the sources at the site over which targets are evaluated. Use a target distance limit of 4 miles for the ground water migration pathway, except when aquifer discontinuities apply (see section 3.0.1.2.2). Furthermore, consider any well with an observed release from a source at the site (see section 3.1.1) to lie within the target distance limit of the site, regardless of the well's distance from the sources at the site.
>
> For sites that consist solely of a contaminated ground water plume with no identified source, begin measuring the 4-mile target distance limit at the center of the area of observed ground water contamination.

HRS Section 3.0.1.2, *Aquifer boundaries*, directs to "[c]ombine multiple aquifers into a single hydrologic unit for scoring purposes if aquifer interconnections can be established for these aquifers. In contrast, restrict aquifer boundaries if aquifer discontinuities can be established."

HRS Section 3.0.1.2.1, *Aquifer interconnections*, directs how aquifers should be evaluated for interconnections. It states:

> Evaluate whether aquifer interconnections occur within 2 miles of the sources at the site. If they occur within this 2-mile distance, combine the aquifers having interconnections in scoring the site. In addition, if observed ground water contamination attributable to the sources at the site extends beyond 2 miles from the sources, use any locations within the limits of this observed ground water contamination in evaluating aquifer interconnections. If data are not adequate to establish aquifer interconnections, evaluate the aquifers as separate aquifers.

HRS Section 3.0.1.2.2, *Aquifer discontinuities*, directs how to evaluate potential discontinuities at the site being evaluated. It states:

> Evaluate whether aquifer discontinuities occur within the 4-mile target distance limit. An aquifer discontinuity occurs for scoring purposes only when a geologic, topographic, or other structure or feature entirely transects an aquifer within the 4-mile target distance limit, thereby creating a continuous boundary to ground water flow within this limit. If two or more aquifers can be combined into a single hydrologic unit for scoring purposes, an aquifer discontinuity occurs only when the structure or feature entirely transects the boundaries of this single hydrologic unit.
>
> When an aquifer discontinuity is established within the 4-mile target distance limit, exclude that portion of the aquifer beyond the discontinuity in evaluating the ground water migration pathway. However, if hazardous substances have migrated across an apparent discontinuity within the 4-mile target distance limit, do not consider this to be a discontinuity in scoring the site.

In addition to these directions, the preamble to the 1990 HRS in the Federal Register[5] provides the following examples of information that can be used to identify aquifer interconnections for the purposes of scoring a site; page 51553 states:

> In practice, EPA has found that studies in the field to determine whether aquifers are interconnected in the vicinity of a site will generally require resources more consistent with remedial investigations than SIs, especially where installation of deep wells is necessary to conduct aquifer testing. Thus, EPA has in the past relied largely on existing information to make such determinations and the Agency finds it necessary to continue that approach. Examples of the types of information useful in identifying aquifer interconnections were given in the proposed rule. This information includes literature or well logs indicating that no lower relative hydraulic conductivity layer or confining layer separates the aquifers being assessed (e.g., presence of a layer with a hydraulic conductivity lower by two or more orders of magnitude); **literature or well logs indicating that a lower relative hydraulic conductivity layer or confining layer separating the aquifers is not continuous through the two-mile radius (i.e., hydrogeologic interconnections between the aquifers are identified)**; evidence that withdrawals of water from one aquifer (e.g., pumping tests, aquifer tests, well tests) affect water levels in another aquifer; **and observed migration of any constituents from one aquifer to another within two miles. For this last type of information, the mechanism of vertical migration does not have to be defined, and the constituents do not have to be attributable to the site being evaluated.** Other mechanisms that can cause interconnection (e.g., boreholes, mining activities, faults, etc.) will also be considered. [emphasis added]

[5] 55 FR 51553. Accessed at https://semspub.epa.gov/src/document/HQ/174028.pdf

Page 27 of the HRS documentation record at proposal provides the general description of the ground water migration pathway and the regional geological setting. Following this description, the HRS documentation record at proposal establishes the target distance limit for the Site. It states on pages 27 and 28:

> **3.0.1.1 Ground Water Target Distance Limit**
>
> For sites that consist solely of a contaminated groundwater plume with no identified source, the 4-mile target distance limit is measured from the center of the area of observed groundwater contamination…

Regarding information specific to aquifer interconnection, page 27 of the HRS documentation record at proposal describes the regional aquifer as:

> Highly-permeable interconnected sand and gravel deposits with few and discontinuous clay and silt deposits allow direct percolation of Santa Ana River and other surface water into the subsurface (Ref. 22, p. 11; Ref. 23, pp. 51-54). In the site vicinity, clay and silt aquitards are thin and discontinuous, allowing groundwater to flow between shallower and deeper portions of the aquifer where drinking water production wells are screened (Ref. 22, p. 11; Ref. 23, pp. 51-54; Ref. 110, p. 19, 22, 40).

Page 28 of the HRS documentation record at proposal provides information on the aquifers specific to the Site. It states:

> **3.0.1.2 Aquifer Boundaries/Site Geology**
>
> **Stratum 1: Interconnected Sand and Gravel Aquifer**
> The subsurface beneath the site consists of a complex series of interconnected sand and gravel deposits, with discontinuous lower-permeability clay and silt lenses that do not hydraulically isolate these water-bearing zones from each other (Ref. 22, pp. 11-12, 33; Ref. 23, pp. 52-53, 64; Ref. 110, pp. 19, 22, 40). The hydraulic gradient is locally amplified by production wells extracting water from the deeper portion of the aquifer. A downward hydraulic gradient allows VOC-impacted groundwater to migrate both laterally and vertically downward, largely in response to pumping-induced gradients (Ref. 22, p. 33). VOCs have been detected as deep as 600 feet bgs within 2 miles of the source (Ref. 22, pp. 12, 16, 45).
>
> Generalized geologic references for the Orange County Groundwater Basin describe the subsurface as being divided into Shallow, Principal, and Deep aquifers (Ref. 22, p. 11). However, as described above, the generally-defined Shallow and Principal aquifers are not hydraulically separate aquifers in the site vicinity (Ref. 22, pp. 11-12, 33; Ref. 23, pp. 52-53, 64; Ref. 110, pp. 15, 17, 20-22, 35). Therefore, the Shallow and Principal aquifers beneath the OCNB site are evaluated as a single Interconnected Sand and Gravel Aquifer for HRS scoring purposes.

Page 29 of the HRS documentation record at proposal further discusses the specific aquifer interconnections at the Site between the shallow and principal aquifers. It states:

> For HRS scoring purposes, as described above, the aquifer beneath the site is evaluated as a single aquifer, the Interconnected Sand and Gravel Aquifer. This aquifer has been demonstrated to be a single, interconnected aquifer within two miles of the source due to contamination migrating downward into the deeper portion of the aquifer (see Section 3.1.1 Observed Release of this document).

As referred in the above quote, Section 3.1.1 Observed Release of the HRS documentation record at proposal, specifically page 38, contains a table of deep monitoring wells at the Site that meet observed release criteria, summarized in Table 1 of this support document below. As shown on Figure 1 below wells FM-10, FM-11, FM-12, FM-19B, FM-22, FM-23, and FM-24 are all located within 2 miles of the center of the groundwater plume.

Table 1 – Deep Monitoring Well Results Establishing an Observed Release

Deep Monitoring Well Results Establishing an Observed Release						
Well Name	**CLP Sample ID**	**Sampling Date**	**Hazardous Substance**	**Concentration (µg/l)**	**CRQL (µg/l)**	**References**
FM-10	YA643	5/19/16	1,1-DCE	1.2	0.50	Ref. 4, p. 35; Ref. 5, p. 33; Ref. 9, pp. 7, 18, 184-189, 196-201; Ref. 10, p. 13; Ref. 17, p. 8
			TCE	12	0.50	
FM-11	YA644	5/18/16	1,1-DCE	1.4	0.50	Ref. 4, p. 35; Ref. 5, p. 35; Ref. 9, pp. 5, 208-213, 220-225; Ref. 10, pp. 13-14; Ref. 17, p. 6
			TCE	25	2.5	
FM-12	YA645	5/26/16	1,1-DCE	1.5	0.50	Ref. 4, p. 36; Ref. 8, p. 37; Ref. 15, pp. 7, 20, 225-230, 237-241; Ref. 17, p. 17
			TCE	12	2.5	
FM-16	YA646	5/24/16	PCE	31	2.5	Ref. 4, pp. 36, 44; Ref. 8, pp. 39-40; Ref. 15, pp. 5, 248-253, 259-264; Ref. 16, p. 14; Ref. 17, p. 12
FM-17	YA647	5/24/16	PCE	49	2.5	Ref. 4, p. 36; Ref. 7, pp. 40-41; Ref. 13, pp. 7, 171-176, 183-188; Ref. 14, p. 13; Ref. 17, p. 13
FM-19B	YA648	5/26/16	1,1-DCE	1.0	0.50	Ref. 4, p. 36; Ref. 8, p. 45; Ref. 15, pp. 7, 267-272; Ref. 16, p. 15; Ref. 17, p. 16
			TCE	18	0.50	
FM-19C	YA649	5/26/16	PCE	22	2.5	Ref. 4, p. 36; Ref. 8, pp. 4, 47-48; Ref. 15, pp. 7, 280-285, 291-296; Ref. 16, p. 16; Ref. 17, p. 16
FM-22	YA650	5/25/16	1,1-DCE	3.0	0.50	Ref. 4, pp. 36, 45; Ref. 8, pp. 4, 49-50; Ref. 15, pp. 6, 299-304, 311-316; Ref. 16, p. 17; Ref. 17, p. 14
			TCE	31	2.5	
			PCE	29	2.5	
FM-23	YA651	5/23/16	1,1-DCE	1.8	0.50	Ref. 4, pp. 35, 43; Ref. 7, pp. 5, 42; Ref. 13, pp. 6, 192-197, 204-209; Ref. 14, p. 13; Ref. 17, p. 11
			TCE	27	2.5	
FM-24	YA652	5/17/16	1,1-DCE	1.7	0.50	Ref. 4, pp. 35, 42; Ref. 6, pp. 5, 36; Ref. 11, pp. 6, 181-186, 193-198; Ref. 12, p. 15
			TCE	31	2.5	

µg/l: Micrograms analyte per liter groundwater
CRQL: EPA Contract Laboratory Program Contract Required Quantitation Limit

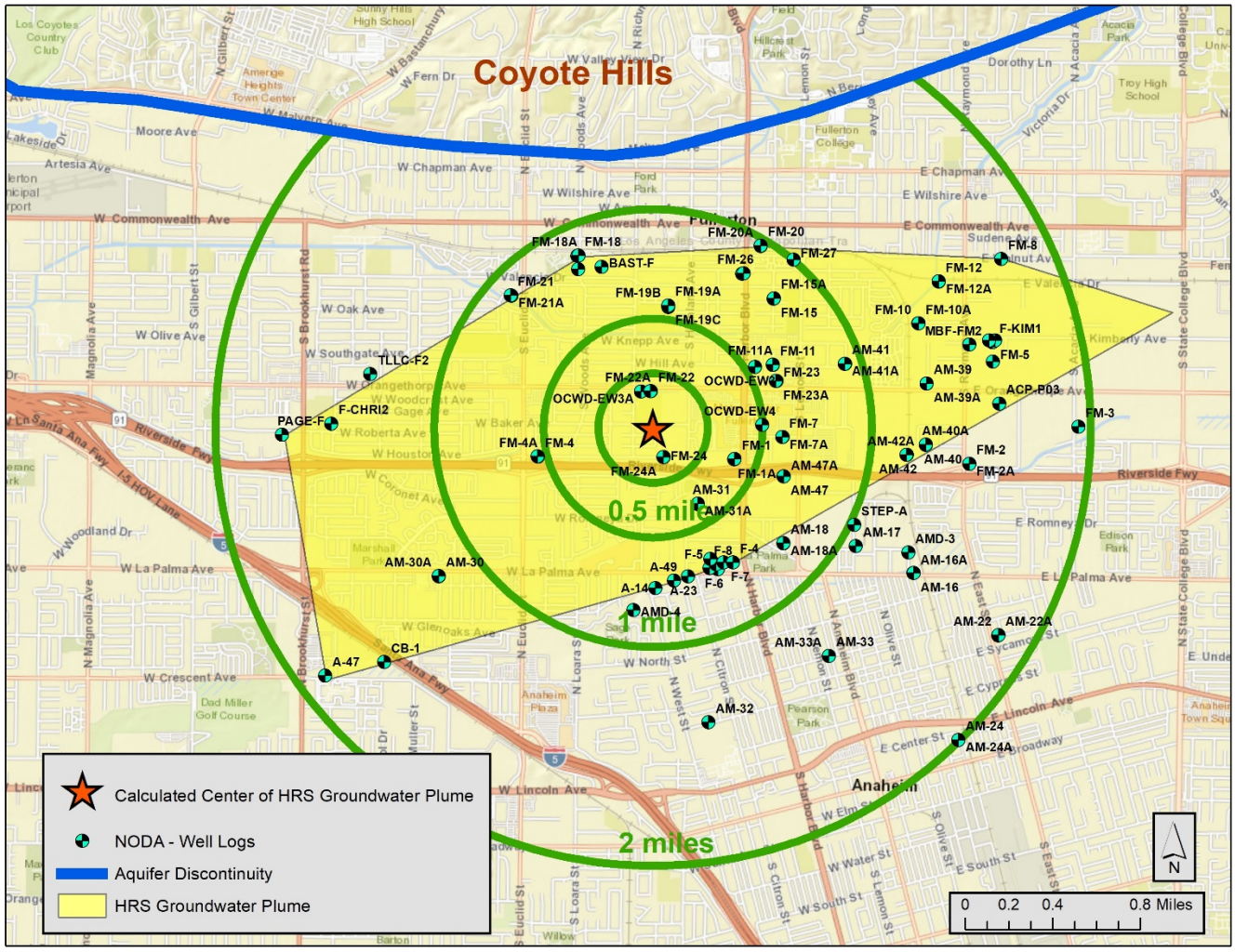

Figure 1: Wells within 2 Miles of the Groundwater Plume.

The HRS documentation record at proposal sufficiently documents that the shallow and principal aquifers[6] at the Site are interconnected for HRS purposes by demonstrating that Site-related contamination has migrated into the principal aquifer from the shallow aquifer.

As background to establishing aquifer interconnections at the Site, the EPA provided general geological information for the aquifers underlying the Site. As quoted above, the HRS documentation record at proposal states that regionally the shallow and principal aquifers consist of highly permeable interconnected sand and gravel deposits. It was also documented that some discontinuous clay and silt deposits exist in the aquifers, but in the vicinity of the Site these clay and silt aquitards are thin and discontinuous and allow groundwater to flow into the deeper portions of the aquifer (i.e., the principal aquifer).

In conjunction with this regional information, the EPA provided evaluation of the aquifers in the vicinity of the Site. To demonstrate that the shallow and principal aquifers are interconnected within 2 miles of the Site, the EPA developed a TDL and evaluated aquifer conditions and wells within 2 miles of the center of the groundwater plume for the presence of continuous confining layers and/or evidence of contaminant migration (see Figure 2 of

[6] The EPA notes that the shallow aquifer and principal aquifers are variable in thickness and depth throughout the extent of the groundwater plume at this Site. However, local studies suggest that the shallow aquifer extends from the surface down approximately 200 to 250 feet bgs and the principal aquifer then extends to a total depth of approximately 1,300 to 2,200 feet bgs (HRS documentation record Reference 22, pp. 11-12; Reference 23, pp. 52-53).

the HRS documentation record at proposal and Figure 1 of this support document). As described above, the EPA utilized regional studies[7] with information specific to the North Basin in Orange County, California to determine that the subsurface below the Site consists of interconnected sand and gravel deposits with discontinuous lower-permeability clay lenses that do not hydraulically isolate water-bearing zones. Additionally, one of these studies (HRS documentation record Reference 22) found VOC contamination in wells as deep as 600 feet bgs in the vicinity of the Site.

To confirm Site-specific interconnection of the shallow aquifer with the principal aquifer as found in the referenced studies on the North Basin, the EPA also documented the migration of contamination in seven deep monitoring wells at the Site used to establish an observed release of VOCs (FM-10, FM-11, FM-12, FM-19B, FM-22, FM-23, and FM-24). These seven wells are all screened in principal aquifer (at depths ranging from 206 to 385 feet bgs; see page 37 of the HRS documentation record at proposal) and located within 2 miles of the Site (see Figure 1 of this support document). The contaminant concentrations in these wells are presented in Table 1 above which is quoted from page 38 of the HRS documentation record at proposal. The documentation of the Site-related VOCs migrating to these wells in the principal aquifer is consistent with the examples of evidence, as outlined in the preamble to the 1990 HRS in the Federal Register quoted above, that the shallow and principal aquifers are interconnected. Thus, none of the silt or clay lenses identified beneath the Site are capable of acting as a barrier to groundwater flow and are correctly identified as discontinuous silt or clay lenses.

In addition to the contamination found in deep monitoring wells, the finding of which is sufficient to establish aquifer interconnection, the HRS documentation record at proposal also discusses drinking water production wells that have been shut down due to VOC contamination demonstrating that contamination migrated from the shallow to the principal aquifer. As noted on page 27 of the HRS documentation record:

> Four drinking water production wells have been shut down and destroyed due to the contamination: Fullerton wells F-FS13 (2002), F-KIM1 (2002); Anaheim well A-23 (2001); and private well BAST-F (2013) (Ref. 23, p. 180; Ref. 103; Ref. 109). Fullerton well F-7 was placed on inactive status in February 2015 due to VOCs exceeding MCLs, and is planned for destruction in the future (Ref. 126; Ref. 127; Ref. 131).

Wells F-KIM1 and F-7 are located within 2 miles of the Site—Fullerton well F-KIM1 is located approximately 1.6 miles east of the center of the groundwater plume and Fullerton well F-7 is located approximately 0.75 miles southeast of the center of the groundwater plume (see HRS documentation record Figure 2 and Figure 1 of this support document); both of these wells are screened solely in the principal aquifer (F-KIM1 is screened from 339 to 572 feet bgs and F-7 is screened from 300-410 feet bgs). The contamination documented in these wells shows that contamination is observed to migrate from the shallow aquifer to the principal aquifer indicating interconnection of these aquifers.

Finally, in response to initial comments received on this Site, the EPA supplemented the HRS documentation record and supporting references at proposal with well borehole logs for wells referenced in in the DVA Memo). As noted above in the comment summary portion of this section, and as discussed in section 3, Summary of Comments, of this support document, the EPA published these documents as part of a NODA on August 13, 2018 and accepted additional comments on this data for an additional 30 days until the comment period closed on September 12, 2018. These comments are included and responses to them are provided in this support document.

[7] The EPA used the following regional studies as HRS References:

- Reference 22: Intera, Conceptual Model Refinement, North Basin Groundwater Modeling Project, February 18, 2015, 198 pages.
- Reference 23: Orange County Water District, Groundwater Management Plan, 2015 Update, June 17, 2015, 395 pages.
- Reference 110: Sundance Environmental & Energy Specialists, Ltd., Orange County North Basin Plume 3DVA Technical Memorandum, Final, August 2017, 47 pages.

As quoted above, the HRS directs that if well logs indicate that any lower relative hydraulic conductivity layer or confining layer separating the aquifers is not continuous through the 2-mile radius, this information indicates that aquifers are interconnected. The borehole data included in the NODA includes 158 well logs that document that a continuous silt or clay confining layer is not present beneath the Site. Many of the logs contain evidence of silt and clay layers being present within the borehole, but silt or clay units rarely align in depth and are sometimes completely absent, which indicates that they are discrete layers that cannot act as a confining layer. One example of a well log containing no evidence of a confining layer between the shallow and principal aquifers is well FM-24 located approximately 0.2 miles south of the center of the groundwater plume (see pages 6-8 of the NODA document, docket ID EPA-HQ-OLEM-2017-0603-0107). The borehole data for this well indicates that sand and gravel are present from the surface down to more than 300 feet bgs and no silt or clay confining layer is locally present in the borehole until the final depth of 302 feet bgs. While the combined borehole data from over 150 wells indicates that only discrete clay/silt lenses can be present under the Site, well FM-24 provides definitive evidence that a continuous silt or clay confining layer cannot be present underlying the Site throughout the 2-mile radius. Thus, this borehole data constitutes further evidence that the shallow and principal aquifers at the Site are interconnected.

Regarding specific comments that assert a continuous confining unit is present in the central and western portions of the study area that separate the shallow and principal aquifers, the HRS does not require that the entire study area (or even certain portions) be void of confining units. Instead it requires that interconnections between aquifers be established within 2-miles of the center of a contaminated groundwater plume. However, as noted in the above response, contamination has been observed to vertically migrate from the shallow aquifer into the principal aquifer **in central portions** of the study area (see deep monitoring wells FM-22 and FM-24 above in Table 1 and Figure 1 of this support document) demonstrating that the aquifers are interconnected in central portions of the study area. In addition to the vertical migration of contamination, well FM-24 is located 0.2 miles from the center of the groundwater plume where borehole data for this central well confirms that no confining layer is present to a depth of 302 feet bgs (see pages 6-8 of the NODA). This borehole data also confirms that no confining layer can be consistently present between 190 and 220 feet bgs, as suggested by the commenters. To the east of the Site (but within 2 miles of the center of the groundwater plume), the EPA documented 5 additional deep monitoring wells screened in the principal aquifer with contamination that has been observed to migrate from the overlying aquifer (wells: FM-10, FM-11, FM-12, FM-19B, and FM-23; see Table 1 above and Figure 1 of this support document). However, the EPA notes that the Joint Commenters do not challenge the aquifer interconnections in the eastern portions of the Site as in their comments they agree that extraction well EW-1 shows no evidence of a confining layer in the borehole logs.

Thus, any confining unit present in the western portion of the study area does not negate establishment of aquifer interconnection consistent with the HRS. Additionally, it should be noted that such layers also do not constitute an HRS aquifer discontinuity. That is, they do not entirely transect an aquifer within the 4-mile target distance limit, thereby creating a continuous boundary to ground water flow within this limit, as is required by HRS Section 3.0.1.2.2, *Aquifer discontinuities*, quoted above.

Regarding the comment on the NODA borehole data suggesting that well lithology reports may not detect thin confining layers that would prohibit vertical flow, as noted in the above response the EPA has provided multiple lines of evidence to support aquifer interconnection at the Site. This evidence includes the observation of contamination migrating from the shallow aquifer to the principal aquifer and confirms no thin (or undetectable) confining layer at the Site prevents the vertical flow of groundwater at the Site. While the EPA provides multiple lines of evidence for aquifer interconnection, the EPA notes that commenter provided no supporting information or evidence to back its claim that thin, undetectable, confining layers might somehow effectively prevent ground water flow at the Site.

Regarding the commenter's statement that an expert witness' testimony supports a confining, or low permeability, unit "in substantial portions" of the North Basin that prevents shallow contamination from reaching the principal aquifer zone, as shown in the above response, Site-specific evidence is presented in the HRS documentation record at proposal that confirms contamination has migrated into the principal aquifer. That is, while confining

units are present in the North Basin, Site-specific deep monitoring well sampling data and corresponding well borehole lithology logs confirm that the shallow and principal aquifers are hydraulically interconnected within 2 miles of the center of the groundwater plume at the OCNB site (i.e., no continuous confining unit is present within 2-miles of the center of the plume preventing this interconnection).

These comments result in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.19 Likelihood of Release

Comment: SSPA commented that background well selection and background levels determination were inappropriate based on well screen depth, given that production wells with deep screen intervals were used in identifying background levels for shallower production wells. SSPA also commented that concentrations in release production wells are below HRS significant increase criteria that would be set by nearby monitoring wells. SSPA further commented that the selection of background levels in documenting an observed release does not take into consideration the contribution that parent substances located upgradient of release samples may have on degradation product levels in downgradient release samples; SSPA contended that the detection of a compound could actually be due to the degradation of a parent and not due to an independent observed release, resulting in a possible "double-counting". SSPA commented that the May 2016 groundwater samples used to establish an observed release and analyzed by the EPA using EPA CLP analytical method SOM02.3 are biased high when compared to OCWD groundwater samples collected from the same wells on the same day and analyzed by OCWD using EPA Method 524.2.

Response: The observed release by chemical analysis was established consistent with the HRS.

In establishing an observed release for the ground water migration pathway, HRS Section 3.1.1, *Observed release,* provides:

> Establish an observed release to an aquifer by demonstrating that the site has released a hazardous substance to the aquifer. Base this demonstration on either:
>
> • Direct observation—a material that contains one or more hazardous substances has been deposited into or has been observed entering the aquifer.
>
> • Chemical analysis—an analysis of ground water samples from the aquifer indicates that the concentration of hazardous substance(s) has increased significantly above the background concentration for the site (see section 2.3). Some portion of the significant increase must be attributable to the site to establish the observed release, except: when the source itself consists of a ground water plume with no identified source, no separate attribution is required.

HRS Section 3.1.1 quoted above refers to HRS Section 2.3, *Likelihood of release,* which further directs:

> Establish an observed release either by direct observation of the release of a hazardous substance into the media being evaluated (for example, surface water) **or by chemical analysis** of samples appropriate to the pathway being evaluated (see sections 3, 4, and 6). **The minimum standard to establish an observed release by chemical analysis is analytical evidence of a hazardous substance in the media significantly above the background level.** Further, some portion of the release must be attributable to the site. Use the criteria in Table 2–3 as the standard for determining analytical significance. [emphasis added].

The observed release criteria are explained in HRS Section 2.3, *Likelihood of release,* and HRS Table 2-3. HRS Table 2-3 explains:

TABLE 2-3.–OBSERVED RELEASE CRITERIA FOR CHEMICAL ANALYSIS

Sample Measurement < Sample Quantitation Limit[a]
No observed release is established.

Sample Measurement ≥ Sample Quantitation Limit[a]
An observed release is established as follows:

- If the background concentration is not detected (or is less than the detection limit), an observed release is established when the sample measurement equals or exceeds the sample quantitation limit.[a]
- If the background concentration equals or exceeds the detection limit, an observed release is established when the sample measurement is 3 times or more above the background concentration.

[a]If the sample quantitation limit (SQL) cannot be established, determined [*sic*] if there is an observed release as follows:

- If the sample analysis was performed under the EPA Contract Laboratory Program, use the EPA contract-required quantitation limit (CRQL) in place of the SQL.
- If the sample analysis is not performed under the EPA Contract Laboratory Program, use the detection limit (DL) in place of the SQL.

The observed release concentrations in each of the three well types—shallow monitoring wells, deep monitoring wells, and production wells—were significantly above their respective background levels and meet the HRS criteria described in HRS Sections 2.3, *Likelihood of release*, and 3.1.1, *Observed release*. Background levels and observed release concentrations characterizing the plume were established in the shallow monitoring wells, deep monitoring wells, and drinking water production wells. Shallow monitoring wells were compared to shallow monitoring wells, deep monitoring wells were compared to deep monitoring wells, and production wells were compared to production wells. Consistent with HRS Table 2-3, if the background concentration is not detected, a significant increase is established when the release sample measurement equals or exceeds the sample quantitation limit (SQL). The analysis was performed by the EPA Contract Laboratory Program (CLP), thus the EPA contract-required quantitation limit (CRQL) was used in place of the SQL. If the background concentration equals or exceeds the CRQL, a significant increase is established when the release sample measurement is 3 times or more above the background concentration. Background levels and observed release concentrations that are presented in the HRS documentation record at proposal for each of the shallow monitoring wells, deep monitoring wells, and drinking water production wells are provided below.

Shallow Monitoring Wells

Page 32 of the HRS documentation record at proposal summarizes the background levels in shallow monitoring wells:

Background Levels to Establish an Observed Release to Shallow Monitoring Wells		
Hazardous Substance	**Maximum Background Concentration 2016 SI Sampling Results (µg/l)**	**HRS Table 2-3 Minimum Concentration to Document an Observed Release by Chemical Analysis (µg/l)**
1,1-DCE	ND	release sample CRQL
TCE	ND	release sample CRQL
PCE	0.36 J, CRQL = 0.50	1.5

Note: Detection below the CRQL is treated as non-quantifiable for HRS purposes, and adjustment factors are not applied. For a conservative background level, the CRQL of PCE is used here as a maximum background concentration (Ref. 107, p. 4). The CRQL is the applicable SQL for this data set.
µg/l: micrograms analyte per liter groundwater

J: Result is above the MDL but below the CRQL. The result is not biased, and no adjustment is needed (Ref. 6, p. 3).
CRQL: EPA Contract Laboratory Program Contract Required Quantitation Limit
ND: Not detected.

Pages 34 and 35 of the HRS documentation record at proposal provide the 1,1-DCE, TCE and PCE concentrations in the shallow monitoring wells that were significantly above shallow monitoring wells background levels:

Shallow Monitoring Well Results Establishing an Observed Release						
Well Name	**CLP Sample ID**	**Sampling Date**	**Hazardous Substance**	**Concentration (µg/l)**	**CRQL (µg/l)**	**References**
AM-39	YA623	5/25/16	1,1-DCE	3.3	0.50	Ref. 4, pp. 36, 45; Ref. 8, pp. 21-22; Ref. 15, pp. 6, 56-58; Ref. 16, pp. 6-7; Ref. 17, p. 14
			TCE	2.5	0.50	
			PCE	10	0.50	
AM-39A	YA624	5/25/16	TCE	17	0.50	Ref. 4, pp. 36, 45; Ref. 8, pp. 23-24; Ref. 15, pp. 6, 69-71; Ref. 16, p. 7; Ref. 17, p. 14
			PCE	20	0.50	
AM-41	YA625	5/18/16	1,1-DCE	1.5	0.50	Ref. 4, p. 35; Ref. 5, pp. 23-24; Ref. 9, pp. 5, 67-69, 78-83; Ref. 10, pp. 8-9; Ref. 17, p. 6
			TCE	5.5	0.50	
			PCE	30	2.5	
AM-41A	YA626	5/18/16	1,1-DCE	4.9	0.50	Ref. 4, p. 35; Ref. 5, pp. 25-26; Ref. 9, pp. 5, 88-90, 101-106; Ref. 10, p. 9; Ref. 17, p. 6
			TCE	53	2.5	
			PCE	26	2.5	
FM-5	YA627	5/26/16	1,1-DCE	25	10	Ref. 4, p. 36; Ref. 8, pp. 25-26; Ref. 15, pp. 7, 82-85, 96-101; Ref. 16, p. 8; Ref. 17, p. 17
			TCE	140	10	
			PCE	20	10	
FM-8	YA629	5/19/16	1,1-DCE	3.6	0.50	Ref. 4, p. 35; Ref. 5, pp. 27-28; Ref. 9, pp. 7, 112-114, 125-130; Ref. 10, p. 10; Ref. 17, p. 9
			TCE	28	2.5	
			PCE	17	2.5	
FM-11A	YA630	5/18/16	1,1-DCE	4.7	0.50	Ref. 4, pp. 35, 42; Ref. 5, pp. 28-29; Ref. 9, pp. 5, 137-139, 150-155; Ref. 10, p. 11; Ref. 17, p. 7
			TCE	37	2.5	
			PCE	39	2.5	
FM-12A	YA632	5/26/16	1,1-DCE	45	5.0	Ref. 4, p. 36; Ref. 8, pp. 29-30; Ref. 15, pp. 7, 133-135, 148-153; Ref. 16, p. 10; Ref. 17, p. 17
			TCE	96	5.0	
			PCE	58	5.0	
FM-15A	YA634	5/24/16	1,1-DCE	27	5.0	Ref. 4, pp. 36, 44; Ref. 7, pp. 29-30; Ref. 13, p. 7, 74-76, 87-92; Ref. 14, p. 9; Ref. 17, p. 12
			TCE	95	5.0	
			PCE	17	0.50	
FM-16A	YA636	5/24/16	1,1-DCE	1.2	0.50	Ref. 4, pp. 36, 44; Ref. 7, pp. 32-33; Ref. 13, p. 7, 122-124, 135-140; Ref. 14, pp. 10-11; Ref. 17, p. 12
			TCE	28	2.5	
			PCE	10	0.50	
FM-18A	YA637	5/17/16	1,1-DCE	11	0.50	Ref. 4, pp. 35, 41; Ref. 6, pp. 30-31; Ref. 11, pp. 6, 99-101, 111-116; Ref. 12, pp. 12-13
			TCE	110	10	
			PCE	4.6	0.50	

Shallow Monitoring Well Results Establishing an Observed Release						
Well Name	**CLP Sample ID**	**Sampling Date**	**Hazardous Substance**	**Concentration (µg/l)**	**CRQL (µg/l)**	**References**
FM-19A	YA638	5/26/16	1,1-DCE	1.5	0.50	Ref. 4, p. 36; Ref. 8, pp. 33-34; Ref. 15, pp. 7, 191-193, 202-207; Ref. 16, pp. 11-12; Ref. 17, p. 16
			TCE	19	2.5	
FM-20A	YA639	5/17/16	1,1-DCE	66	5.0	Ref. 4, pp. 34, 41; Ref. 6, pp. 32-33; Ref. 11, pp. 6, 122-124, 141-146; Ref. 12, pp. 13-14; Ref. 17, p. 3
			TCE	83	5.0	
			PCE	72	5.0	
FM-22A	YA641	5/25/16	1,1-DCE	6.0	0.50	Ref. 4, pp. 36, 45; Ref. 8, pp. 35-36; Ref. 15, pp. 6, 212-214; Ref. 16, pp. 12-13; Ref. 17, pp. 14-15
			TCE	11	0.50	
			PCE	15	0.50	
FM-23A	YA642	5/23/16	1,1-DCE	6.5	0.50	Ref. 4, pp. 35, 43; Ref. 7, pp. 38-39; Ref. 13, pp. 6, 146-148, 159-164; Ref. 14, pp. 11-12; Ref. 17, p. 11
			TCE	11	0.50	
			PCE	19	2.5	

µg/l: micrograms analyte per liter groundwater
CRQL: EPA Contract Laboratory Program Contract Required Quantitation Limit

Deep Monitoring Wells

Page 37 of the HRS documentation record at proposal summarizes the background levels in the deep monitoring wells:

Background Levels to Establish an Observed Release to Deep Monitoring Wells		
Hazardous Substance	**Maximum Background Concentration 2016 SI Sampling Results (µg/l)**	**HRS Table 2-3 Minimum Concentration to Document an Observed Release by Chemical Analysis (µg/l)**
1,1-DCE	ND	release sample CRQL
TCE	2.6	7.8
PCE	3.4	10.2

µg/l: micrograms analyte per liter groundwater
CRQL: EPA Contract Laboratory Program Contract Required Quantitation Limit
ND: Not detected.

Page 38 of the HRS documentation record at proposal provides the 1,1-DCE, TCE and PCE concentrations in the deep monitoring wells that were significantly above deep monitoring wells background levels:

Deep Monitoring Well Results Establishing an Observed Release						
Well Name	**CLP Sample ID**	**Sampling Date**	**Hazardous Substance**	**Concentration (µg/l)**	**CRQL (µg/l)**	**References**
FM-10	YA643	5/19/16	1,1-DCE	1.2	0.50	Ref. 4, p. 35; Ref. 5, p. 33; Ref. 9, pp. 7, 18, 184-189, 196-201; Ref. 10, p. 13; Ref. 17, p. 8
			TCE	12	0.50	
FM-11	YA644	5/18/16	1,1-DCE	1.4	0.50	Ref. 4, p. 35; Ref. 5, p. 35; Ref. 9, pp. 5, 208-213, 220-225; Ref. 10, pp. 13-14; Ref. 17, p. 6
			TCE	25	2.5	

Deep Monitoring Well Results Establishing an Observed Release						
Well Name	**CLP Sample ID**	**Sampling Date**	**Hazardous Substance**	**Concentration (µg/l)**	**CRQL (µg/l)**	**References**
FM-12	YA645	5/26/16	1,1-DCE	1.5	0.50	Ref. 4, p. 36; Ref. 8, p. 37; Ref. 15, pp. 7, 20, 225-230, 237-241; Ref. 17, p. 17
			TCE	12	2.5	
FM-16	YA646	5/24/16	PCE	31	2.5	Ref. 4, pp. 36, 44; Ref. 8, pp. 39-40; Ref. 15, pp. 5, 248-253, 259-264; Ref. 16, p. 14; Ref. 17, p. 12
FM-17	YA647	5/24/16	PCE	49	2.5	Ref. 4, p. 36; Ref. 7, pp. 40-41; Ref. 13, pp. 7, 171-176, 183-188; Ref. 14, p. 13; Ref. 17, p. 13
FM-19B	YA648	5/26/16	1,1-DCE	1.0	0.50	Ref. 4, p. 36; Ref. 8, p. 45; Ref. 15, pp. 7, 267-272; Ref. 16, p. 15; Ref. 17, p. 16
			TCE	18	0.50	
FM-19C	YA649	5/26/16	PCE	22	2.5	Ref. 4, p. 36; Ref. 8, pp. 4, 47-48; Ref. 15, pp. 7, 280-285, 291-296; Ref. 16, p. 16; Ref. 17, p. 16
FM-22	YA650	5/25/16	1,1-DCE	3.0	0.50	Ref. 4, pp. 36, 45; Ref. 8, pp. 4, 49-50; Ref. 15, pp. 6, 299-304, 311-316; Ref. 16, p. 17; Ref. 17, p. 14
			TCE	31	2.5	
			PCE	29	2.5	
FM-23	YA651	5/23/16	1,1-DCE	1.8	0.50	Ref. 4, pp. 35, 43; Ref. 7, pp. 5, 42; Ref. 13, pp. 6, 192-197, 204-209; Ref. 14, p. 13; Ref. 17, p. 11
			TCE	27	2.5	
FM-24	YA652	5/17/16	1,1-DCE	1.7	0.50	Ref. 4, pp. 35, 42; Ref. 6, pp. 5, 36; Ref. 11, pp. 6, 181-186, 193-198; Ref. 12, p. 15
			TCE	31	2.5	

µg/l: Micrograms analyte per liter groundwater
CRQL: EPA Contract Laboratory Program Contract Required Quantitation Limit

Production Wells

Page 41 of the HRS documentation record at proposal summarizes the background levels in the drinking water production wells:

Background Levels to Establish an Observed Release to Production Wells		
Hazardous Substance	**Maximum Background Concentration 2016 SI Sampling Results (µg/l)**	**HRS Table 2-3 Minimum Concentration to Document an Observed Release by Chemical Analysis (µg/l)**
1,1-DCE	ND	release sample CRQL
TCE	ND	release sample CRQL
PCE	ND	release sample CRQL

µg/l: micrograms analyte per liter groundwater
CRQL: EPA Contract Laboratory Program Contract Required Quantitation Limit
ND: Not detected.

Page 42 of the HRS documentation record at proposal provides the concentrations of 1,1-DCE, TCE and PCE in the drinking water production wells that were significantly above production wells background levels:

Drinking Water Production Well Results Documenting an Observed Release						
Well Name	**CLP Sample ID**	**Sampling Date**	**Hazardous Substance**	**Concentration (µg/l)**	**CRQL (µg/l)**	**References**
A-47	YA656	5/17/16	1,1-DCE	0.62	0.50	Ref. 4, p. 37; Ref. 6, p. 44; Ref. 11, pp. 6, 226-231; Ref. 12, p. 19; Ref. 17, p. 3
F-4	YA657	5/18/16	TCE	0.84	0.50	Ref. 4, p. 37; Ref. 5, pp. 37-38; Ref. 9, pp. 5, 18, 229-234, 238-243; Ref. 10, p. 15; Ref. 17, p. 5
			PCE	0.50	0.50	
F-5	YA658	5/18/16	TCE	1.6	0.50	Ref. 4, p. 37; Ref. 5, pp. 39-40; Ref. 9, pp. 5, 18, 249-254, 258-263; Ref. 10, p. 16; Ref. 17, p. 5
			PCE	0.97	0.50	
F-6	YA659	5/18/16	TCE	1.1	0.50	Ref. 4, p. 37; Ref. 5, pp. 41-42; Ref. 9, pp. 5, 18, 269-274, 279-284; Ref. 10, pp. 16-17; Ref. 17, p. 5
			PCE	1.2	0.50	
F-8	YA660	5/18/16	TCE	0.90	0.50	Ref. 4, p. 37; Ref. 5, pp. 43-44; Ref. 9, pp. 5, 18, 290-295, 300-305; Ref. 10, p. 17; Ref. 17, p. 5
			PCE	2.0	0.50	
F-8 FD	YA683	5/18/16	TCE	0.95	0.50	Ref. 4, p. 37; Ref. 5, pp. 57-58; Ref. 9, pp. 6, 360-365; Ref. 10, p. 20; Ref. 17, p. 5
			PCE	2.2	0.50	
PAGE-F	YA661	5/17/16	TCE	0.82	0.50	Ref. 4, p. 38; Ref. 6, p. 50; Ref. 11, pp. 6, 236-241; Ref. 12, p. 20; Ref. 17, p. 4

µg/l: micrograms analyte per liter groundwater
CRQL: EPA Contract Laboratory Program Contract Required Quantitation Limit

In addition to the above explanations, the following subsections address specific comments related to the background levels and observed release concentrations:

- 3.19.1 Production Well Background – Consideration of Well Depth
- 3.19.2 Production Well Background – Consideration of Monitoring Well Results
- 3.19.3 Consideration of Degradation in Background Levels
- 3.19.4 Sampling Bias

These general and specific comments result in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.19.1 Production Well Background – Consideration of Well Depth

Comment: SSPA questioned the selection of the wells to identify background levels in establishing observed releases to groundwater.

SSPA asserted that background well selection and background levels determination were inappropriate based on well screen depth, given that production wells with deep screen intervals were used in identifying background levels for shallower production wells.

SSPA stated that comparable well samples should be collected from the same aquifer. SSPA cited the September 1995 EPA factsheet, *Establishing Background Levels* (EPA/540/F-94/030 Directive 9285.7-19FS)[8], and quoted this factsheet as stating "[s]amples from any two wells can be considered comparable if both are collected from the same aquifer," and stating "[s]ampled wells generally should be screened at similar zones within the same aquifer, depending on the site hydrogeologic setting, because different depths may have different contaminant levels and water chemistry."

SSPA commented that the HRS documentation record at proposal determined background levels for comparison to release production wells considering only background production wells. SSPA commented that three of the six background production wells used in the HRS documentation record at proposal are screened between -387 to -1,333 feet above mean sea level (ft amsl): BP-BOIS, A-48 and A-54. By contrast, all release production wells are screened between -77 to -255 ft amsl. SSPA commented that "[d]etermining background levels using a combination of deeper wells that are screened within the drinking water aquifer together with shallower wells that are not screened within the drinking water aquifer is not appropriate." SSPA commented that this approach disregarded screened interval depth, and also involved "ignoring data from monitoring wells screened in the same aquifer interval as the site production wells."

Response: The background levels for production wells identified in the HRS documentation record at proposal are sufficient to identify an observed release in production wells for HRS purposes and consideration of well type in selecting background levels is consistent with EPA's 1995 factsheet, *Establishing Background Levels* (EPA/540/F-94/030 Directive 9285.7-19FS) cited by commenters. The background samples used to establish background levels are sufficiently similar in well characteristics and from similar relative portions of the aquifer to document that the significant increase in contamination was due to a release from the Site and not differences in sample characteristics.

The HRS does not identify requirements or define conditions for establishing background levels of contaminants for production wells. The HRS addresses background only in the context of identifying an observed release of a hazardous substance to the environment by chemical analysis.

HRS Section 3.1.1, *Observed release*, explains how to establish an observed release to an aquifer:

> Establish an observed release to an aquifer by demonstrating that the site has released a hazardous substance to the aquifer. Base this demonstration on either:
>
> - Direct observation-a material that contains one or more hazardous substances has been deposited into or has been observed entering the aquifer.
> - Chemical analysis-an analysis of ground water samples from the aquifer indicates that the concentration of hazardous substance(s) has increased significantly above the background concentration for the site (see section 2.3). Some portion of the significant increase must be attributable to the site to establish the observed release, except: when the source itself

[8] Available at https://www.epa.gov/superfund/hrs-toolbox#Fact%20Sheets.

> consists of a ground water plume with no identified source, no separate attribution is required.

HRS Section 2.3, *Likelihood of release*, states in relevant part:

> Establish an observed release either by direct observation of the release of a hazardous substance into the media being evaluated (for example, surface water) or by chemical analysis of samples appropriate to the pathway being evaluated (see sections 3, 4, and 6). The minimum standard to establish an observed release by chemical analysis is analytical evidence of a hazardous substance in the media significantly above the background level. Further, some portion of the release must be attributable to the-site. Use the criteria in Table 2-3 as the standard for determining analytical significance.

The HRS documentation record at proposal explains that background and release wells were divided into three types—shallow monitoring wells, deep monitoring wells, and drinking water production wells—to ensure each set is screened in the same relative depth and share similar well construction, i.e. well type. The HRS documentation record at proposal explains that drinking water production wells are only compared with other drinking water production wells, because these have longer screen lengths and larger casing diameters than the monitoring wells.

Page 30 of the HRS documentation record at proposal explains the background well types used to establish background levels and compared to wells of similar wells types to establish an observed release. It states:

> For background similarity, and to meet the criteria for establishing an observed release, wells are separated into 3 types, as described below. This ensures that background wells are screened within the same relative depth within the Interconnected Sand and Gravel Aquifer, **and have similar construction as the contaminated wells with which they are being compared**. Shallow monitoring wells are screened at depths of 200 feet bgs or less. Deep monitoring wells are screened below 200 feet bgs (Ref. 20). **Drinking water production wells are only compared with other production wells, due to longer screen lengths and larger casing diameters than the monitoring wells** (Ref. 111; Ref. 112). [emphasis added]

The HRS documentation record at proposal further explains that the well characteristics, such as well type, depth, and screened interval in the aquifer, are similar for each type of background and release well. See pages 31-42 of the HRS documentation record at proposal for descriptions of each of the well types and tables showing the well depth and screened intervals, some of which are cited below.

Page 31 of the HRS documentation record at proposal discusses the shallow monitoring background wells:

> **-Background Shallow Monitoring Wells**
> Background monitoring wells were sampled during the same sampling event, using the same sampling methods as the release wells. **Background shallow monitoring wells were selected for similar depth, screen length, and construction as shallow contaminated monitoring wells located within the OCNB plum**e (Ref. 112). The background monitoring wells are located east (upgradient) and south (cross-gradient) of the groundwater VOC plume, as identified based on historical OCWD sampling data showing VOC concentrations and groundwater flow directions (Ref. 4, p. 15; Ref. 19, p. 38; Ref. 20). According to OCWD, there are no monitoring wells north (cross-gradient) or west (downgradient) in proximity of the leading edge of the plume (Ref. 4, p. 15; Ref. 19, p. 38).
>
> **Screened intervals of background and contaminated wells were used to determine whether the wells were screened at the same relative depth within the aquifer**. Shallow monitoring wells are screened at less than 200 feet bgs (Ref. 4, p. 15; Ref. 19, pp. 20-21, 24, 38; Ref. 20). The well locations are shown on Figure 1. [emphasis added]

The tables on pages 31 and 33 of the HRS documentation record at proposal show the screened intervals of the background shallow monitoring wells at depths as high as 89.1 feet above mean sea level (amsl) and as low as -23.25 feet amsl, and the screened intervals of the observed release shallow monitoring wells at depths as high as 68.35 feet amsl and as low as -43.74 feet amsl, respectively. Thus, similar wells are compared and the screened intervals of the background and observed release shallow monitoring wells are in the same relative portion of the aquifer.

Page 35 of the HRS documentation record at proposal discusses the deep monitoring background wells:

> **-Background Deep Monitoring Wells**
> Background monitoring wells were sampled during the same sampling event, using the same sampling methods as the release wells. **Background deep monitoring wells were selected for similar depth, screen length, and construction as deep contaminated monitoring wells located within the OCNB plume.** The background monitoring wells are located east (upgradient) and south (cross-gradient) of the groundwater VOC plume, as identified based on historical OCWD sampling data showing VOC concentrations and groundwater flow directions (Ref. 4, p. 15; Ref. 19, p. 38; Ref. 20). There are no identified monitoring wells north (cross-gradient) or west (downgradient) in proximity of the leading edge of the plume (Ref. 4, p. 15; Ref. 19, p. 38).
>
> **Screened intervals of background and contaminated wells were used to determine whether the wells were screened at the same relative depth within the aquifer.** Deep monitoring wells are screened at greater than 200 feet bgs (Ref. 4, p. 15; Ref. 19, pp. 20-21, 24, 38; Ref. 20). The well locations are shown on Figure 1. [emphasis added]

The tables on pages 35 and 37 of the HRS documentation record at proposal show the screened intervals of the background deep monitoring wells at depths as high as -64.29 feet amsl to as low as -237.86 feet amsl and the screened intervals of the observed release deep monitoring wells at depths as high as -41.94 feet amsl to as low as -239.37 feet amsl, respectively. Thus, similar wells are compared and the screened intervals of the background and observed release deep monitoring wells are in the same relative portion of the aquifer.

Page 39 of the HRS documentation record at proposal discusses the drinking water production background wells:

> **-Background Drinking Water Production Wells**
> Background drinking water production wells were sampled during the same sampling event, using the same sampling methods as the release wells. **Background drinking water production wells were selected for similar depths, screen lengths, and construction with contaminated production wells located within the OCNB plume**. Background production wells are located east (upgradient), south (cross-gradient), and west (downgradient) of the OCNB plume. According to OCWD, there are no production wells north (cross-gradient) of the plume (Ref. 4, p. 15; Ref. 19, p. 38). [emphasis added]
>
> **Screened intervals of background and contaminated wells were used to determine whether the wells were screened at comparable depths within the aquifer** (Ref. 4, p. 15; Ref. 19, pp. 20, 22, 25, 38; Ref. 20). The well locations are shown on Figures 1 and 2. [emphasis added]

Well Name	Wellhead Elevation (feet above msl)	Screened Interval (feet bgs)	Screened Interval (feet above msl)	References
SCWC-PBF3	226	220 to 475	6 to -249	Ref. 21; Ref. 23, p. 353
SCWC-PBF4	228	275 to 520	-47 to -292	Ref. 21; Ref. 23, p. 353
SCWC-PLJ2	200	402 to 492	-202 to -292	Ref. 21; Ref. 23, p. 353
A-48	108	932 to 1344	-824 to -1236	Ref. 21; Ref. 23, p. 349
A-54	147	680 to 1480	-533 to -1333	Ref. 21; Ref. 23, p. 349
BP-BOIS	87.53	475 to 1355	-387.47 to -1267.47	Ref. 21; Ref. 23, p. 350

msl: mean sea level
bgs: below ground surface

Page 42 of the HRS documentation record at proposal discusses the drinking water production observed release wells:

> **- Drinking Water Production Wells Establishing an Observed Release:**
> Drinking water production wells establishing an observed release are shown on Figures 1 and 2. These wells contained 1,1-DCE, TCE, and/or PCE at concentrations exceeding the background levels specified above.

Well Name	Wellhead Elevation (feet above msl)	Screened Interval (feet bgs)	Screened Interval (feet above msl)	Reference
A-47	112.94	482 to 1375	-369.06 to -1262.06	Ref. 21; Ref. 23, p. 349
F-4	151.62	315 to 405	-163.38 to -253.38	Ref. 21; Ref. 23, p. 352
F-5	148.32	350 to 400	-201.68 to -251.68	Ref. 21; Ref. 23, p. 352
F-6	148.02	340 to 401	-191.98 to -252.98	Ref. 21; Ref. 23, p. 352
F-8	148.02	324 to 402	-175.98 to -253.98	Ref. 21; Ref. 23, p. 352
PAGE-F	109	186 to 364	-77 to -255	Ref. 21; Ref. 23, p. 379

msl: mean sea level
bgs: below ground surface

The tables on pages 39 and 42 of the HRS documentation record at proposal show that the screened intervals of the six background drinking water production wells and the six observed release drinking water production wells range from 6 to -1333 feet above mean sea level and from -77 to -1262.06 feet above mean sea level, respectively. These similar wells are compared and the screened intervals of the background and observed release drinking water production wells overlap and are in the same relative portion of the aquifer.

The 1995 EPA, *Establishing Background Levels* (EPA/540/F-94/030 Directive 9285.7-19FS) (referenced in SSPA comments) discusses comparing similar aquifers **and well types**. EPA selected drinking water production wells to establish background levels for observed release drinking water production wells consistent with that guidance. Page 4 of this guidance states:

> "Aqueous release and background samples must be **collected from comparable zones** (e.g., saturated zone) **in the same aquifer** and, where possible, should be collected during the same sampling event. . . ."

> Samples from any two wells can be considered comparable if both are collected from the same aquifer. . . . Ideally, **well completion techniques and usage of background wells should be similar to those of the well under investigation**. Sampled wells generally should be screened at similar zones within the same aquifer, depending on the site hydrogeologic setting, because different depths may have different contaminant levels and water chemistry. Depth should be measured as elevation relative to a reference (e.g., mean sea level) instead of below ground surface for data consistency." [emphasis added].

The commenter incorrectly stated that the observed release drinking water production wells had screened intervals ranging from -77 to -255 feet amsl. The pool of deeper background drinking water production wells had screen intervals ranging from -387.47 to -1,333 ft amsl (-824 to -1236; -533 to -1333; -387.47 to -1267.47 ft amsl), which includes the observed release drinking water production well A-47, screened from -369.06 to -1262.06 ft amsl.

Additional deeper background production wells are included in the pool of background production wells also. The wells with VOCs examined include wells with TCE/PCE contamination, but also include well A-47 which had a release of 1,1-DCE as noted on page 42 of the HRS documentation record at proposal. Additional shallower wells included in the pool of background drinking water production wells included wells SCWC-PBF3, SCWC-PBF4, SCWC-PLJ2, screened at 6 to -249, -47 to -292, and -202 to -292, respectively. These wells provide comparable background results for the release drinking water production wells with screened intervals ranging from -77 to -255 feet amsl.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL

3.19.2 Production Well Background – Consideration of Monitoring Well Results

Comment: SSPA questioned identification of observed releases in production wells based on comparison to background deep monitoring well results. SSPA commented that concentrations in release production wells are below HRS significant increase criteria that would be set by nearby monitoring wells, pointing to background deep monitoring well AM-35, which is screened from -219.86 to -237.86 ft amsl with detected TCE and PCE concentrations of 2.6 µg/l and 3.4 µg/l, respectively. Following HRS observed release criteria, SSPA calculated significant increase criteria of 7.8 µg/l TCE and 10.2 µg/l PCE. SSPA commented that the greatest concentrations found in release production wells were 1.6 µg/l TCE and 2.2 µg/l PCE, neither of which would qualify as observed releases based on these background levels.

Response: The HRS documentation record at proposal provides appropriate background levels from background production wells that are similar in depth and well construction type to the observed release production wells and has established a significant increase of 1,1-DCE, TCE, and/or PCE in production wells A-47, F-4, F-5, F-6, F-8 and PAGE-F. The deep monitoring well, AM-35, that SSPA recommends for establishing background levels for the drinking water production wells was not used as a background well to establish background levels for the observed release production wells because, as explained in section 3.19.1, Production Well Background – Consideration of Well Depth, of this support document, the HRS documentation record at proposal provides more appropriate background production well data considering the well construction characteristics.

As discussed in section 3.19.1, Production Well Background – Consideration of Well Depth, of this support document, the HRS does not identify requirements or define conditions for establishing background levels of contaminants. And as further explained in that section, the HRS documentation record at proposal provides appropriate and comparable background production well data used to establish a background level for the drinking water production wells. The background production wells were similar to release production wells based on construction characteristics and included background production wells with screened intervals that cover the range of screened intervals in the release production wells (i.e., release production wells ranged from -77 to -1262 ft amsl and background production wells ranged from 6 to -1267.47 ft amsl, whereas background deep monitoring wells discussed ranged from -64.9 to -237 ft amsl). It is more appropriate to compare the release production wells

to production background wells due to these construction characteristics and, in particular, because the concentrations in the monitoring wells may be different from those in production wells, which have larger casing diameters, longer screen lengths, and greater pumping capacities.

The HRS documentation record at proposal establishes an observed release by chemical analysis in the drinking water production wells by comparing the contaminant concentrations in those wells to background levels established in similar drinking water production wells. The HRS documentation record at proposal, on page 40, establishes background levels for the production wells based on sampling results of the following background production wells:

Background Production Well Groundwater Concentrations							
Well Name	**CLP Sample ID**	**Sampling Date**	**Hazardous Substance**	**Concentration (µg/l)**	**MDL (µg/l)**	**CRQL (µg/l)**	**References**
SCWC-PBF3	YA653	5/17/16	1,1-DCE	ND	0.21	0.50	Ref. 4, p. 37; Ref. 6, pp. 3, 38-39; Ref. 11, pp. 6, 202-207; Ref. 12, p. 16; Ref. 17, p. 3
			TCE	ND	0.080	0.50	
			PCE	ND	0.15	0.50	
SCWC-PBF4	YA654	5/17/16	1,1-DCE	ND	0.21	0.50	Ref. 4, p. 37; Ref. 6, pp. 3, 40-41; Ref. 11, pp. 6, 210-215; Ref. 12, p. 17; Ref. 17, p. 3
			TCE	ND	0.080	0.50	
			PCE	ND	0.15	0.50	
SCWC-PLJ2	YA655	5/17/16	1,1-DCE	ND	0.21	0.50	Ref. 4, p. 37; Ref. 6, pp. 3, 42-43; Ref. 11, pp. 6, 218-223; Ref. 12, p. 18; Ref. 17, p. 3
			TCE	ND	0.080	0.50	
			PCE	ND	0.15	0.50	
A-48	YA680	5/18/16	1,1-DCE	ND	0.21	0.50	Ref. 4, p. 37; Ref. 5, pp. 3, 53-54; Ref. 9, pp. 6, 343-348; Ref. 10, p. 18; Ref. 17, p. 6
			TCE	ND	0.080	0.50	
			PCE	ND	0.15	0.50	
A-54	YA681	5/17/16	1,1-DCE	ND	0.21	0.50	Ref. 4, p. 37; Ref. 6, pp. 3, 60-61; Ref. 11, pp. 7, 278-283; Ref. 12, p. 21; Ref. 17, p. 3
			TCE	ND	0.080	0.50	
			PCE	ND	0.15	0.50	

Background Production Well Groundwater Concentrations							
Well Name	**CLP Sample ID**	**Sampling Date**	**Hazardous Substance**	**Concentration (µg/l)**	**MDL (µg/l)**	**CRQL (µg/l)**	**References**
BP-BOIS	YA682	5/18/16	1,1-DCE	ND	0.21	0.50	Ref. 4, p. 37; Ref. 5, pp. 3, 55-60; Ref. 9, pp. 6, 353-358; Ref. 10, p. 19; Ref. 17, p. 6
			TCE	ND	0.080	0.50	
			PCE	ND	0.15	0.50	

µg/l: Micrograms analyte per liter groundwater
MDL: Method Detection Limit
CRQL: EPA Contract Laboratory Program Contract Required Quantitation Limit
ND: Not detected.

The background production wells results shown in the table above are summarized and presented on pages 40 and 41 of the HRS documentation record at proposal and provide the background levels for 1,1-DCE, TCE, and PCE for the production wells, stating:

> The minimum standard to establish an observed release by chemical analysis is analytical evidence of a hazardous substance significantly above the background level and some portion of the significant increase above the background level is attributable to the site. In accordance with HRS Table 2-3, if the background concentration is not detected, a significant increase is established when the sample measurement equals or exceeds the sample quantitation limit (SQL). If the background concentration equals or exceeds the detection limit, a significant increase is established when the sample measurement is 3 times or more above the background concentration. If the sample analysis was performed under the EPA Contract Laboratory Program (CLP), the EPA contract-required quantitation limit (CRQL) can be used in place of the SQL if the SQL is not available. Based on the above sampling results, the following background levels are established for the deep monitoring[9] [production] wells:

Background Levels to Establish an Observed Release to Production Wells		
Hazardous Substance	**Maximum Background Concentration 2016 SI Sampling Results (µg/l)**	**HRS Table 2-3 Minimum Concentration to Document an Observed Release by Chemical Analysis (µg/l)**
1,1-DCE	ND	release sample CRQL
TCE	ND	release sample CRQL
PCE	ND	release sample CRQL

µg/l: micrograms analyte per liter groundwater
CRQL: EPA Contract Laboratory Program Contract Required Quantitation Limit
ND: Not detected.

Page 42 of the HRS documentation record at proposal documents the concentrations of 1,1-DCE, TCE, and PCE in the drinking water production wells that were significantly above background levels:

[9] The EPA notes that the HRS documentation record on page 40 states "deep monitoring wells" in this statement, but instead should have stated "production wells." The background levels for the deep monitoring wells are discussed on pages 35-37 of the HRS documentation record at proposal, not on pages 40-41.

Drinking Water Production Well Results Documenting an Observed Release						
Well Name	**CLP Sample ID**	**Sampling Date**	**Hazardous Substance**	**Concentration (µg/l)**	**CRQL (µg/l)**	**References**
A-47	YA656	5/17/16	1,1-DCE	0.62	0.50	Ref. 4, p. 37; Ref. 6, p. 44; Ref. 11, pp. 6, 226-231; Ref. 12, p. 19; Ref. 17, p. 3
F-4	YA657	5/18/16	TCE	0.84	0.50	Ref. 4, p. 37; Ref. 5, pp. 37-38; Ref. 9, pp. 5, 18, 229-234, 238-243; Ref. 10, p. 15; Ref. 17, p. 5
			PCE	0.50	0.50	
F-5	YA658	5/18/16	TCE	1.6	0.50	Ref. 4, p. 37; Ref. 5, pp. 39-40; Ref. 9, pp. 5, 18, 249-254, 258-263; Ref. 10, p. 16; Ref. 17, p. 5
			PCE	0.97	0.50	
F-6	YA659	5/18/16	TCE	1.1	0.50	Ref. 4, p. 37; Ref. 5, pp. 41-42; Ref. 9, pp. 5, 18, 269-274, 279-284; Ref. 10, pp. 16-17; Ref. 17, p. 5
			PCE	1.2	0.50	
F-8	YA660	5/18/16	TCE	0.90	0.50	Ref. 4, p. 37; Ref. 5, pp. 43-44; Ref. 9, pp. 5, 18, 290-295, 300-305; Ref. 10, p. 17; Ref. 17, p. 5
			PCE	2.0	0.50	
F-8 FD	YA683	5/18/16	TCE	0.95	0.50	Ref. 4, p. 37; Ref. 5, pp. 57-58; Ref. 9, pp. 6, 360-365; Ref. 10, p. 20; Ref. 17, p. 5
			PCE	2.2	0.50	
PAGE-F	YA661	5/17/16	TCE	0.82	0.50	Ref. 4, p. 38; Ref. 6, p. 50; Ref. 11, pp. 6, 236-241; Ref. 12, p. 20; Ref. 17, p. 4

µg/l: micrograms analyte per liter groundwater
CRQL: EPA Contract Laboratory Program Contract Required Quantitation Limit

The observed release concentrations in the production wells meet the HRS criteria quoted from HRS Sections 2.3, *Likelihood of release*, and 3.1.1, *Observed release,* as shown above in section 3.19, Likelihood of Release, of this support document. As shown on pages 40 and 41 of the HRS documentation record at proposal, 1,1-DCE, TCE, and PCE were not detected at or above their contract required quantitation limit (CRQL) of 0.5 µg/l in the background production wells. Thus, concentrations at or above the background and the observed release production wells' CRQLs (which is 0.5 µg/l for all three substances in both the background and observed release production wells evaluated) were significantly above background, thus meeting the HRS observed release criteria.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.19.3 Consideration of Degradation in Background Levels

Comment: SSPA commented that the selection of background levels in documenting an observed release misrepresents the attenuation process by not taking into consideration the contribution that degrading upgradient substances may have on degradation product levels downgradient. SSPA commented that determination of background levels considers each substance independently, but that "the detection of a compound could actually be due to the degradation of a parent compound present at concentrations above the degradation-product background, and not due to an independent observed release." SSPA commented that this approach could be double-counting.

Response: The identification of an observed release by chemical analysis of PCE, TCE, and 1,1-DCE to the aquifer based on groundwater samples is consistent with HRS requirements and HRS observed release criteria. The HRS evaluation is a preliminary screening process, consistent with the purpose of the HRS as a screening tool to determine NPL eligibility. Accounting for the contribution of upgradient parent substance to downgradient release samples is not an HRS requirement and is outside the scope of an HRS evaluation. The possibility of such contributions would be addressed during later stages of the Superfund process.

As shown in sections 3.19, Likelihood of Release, 3.19.1, Production Well Background – Consideration of Well Depth, and 3.19.2, Production Well Releases Below Monitoring Well Background, of this support document, background levels were established and observed releases documented in shallow monitoring wells, deep monitoring wells, and production wells, consistent with the HRS.

The HRS documentation record at proposal correctly establishes background levels for PCE, TCE, and 1,1-DCE at the Site. The background well locations and resulting background levels are sufficiently upgradient and cross gradient of the observed release well locations to establish an observed release - a significant increase in contamination in the wells used to delineate the contaminated groundwater plume. All samples meeting observed release criteria were significantly above their respective background levels. As explained in section 3.19.1, Production Well Background – Consideration of Well Depth, of this support document, background levels for these hazardous substances were established for each of the three types of wells evaluated—shallow monitoring wells, deep monitoring wells, and drinking water production wells. (See pages 30-32, 35-37, and 38-41 of the HRS documentation record at proposal.) The HRS documentation record at proposal also explains that the background well locations used to establish background levels were collected upgradient and cross gradient of historical sampling locations showing VOCs.

Page 31 of the HRS documentation record at proposal provides description of the background well locations for the shallow monitoring wells used to establish background levels for the observed release shallow monitoring wells. It states:

> The background monitoring wells are located east (upgradient) and south (cross-gradient) of the groundwater VOC plume, as identified based on historical OCWD sampling data showing VOC concentrations and groundwater flow directions (Ref. 4, p. 15; Ref. 19, p. 38; Ref. 20).

Page 32 of the HRS documentation record at proposal summarizes the background levels in shallow monitoring wells:

Background Levels to Establish an Observed Release to Shallow Monitoring Wells		
Hazardous Substance	**Maximum Background Concentration 2016 SI Sampling Results (µg/l)**	**HRS Table 2-3 Minimum Concentration to Document an Observed Release by Chemical Analysis (µg/l)**
1,1-DCE	ND	release sample CRQL
TCE	ND	release sample CRQL
PCE	0.36 J, CRQL = 0.50	1.5

Note: Detection below the CRQL is treated as non-quantifiable for HRS purposes, and adjustment factors are not applied. For a conservative background level, the CRQL of PCE is used here as a maximum background concentration (Ref. 107, p. 4). The CRQL is the applicable SQL for this data set.

µg/l: micrograms analyte per liter groundwater
J: Result is above the MDL but below the CRQL. The result is not biased, and no adjustment is needed (Ref. 6, p. 3).
CRQL: EPA Contract Laboratory Program Contract Required Quantitation Limit
ND: Not detected.

Page 35 of the HRS documentation record at proposal provides descriptions of the background well locations for the deep monitoring wells used to establish background levels for the observed release deep monitoring wells. It states:

> The background monitoring wells are located east (upgradient) and south (cross-gradient) of the groundwater VOC plume, as identified based on historical OCWD sampling data showing VOC concentrations and groundwater flow directions (Ref. 4, p. 15; Ref. 19, p. 38; Ref. 20).

Page 37 of the HRS documentation record at proposal summarizes the background levels in the deep monitoring wells:

Background Levels to Establish an Observed Release to Deep Monitoring Wells		
Hazardous Substance	**Maximum Background Concentration 2016 SI Sampling Results (µg/l)**	**HRS Table 2-3 Minimum Concentration to Document an Observed Release by Chemical Analysis (µg/l)**
1,1-DCE	ND	release sample CRQL
TCE	2.6	7.8
PCE	3.4	10.2

µg/l: micrograms analyte per liter groundwater
CRQL: EPA Contract Laboratory Program Contract Required Quantitation Limit
ND: Not detected.

Page 39 of the HRS documentation record at proposal provides description of the background well locations for the drinking water production wells used to establish background levels for the observed release drinking water production wells. It states:

> Background production wells are located east (upgradient), south (cross-gradient), and west (downgradient) of the OCNB plume.

Page 41 of the HRS documentation record at proposal summarizes the background level in the drinking water production wells:

Background Levels to Establish an Observed Release to Production Wells		
Hazardous Substance	**Maximum Background Concentration 2016 SI Sampling Results (µg/l)**	**HRS Table 2-3 Minimum Concentration to Document an Observed Release by Chemical Analysis (µg/l)**
1,1-DCE	ND	release sample CRQL
TCE	ND	release sample CRQL
PCE	ND	release sample CRQL

µg/l: micrograms analyte per liter groundwater
CRQL: EPA Contract Laboratory Program Contract Required Quantitation Limit
ND: Not detected.

As described in section 3.14, Adequacy of Administrative Record, of this support document, the HRS evaluation reflects a preliminary screening process rather than a detailed analysis, which is consistent with the purpose of the HRS as a screening tool to determine NPL eligibility. It is not intended to be a comprehensive assessment of the full extent of contamination; a more detailed assessment of the exact nature, extent, and risk posed by the contamination is part of later stages of the Superfund process. The HRS documentation record at proposal on page 28 acknowledges that "[t]he plume represented on Figure 1 is for HRS scoring purposes only, and does not delineate all groundwater contamination in the area." The level of data and modeling necessary to predict the downgradient contributions to a specific degradation product substance from upgradient parent substance concentrations is not required and is beyond the scope of the HRS as a screening tool. This is especially the case for compounds such as these chlorinated solvents, where the speed of degradation may depend on complex local groundwater chemistry and microbial activity, and the contributions of a parent substance (e.g., PCE) to degradation product substances may be spread unevenly across multiple degradation products (e.g., TCE, DCE, vinyl chloride) downgradient depending on this chemistry/microbial activity.

Furthermore, even if parent compounds were taken into account in setting background levels for degradation products in release wells for this Site—an approach the EPA does not use for HRS purposes—it is notable that there are many instances where release concentrations of degradation products would still eclipse background levels of parent substances. That is, as shown in HRS documentation record background/release tables quoted in section 3.19, Likelihood of Release, of this support document, in comparing background/release datasets for each well type there are release levels of potential degradation products such as 1,1-DCE or TCE that would exceed background levels set by possible parent compounds TCE or PCE.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.19.4 Sampling Bias

Comment: SSPA alleged a statistical high bias in May 2016 EPA groundwater sample results relative to OCWD results. SSPA commented that the May 2016 groundwater samples results presented in the HRS documentation record at proposal to establish an observed release were based on samples collected and analyzed by the EPA using EPA CLP analytical method SOM02.3 with trace levels analysis. OCWD collected samples from the same wells on the same day and analyzed these via EPA Method 524.2. SSPA evaluated the EPA and OCWD datasets, presenting the evaluation in scatterplots shown in Figure 3 of its comment document (Exhibit 1 of the Joint Commenters submission, docket ID EPA-HQ-OLEM-2017-0603-0103). SSPA plotted each analyte (PCE, TCE and 1,1-DCE) result set on a separate plot with the X-axis representing the OCWD value and Y-axis representing the EPA value, and also included a plot with all analyte results using the same axis setup. SSPA commented that "the majority of scatter points lie above the line-of-equivalence, indicating an upward bias," using a "best-fit" line for each dataset to illustrate its tilt away from the line of equivalence. SSPA asserted that the bias results in EPA values approximately 13-32% greater than OCWD values.

Response: The HRS documentation record at proposal correctly identifies an observed release in the groundwater samples used to identify the contaminated groundwater plume at the Site. EPA acknowledges that there may be

some overarching high bias of the EPA dataset relative to the OCWD dataset, as discussed in the split sample comparison on pages 3461-3479 of Appendix I (added to Reference 4 at promulgation). However, the EPA results were validated according to EPA procedures, and no individual result-specific validation qualifiers were applied to the observed release concentrations that would indicate that the EPA results are biased high based on quality control failures. Most importantly, the difference between the EPA and OCWD datasets would not invalidate the significant increase identified between background and release samples used in the HRS scoring of this Site and, considering this difference, would have no effect on the Site's HRS score. Further, even if the OCWD dataset were used for HRS purposes, the Site score would be sufficient for listing. Finally, even if the EPA dataset release results were treated as validator-qualified high-biased, the Site score would remain above the NPL threshold of 28.50.

As noted, the EPA acknowledges that there may be some overarching high bias of the EPA dataset relative to the OCWD dataset, as discussed in the split sample comparison on pages 3461-3479 of Appendix I (added to Reference 4 at promulgation). However, such a bias would affect the entire dataset equally (background and release results), and as shown below, this potential high bias cannot affect the HRS site score.

As shown in sections 3.19, Likelihood of Release, 3.19.1, Production Well Background – Consideration of Well Depth, and 3.19.2, Production Well Background – Consideration of Monitoring Well Results, of this support document, background levels were established and observed releases documented in shallow monitoring wells, deep monitoring wells, and production wells, consistent with the HRS.

The EPA samples used in HRS scoring were analyzed through EPA's Contract Laboratory Program (CLP) via EPA CLP SOM02.3 and validated according to the *USEPA National Functional Guidelines for Superfund Organic Methods Data Review* (August 2014). (See pages 90 and 302 to 547 of Reference 4 of the HRS documentation record at proposal). No analytical data flags were applied to the individual observed release concentrations designating that the EPA results are biased high based on quality control failure. The Sampling and Analysis plan provided in Appendix E of Reference 4 (pages 51 to 301) of the HRS documentation record at proposal provides the sampling and the analytical data procedures for the samples. Page 90 of Reference 4 of the HRS documentation record at proposal states:

> Validation of analytical data generated by the CLP and contract laboratories for this investigation will be contracted by the EPA in accordance with the *EPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (EPA 540-R-99\008, 10/99) and/or the EPA Contract Laboratory Program National Functional Guidelines for Low Concentration Organic Data Review (EPA540-R-00-006, 06/01)*. Tier 3 validation for 100% of the data will be required for all the EPA and OCWD split samples, performed by the respective laboratories.
>
> To meet requirements for categorization as definitive data, the following criteria will be evaluated:
>
> - Holding times
> - Sampling design approach
> - Blank contamination
> - Initial and continuing calibration
> - Detection limits
> - Analyte identification and quantitation
> - Matrix spike recoveries
> - Performance evaluation samples when specified
> - Analytical and total error determination
> - Laboratory Control Samples.

No samples used in the scoring were labelled biased high in the data validation of the analytical results (such labelling is required by the CLP method). The data validation results for the EPA samples are provided in

Appendix F (pages 302 to 547) of Reference 4 of the HRS documentation record at proposal; pages 305, 364, 427 and 486 provide confirmation that the analytical results were validated in accordance with EPA guidance and they state:

> This report was prepared in accordance with the following documents:
> - *USEPA Contract Laboratory Program Statement of Work for Organics Superfund Methods, Multi-Media, Multi-Concentration*, SOM02.3, September 2015 and
> - *USEPA National Functional Guidelines for Superfund Organic Methods Data Review*, August 2014.

Effect of the Statistical Difference between Datasets

The difference between the datasets does not invalidate the significant increase identified between background and release samples scored. For example, if the EPA dataset is biased as a whole, background sample results would be biased in the same way as the release sample results, and the significant increase meeting HRS criteria would still exist.

Furthermore, even the upper end of the alleged high bias range identified by the commenter (32%) cannot account for the significant increase identified in release samples. That is, if this bias were to somehow only affect the release sample results (which would not be realistic), reducing each release sample result by this upper end of 32% would not lower the HRS site score below the NPL threshold of 28.50. All shallow monitoring well, deep monitoring well, and production well release results would remain above observed release criteria except two production well results (A-47 1,1-DCE result of 0.62 µg/l would be reduced to 0.421 µg/l and F-4 PCE result of 0.50 µg/l would be reduced to 0.34 µg/l). Production wells F-5 and F-6 TCE results would be reduced below the TCE benchmark[10] for identifying Level I concentrations. However, even with these changes the overall targets values would still be sufficient to score the Site sufficient for listing, resulting in an overall site score the same as proposed. This hypothetical scenario is detailed below:

- The nearest well value would be reduced from 50 to 45 as no wells would be subject to Level I contamination (see sections 3.3.1 and 3.3.2.3 on pages 51 and 54, respectively, of the HRS documentation record at proposal and HRS Section 3.3.1, *Nearest well*).
- The Level I concentration factor value would be reduced from 208,586 to 0 as no wells would be subject to Level I concentrations.
- The Level II concentration factor value would consider only the populations apportioned to wells F4, F5, F6, F8, and Page-F, (10,429.3 + 10,429.3 + 10,429.3 +10,429.3 + 115) resulting in an assigned value of 41,832.2.
- The targets associated with well A-47 would instead be subject to potential contamination and be considered in the 1- to 2-mile distance category weighting; the potentially contaminated targets in the 1- to 2-mile distance category from the Site would be increased from 14,201.9 to 28, 212.9 which would result in the same distance-weighted assigned value of 2,939 assigned for the 1- to 2-mile category in the HRS documentation record at proposal (see section 3.3.2.4 on page 55 of the HRS documentation record at proposal and HRS Table 3-12).
- The sum of the distance-weighted population assigned values (28,001.0 ÷ 10 = 2,800.1) would remain the same as in the HRS documentation record at proposal (see section 3.3.2.4 on page 55 of the HRS documentation record at proposal; see also Figure 2, Production Well Location Map and distance Rings, of the HRS documentation record at proposal).

[10] The TCE HRS benchmark used to evaluate Level I TCE concentration in the HRS documentation record at proposal is the TCE HRS cancer risk screening concentration for drinking water, which is 1.1 µg/l (see page 51 of the HRS documentation record at proposal).

- The resources assigned value (0) and the wellhead protection areas assigned value (20) would remain the same as proposed.
- The resulting total targets value (41,697.3) when combined with the likelihood of release (550) and waste characteristics value (18) assigned as proposal would result in the same ground water migration pathway score of 100 as in the HRS documentation record at proposal {[(550 x 18 x 41,897.2) ÷ 82,500] = 5,027.66, maximum value assigned is 100}. The resulting overall site score of 50.00 would remain as in the HRS documentation record at proposal.

OCWD Results Would Document an Observed Release

EPA uses its own data for scoring purposes. However, it is notable that the OCWD analytical results would produce the same results for scoring purposes: these results also would confirm a significant increase in the drinking water production wells when compared to the drinking water production wells background levels using the criteria established in HRS Sections 2.3, *Likelihood of release,* and 3.1.1, *Observed release,* as quoted above in section 3.19, Likelihood of Release, of this support document. To demonstrate this, the EPA and OCWD analytical results for the production wells scored are provided in the following tables where split samples were collected and analyzed by both EPA and OCWD. (The OCWD results mentioned by the commenter are available in the document Orange County Water District, North Basin VOC Split Samples with EPA, Sampling Period: May 16th – 26th, 2016, included in Attachment I of the SI Report, in the revised Reference 4 of the HRS documentation record at promulgation.) The EPA and OCWD background results are as follows:

Background Production Well Groundwater Concentrations									
EPA*							**OCWD****		
Well Name	**CLP Sample ID**	**Sampling Date**	**Hazardous Substance**	**Conc. (µg/l)**	**MDL (µg/l)**	**CRQL (µg/l)**	**OCWD Sample ID**	**Conc. (µg/l)**	**RDL (µg/l)**
SCWC -PBF3	YA653	5/17/16	1,1-DCE	ND	0.21	0.50	160503 99-02	ND	0.5
			TCE	ND	0.080	0.50		ND	0.5
			PCE	ND	0.15	0.50		ND	0.5
SCWC -PBF4	YA654	5/17/16	1,1-DCE	ND	0.21	0.50	160503 98-02	ND	0.5
			TCE	ND	0.080	0.50		ND	0.5
			PCE	ND	0.15	0.50		ND	0.5
SCWC -PLJ2	YA655	5/17/16	1,1-DCE	ND	0.21	0.50	160503 97-02	ND	0.5
			TCE	ND	0.080	0.50		ND	0.5
			PCE	ND	0.15	0.50		ND	0.5
A-48	YA680	5/18/16	1,1-DCE	ND	0.21	0.50	160504 49-02	ND	0.5
			TCE	ND	0.080	0.50		ND	0.5
			PCE	ND	0.15	0.50		ND	0.5
A-54	YA681	5/17/16	1,1-DCE	ND	0.21	0.50	160503 96-02	ND	0.5
			TCE	ND	0.080	0.50		ND	0.5
			PCE	ND	0.15	0.50		ND	0.5
BP-BOIS	YA682	5/18/16	1,1-DCE	ND	0.21	0.50	160504 50-02	ND	0.5
			TCE	ND	0.080	0.50		ND	0.5
			PCE	ND	0.15	0.50		ND	0.5

Background Levels to Establish an Observed Release to Production Wells			
EPA			**OCWD Results**
Hazardous Substance	**Maximum Background Concentration 2016 SI Sampling Results (µg/l)**	**HRS Table 2-3 Minimum Concentration to Document an Observed Release by Chemical Analysis (µg/l)**	**Maximum Background Concentration 2016 SI Sampling Results (µg/l)**
1,1-DCE	ND	release sample CRQL	ND
TCE	ND	release sample CRQL	ND
PCE	ND	release sample CRQL	ND

µg/l: Micrograms analyte per liter groundwater
MDL: Method Detection Limit
Conc. : Concentration
CRQL: EPA Contract Laboratory Program Contract Required Quantitation Limit
ND: Not detected.
RDL = Reporting Detection Limit (See Attachment I of the SI Report, in the revised Reference 4 of the HRS documentation record at promulgation, pages 3835 and 3550).
*Pages 40 and 41 of HRS documentation record at proposal
**See Attachment I of the SI Report, in the revised Reference 4 of the HRS documentation record at promulgation for OCWD results (OCWD results are on pages 3557, 3558, 3559, 3836, 3846 and 3847; OCWD Sample ID /Well IDs are on pages 3826, 4151 and 4152).

The EPA and OCWD observed release results are as follows:

Drinking Water Production Well Results Documenting an Observed Release								
EPA*						**OCWD****		
Well Name	**CLP Sample ID**	**Sampling Date**	**Hazardous Substance**	**Conc. (µg/l)**	**CRQL (µg/l)**	**OCWD Sample ID**	**Conc. (µg/l)**	**RDL**
A-47	YA656	5/17/16	1,1-DCE	0.62	0.50	16050395-02	0.57	0.5
F-4	YA657	5/18/16	TCE	0.84	0.50	16050445-02	0.73	0.5
			PCE	0.50	0.50		0.92	0.5
F-5	YA658	5/18/16	TCE	1.6	0.50	16050446-02	1.02	0.5
			PCE	0.97	0.50		0.68	0.5
F-6	YA659	5/18/16	TCE	1.1	0.50	16050447-02	0.55	0.5
			PCE	1.2	0.50		TR (0.34)	0.5
F-8	YA660	5/18/16	TCE	0.90	0.50	16050448-02	0.61	0.5
			PCE	2.0	0.50		1.59	0.5
F-8 FD	YA683	5/18/16	TCE	0.95	0.50	NA***		
			PCE	2.2	0.50			
PAGE-F	YA661	5/17/16	TCE	0.82	0.50	16050400-024▲	0.59	0.5

µg/l: Micrograms analyte per liter groundwater
MDL: Method Detection Limit
CRQL: EPA Contract Laboratory Program Contract Required Quantitation Limit
RDL = Reporting Detection Limit (See Attachment I of the SI Report, in the revised Reference 4 of the HRS documentation record at promulgation, OCWD Results, pages 3550 and 3835).

TR = Trace (Result is reported TR if the concentration falls between 0.25 and 0.496 µg/l.) (See Attachment I of the SI Report, in the revised Reference 4 of the HRS documentation record at promulgation, pages 3550 and 3835).
▲ = 1,1-DCE was detected in this OCWD sample at a concentration of 3.46 µ/L. In the EPA results, 1,1-DCE was present at 0.38 J µg/l, below the CRDL. [J = Estimated. Concentration was above the MDL but below the CRQL] Hence, because the EPA result for 1,1-DCE did not meet observed release criteria, it was not presented for this well in the HRS documentation record at proposal. (See page 236 of Reference 11 of the HRS documentation record at proposal)
*Page 42 of HRS documentation record at proposal
**See Attachment I of the SI Report, in the revised Reference 4 of the HRS documentation record at promulgation for OCWD results (OCWD results are on pages 3837, 3842-3845 and 3556; OCWD Sample ID /Well IDs are on pages 3826 and 4151-4152).
***Duplicate sample, not analyzed by OCWD.

The impact of using the OCWD data for production wells would be that PCE in one production well, F-6, would no longer meet observed release criteria (although the TCE result in F-6 would still meet observed release criteria). Also Wells F-5 and F-6 would no longer be assessed as subject to Level I concentrations because the TCE concentrations would be below the TCE cancer risk screening concentration[11]; these two wells would instead be evaluated as subject to Level II concentrations. However, the remaining target wells would still be sufficient to score the Site. This hypothetical scenario is detailed below:

- The nearest well value would be reduced from 50 to 45 as no wells would be subject to Level I contamination (see sections 3.3.1 and 3.3.2.3 on pages 51 and 54, respectively, of the HRS documentation record at proposal and HRS Section 3.3.1, *Nearest well*).
- The Level I concentration factor value would be reduced from 208,586 to 0 as no wells would be subject to Level I concentrations.
- The Level II concentration factor value would consider the populations apportioned to wells A-47, F4, F5, F6, F8, and PAGE-F (14,011 + 10,429.3 + 10,429.3 + 10,429.3 +10,429.3 + 115) resulting in an assigned value of 55,843.2. This value would be increased from the value assigned at proposal (34,984.6).
- The potentially contaminated targets and the sum of the distance-weighted population assigned values (28,001.0 ÷ 10 = 2,800.1)[12] would remain the same as in the HRS documentation record at proposal.
- The resources assigned value (0) and the wellhead protection areas assigned value (20) would remain the same as proposed.
- The resulting total targets value (58,708.3) when combined with the likelihood of release (550) and waste characteristics value (18) assigned at proposal would result in the same ground water migration pathway score of 100 as in the HRS documentation record at proposal {[(550 x 18 x 58,708.3) ÷ 82,500] = 7,044.99, maximum value assigned is 100}. The resulting overall site score of 50.00 would remain as in the HRS documentation record at proposal.

Even if EPA Analytical Results are Considered Qualified and High Biased the Site Score is Still Sufficient for Listing

Even if the EPA analytical results for the production wells were considered biased high, the significant increase meets HRS criteria and would be sufficient for listing. That is, even if the EPA production well results were treated as if they were all validator-qualified results individually exhibiting high bias due to quality control failures (which is not the case), guidance issued in the EPA factsheet, *Using Qualified Data to Document an Observed Release and Observed Contamination*, EPA 540-F-94.028, November 1996, (included as Reference 107 of the HRS package) indicates to divide the observed release concentration by the adjustment factor recommended in the factsheet and use the background levels as documented, i.e., use background levels without

[11] The TCE HRS cancer risk screening concentration for drinking water is 1.1 µg/l (see page 51 of the HRS documentation record at proposal).
[12] The sum of the distance-weighted population values is divided by 10 per HRS Section 3.3.2.4, *Potential contamination*.

any adjustments (see page 8 of *this factsheet*). Hence, the 1,1-DCE observed release results would be divided by 2.35, the TCE observed release results would be divided by 1.66, and the PCE results would be divided by 10 (see pages 11 and 12 of *Using Qualified Data to Document an Observed Release and Observed Contamination*).

Considering just the production wells, if the EPA results were considered validator-qualified biased high based on quality control failures, the adjusted concentrations would be as follows (with adjusted concentrations still meeting observed release criteria bolded):

Drinking Water Production Well Results Adjusted Concentrations Documenting an Observed Release

Well Name	CLP Sample ID	Sampling Date	Hazardous Substance	Concentration (µg/l)*	CRQL (µg/l)	Adjusted Concentration
A-47	YA656	5/17/16	1,1-DCE	0.62	0.50	0.26
F-4	YA657	5/18/16	TCE	0.84	0.50	**0.50**
			PCE	0.50	0.50	0.05
F-5	YA658	5/18/16	TCE	1.6	0.50	**0.96**
			PCE	0.97	0.50	0.097
F-6	YA659	5/18/16	TCE	1.1	0.50	**0.66**
			PCE	1.2	0.50	0.12
F-8	YA660	5/18/16	TCE	0.90	0.50	**0.54**
			PCE	2.0	0.50	0.2
F-8 FD	YA683	5/18/16	TCE	0.95	0.50	**0.57**
			PCE	2.2	0.50	0.22
PAGE-F	YA661	5/17/16	TCE	0.82	0.50	0.49

The impact of adjusting the observed release concentrations in the production wells would result in two production wells (A47 and PAGE-F) no longer meeting observed release criteria. Drinking water production wells A-47 and PAGE-F would be eliminated as observed release wells but would be considered potentially contaminated target wells because these two wells are in the 1 to 2-mile distance category of the 4-mile target distance limit of the plume. Wells F-5 and F-6 would no longer be evaluated as subject to Level I concentrations because the TCE concentrations would be below the TCE cancer risk screening concentration[13]; these two wells would instead be evaluated as subject to Level II concentrations. However, the remaining target wells would still be sufficient to score the Site. This hypothetical scenario is detailed below:

- The nearest well value would be reduced from 50 to 45 as no wells would be subject to Level I contamination (see sections 3.3.1 and 3.3.2.3 on pages 51 and 54, respectively, of the HRS documentation record at proposal and HRS Section 3.3.1, *Nearest well*).
- The Level I concentration factor value would be reduced from 208,586 to 0 as no wells would be subject to Level I concentrations.
- The Level II concentration factor value would consider the populations apportioned to wells F4, F5, F6, and F8 (10,429.3 + 10,429.3 + 10,429.3 +10,429.3) resulting in an assigned value of 41,717.2. This value would be increased from the value assigned at proposal (34,984.6).
- The potentially contaminated targets in the 1- to 2-mile distance category from the Site would consider targets apportioned to wells A-47, Page F, F-KIM1A and F-CHRI2 and would be increased from 14,201.9 to

[13] The TCE HRS cancer risk screening concentration for drinking water is 1.1 µg/l (see page 51 of the HRS documentation record at proposal).

28,327.9, which would result in the same distance-weighted assigned value of 2,939 assigned for the 1- to 2-mile category in HRS Table 3-12 at proposal.

- The sum of the distance-weighted population assigned values (28,001.0 ÷ 10 = 2,800.1)[14] would remain the same as in the HRS documentation record at proposal (see section 3.3.2.4 on page 55 of the HRS documentation record at proposal; see also Figure 2, Production Well Location Map and distance Rings, of the HRS documentation record at proposal).
- The resources assigned value (0) and the wellhead protection areas assigned value (20) would remain the same as proposed.
- The resulting total targets value (44,582.3) when combined with the likelihood of release (550) and waste characteristics value (18) assigned as proposal would result in the same ground water migration pathway score of 100 as in the HRS documentation record at proposal {[(550 x 18 x 44,582.3) ÷ 82,500] = 5,349.87, maximum value assigned is 100}. The resulting overall site score of 50.00 would remain as in the HRS documentation record at proposal.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.20 Validity of Plume Area

Comment: SSPA commented that the plume area identified in the HRS documentation record at proposal is non-scientific and not realistic given the amount of data available with which to characterize it.

SSPA commented that the plume delineated in the HRS documentation record at proposal "essentially serves as a surrogate for the actual VOC plume in groundwater." SSPA commented that the HRS specifies, for a contaminated groundwater plume with no identified source, the area of observed groundwater contamination is delineated based on sample points meeting observed release criteria, and that the 4-mile target distance limit (TDL) is measured from the center of that area.

SSPA criticized this approach, stating:

> Since all calculations in the HRS scoring process are based on the observed release area polygon and the 4-mile target-distance limit, the HRS makes no attempt to reach conclusions on the basis of a realistic representation of the contaminant distribution in the aquifer, or considering a plume migration based on historical conditions in the aquifer. Hence, the "plume" extends as far upgradient as it does downgradient, neglecting to take into consideration groundwater flow patterns and their variability, as wells [sic] as any remedial activities in the area.

SSPA commented that the HRS documentation record at proposal mentions the three-dimensional visualization and analysis (3DVA) evaluation (results of which are presented in Reference 110[15] of the HRS documentation record at proposal), and that the 3DVA evaluation is based on geologic interpretations in a 2015 Conceptual Model Refinement (CMR) document (included as Reference 22[16] of the HRS documentation record at proposal). SSPA asserts that hydrogeologic evaluations, groundwater flow patterns, and other information from the CMR document are not included in the 3DVA, which SSPA asserted results in water level contouring and flow patterns being inconsistent between these reports. SSPA argues that:

> These inconsistencies undermine the credibility of the U.S. EPA HRS analysis, and illustrate how previously-published and reported analyses of the vast quantities of available site data are either

[14] The sum of the distance-weighted population values is divided by 10 per HRS Section 3.3.2.4, *Potential contamination*.
[15] Reference 110 of the HRS documentation record at proposal: Sundance Environmental & Energy Specialists, Ltd., Orange County North Basin Plume 3DVA Technical Memorandum, Draft Version 4, August 2017, 47 pages.
[16] Reference 22 of the HRS documentation record at proposal: Intera, Conceptual Model Refinement, North Basin Groundwater Modeling Project, February 18, 2015, 198 pages.

> unused or used only in a very limited sense in the HRS analysis. This omission is important because neglecting established conditions and abundant historical data limits the comprehensiveness and undermines the conclusions of the HRS process completed for OCNB.

Response: The identification of the plume area and the delineation of the 4-mile target distance limit (TDL) based on the plume area is consistent with the directions of the HRS. Using HRS requirements, the plume area was identified based on groundwater samples from the aquifer meeting observed release criteria, and the 4-mile TDL was drawn starting from the center of the plume and extends to 4 miles. The 3DVA and CMR document are consistent for the information used to describe the general hydrogeology in the sand and gravel interconnected aquifer. These and other tools to evaluate hydrogeologic conditions and groundwater flow patterns are beyond the scope of an HRS evaluation and are not part of the HRS evaluation of placement of a site on the NPL.

HRS Section 3.0.1.1, *Ground water target distance limit*, provides directions for determining the TDL, area of the plume, and samples to consider when determining the area of a site:

> The target distance limit defines the maximum distance from the sources at the site over which targets are evaluated. Use a target distance limit of 4 miles for the ground water migration pathway, except when aquifer discontinuities apply (see section 3.0.1.2.2). Furthermore, consider any well with an observed release from a source at the site (see section 3.1.1) to lie within the target distance limit of the site, regardless of the well's distance from the sources at the site.
>
> For sites that consist solely of a contaminated **ground water plume with no identified source, begin measuring the 4-mile target distance limit at the center of the area of observed ground water contamination. Determine the area of observed ground water contamination based on available samples that meet the criteria for an observed release**. [emphasis added]

The HRS requires delineation of a plume to be based on observed release sample locations, and the HRS requires the TDL to be drawn from the center of the area of observed groundwater contamination. As further shown in section 3.19, Likelihood of Release, of this support document, and its subsections, the observed releases identified in monitoring and production wells are established consistent with the HRS. Page 21 of the HRS documentation record at proposal explains that "[f]or HRS scoring purposes, the area of the groundwater plume is based on available sample locations that meet the criteria for an observed release." Figure 1 of the HRS documentation record at proposal depicts the locations of the observed release wells used to delineate the area of the plume and Figure 2 of the HRS documentation record depicts the ground water pathway 4-mile TDL drawn from the center of the plume, consistent with the HRS.

Comprehensive analyses of hydrogeology involving water level contouring and flow patterns, and migration of contamination in the aquifer over numerous years are outside the scope of the HRS evaluation. The HRS evaluation is not intended to be a comprehensive assessment of the full extent of contamination. As described in section 3.14, Adequacy of Administrative Record, of this support document, the HRS evaluation reflects a preliminary screening process, rather than a detailed analysis, which is consistent with the purpose of the HRS as a screening tool to determine NPL eligibility. Page 21 of the HRS documentation record at proposal clarifies that "[t]he area of the plume shown on Figure 1 is for HRS scoring purposes only, as defined below, and does not define the extent of all contamination in the area." The HRS is a measure of risk posed by a site relative to other sites evaluated under the HRS; a more detailed assessment of the exact nature, extent, and risk posed by the Site contamination is part of later stages of the Superfund process.

Finally, inasmuch as the comment challenges the adequacy of the HRS to identify sites for the NPL and further CERCLA attention, this comment applies to the HRS itself and not to its application in the evaluation of this Site. The HRS and the NPL listing process were promulgated on December 14, 1990 (55 FR 51569); comments directed at the HRS are not relevant to the proposal to place the OCNB site on the NPL, nor do such comments affect the Site score. As such, these comments are outside the scope of this rulemaking, which is limited to the placement of the OCNB site on the NPL.

For related discussion on the scoring of the Site as an HRS plume with no identified source, see section 3.17, Characterization of a Plume with No Identifiable Source, of this support document.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.21 Population Subject to Potential Contamination

Comment: SSPA and Ms. Stanley commented on the target population evaluated in scoring the Site. SSPA commented that the HRS does not consider whether target wells are upgradient or downgradient of sources and asserted that if only the population that is "reasonably affected by the contamination" were evaluated, the Site score would be lower. SSPA also commented that three wells evaluated as potentially at risk to be contaminated should not be included in the Site scoring because these wells' screens have been moved to deeper uncontaminated areas of the aquifer. Ms. Stanley quoted an EPA summary fact sheet as stating "the groundwater plume provides much of the areas drinking water."[17] However, Ms. Stanley found this statement to likely be incorrect, noting that the City of Anaheim and parts of Fullerton obtain most of their drinking water from outside sources such as the Colorado River and California Aqueduct.

Response: The target populations scored in the HRS documentation record at proposal were evaluated in compliance with the HRS. The following subsections contain detailed responses to identification of target wells with regard to the consideration of groundwater flow directions, the eligibility of potentially contaminated wells, and drinking water sources impact on the apportionment of target populations:

- 3.21.1 Consideration of Groundwater Flow Direction and Eligible Targets
- 3.21.2 Eligibility of Target Wells to be Scored as Subject to Potential Contamination
- 3.21.3 Drinking Water Supply Sources

3.21.1 Consideration of Groundwater Flow Direction and Eligible Targets

Comment: SSPA asserted that the HRS scoring process does not appropriately consider whether target wells are upgradient or downgradient of sources. SSPA argued that if the target populations scored only included the population "reasonably affected by any contamination," then the HRS site score would be significantly lower. SSPA challenged that, based on decades of available data "the population that is actually exposed is zero." As support, SSPA pointed to an EPA fact sheet[18] for the Site, which states that "[a]ll drinking water currently served by water purveyors meets federal and state drinking water standards."

Response: The HRS does not consider ground water flow direction when evaluating wells within the TDL that are subject to actual or potential contamination. The target populations scored in the HRS documentation record at proposal are appropriately evaluated according to the requirements of the HRS. The HRS documentation record at proposal acknowledges general groundwater flow direction is to the west, southwest in the interconnected sand and gravel aquifer beneath the Site. However, the HRS does not directly consider groundwater flow direction in evaluating targets but does so indirectly by distance weighting the population served by potentially contaminated wells. Further, the HRS directs that drinking water wells withdrawing water from the aquifer within 4 miles of the center of the groundwater plume be included in the evaluation and that the level of contamination be assigned based on the contamination in the water at the point of withdrawal in the aquifer. That is, the requirements that

[17] Although Ms. Stanley does not provide a specific citation for this fact sheet, she may be referring to the January 2018 EPA document Fact Sheet: Orange County North Basin Site Proposed for Superfund List, EPA Region 9: SEMS-RM DOCID # 100004527. Available at https://semspub.epa.gov/src/document/09/100004527.pdf. This fact sheet includes the statement quoted.

[18] SSPA cites the January 2018 EPA document *Fact Sheet: Orange County North Basin Site Proposed for Superfund List*, EPA Region 9: SEMS-RM DOCID # 100004527. Available at https://semspub.epa.gov/src/document/09/100004527.pdf.

water purveyors treat water to ensure it is safe at the point of delivery to customers does not negate the fact that the water they are withdrawing is contaminated in the first place.

In evaluating the likelihood of release factor for the ground water migration pathway, HRS Section 3.1, *Likelihood of release*, states:

> **For an aquifer**, evaluate the likelihood of release factor category in terms of an observed release factor or a potential to release factor. [emphasis added]

In establishing an observed release for the ground water migration pathway, HRS Section 3.1.1, *Observed release*, states, in relevant part:

> Establish an observed release **to an aquifer** by demonstrating that the site has released a hazardous substance to the aquifer. Base this demonstration on either:
>
> - Direct observation- …
> - Chemical analysis- …

HRS Section 3.0.1.1, *Ground water target distance limit*, identifies which targets at a site are to be included in an HRS evaluation:

> [t]he target distance limit defines the maximum distance from the sources at the site over which targets are evaluated. Use a target distance limit of 4 miles for the ground water migration pathway, except when aquifer discontinuities apply (see section 3.0.1.2.2). Furthermore, consider any well with an observed release from a source at the site (see section 3.1.1) to lie within the target distance limit of the site, regardless of the distance limit of the site, regardless of the well's distance from the sources at the site.
>
> For sites that consist solely of a contaminated groundwater plume with no identified source, begin measuring the 4-mile target distance limit at the center of the area of observed groundwater contamination. Determine the area of observed groundwater contamination based on available samples that meet the criteria for an observed release.

In determining the population served, HRS Section 3.3.2, *Population*, states

> In evaluating the population factor, include those persons served by drinking water wells within the target distance limit specified in section 3.0.1.1. For the aquifer being evaluated, count those persons served by wells in that aquifer and those persons served by wells in overlying aquifers . . ."

In directing how to assign the HRS level of contamination for a well, HRS Section 3.3.2.1, *Level of contamination*, states to "Evaluate the population served by water from a **point of withdrawal** based on the level of contamination for that **point of withdrawal**." [emphasis added]

Section 3.0.1.1 on pages 27-28 of the HRS documentation record at proposal discusses the TDL measured from the center of the area of observed groundwater contamination, as shown on Figure 1 of the HRS documentation record at proposal. Section 3.3 on page 51 of the HRS documentation record at proposal begins discussion of drinking water wells to be scored within the TDL, as shown on Figure 2 of the HRS documentation record at proposal. Pages 51-55 of the HRS documentation record at proposal detail the scoring of these wells within the TDL as subject to actual or potential contamination.

As documented on pages 51-55 of the HRS documentation record at proposal, consistent with HRS Section 3.3.2.1, *Level of contamination*, the EPA evaluated the population associated with the contamination in the aquifer at the point of withdrawal from wells in the aquifer and not at a point of delivery or finished water, i.e.

blended/served water. The population evaluated in the scoring is based on an evaluation of wells withdrawing from the aquifer within 4 miles of the center of the groundwater plume.

Importantly, that the water actually served to residents meets drinking water standards does not remove the water from consideration in an HRS evaluation. That water purveyors must meet drinking water standards before serving that water does not invalidate the measurement of contamination at the point of withdrawal in the aquifer, nor does it counter the conclusion that a hazardous substance has been released to the aquifer. See Section 3.13, Consideration of Releases below Regulatory Limits, of this support document for a discussion that contaminant concentrations below drinking water standards do not eliminate the associated releases from consideration when evaluating a site using the HRS.

The HRS does not specifically take into account such level of detail as groundwater flow information. In many instances, the information is not available, and in other cases, the flow direction varies over time. Even where there is extensive knowledge of hydrogeology, interpretation is nearly always subject to dispute. Requiring a precise measure of the affected population would add inordinately to the time and expense of applying the HRS. The EPA decided not to use groundwater flow information, even when available, because of the need to develop a nationally uniform system for scoring a large number of sites expeditiously with commonly-available data. The EPA reconsidered this issue when revising the HRS, and determined that the decision not to directly consider groundwater flow direction in evaluating targets was still appropriate (55 FR 51551).

Instead, the HRS considers flow direction indirectly in the method used to evaluate target populations by weighting target populations based on actual and potential contamination of drinking water wells. The HRS uses a radius of 4 miles around the site when determining the distance to the nearest well in the contaminated aquifer and the population at risk due to actual or potential contamination, provided there is no discontinuity that completely transects the aquifer of concern between the site and the well being scored for HRS purposes (55 FR 51595).

In addition, if wells have not been contaminated by the site, as would be typical of upgradient wells, the wells are considered potentially rather than actually contaminated, and the population drawing from those wells is distance weighted (55 FR 51603). Conversely, if wells have been contaminated, a likelihood for downgradient wells, the wells are considered actually contaminated and given higher weight in scoring**.**

The HRS directs that drinking water wells withdrawing water from the aquifer within 4 miles of the center of the groundwater plume be included in the evaluation and that the level of contamination be assigned based on the contamination in the water at the point of withdrawal in the aquifer. The HRS documentation record at proposal acknowledges general groundwater flow direction is to the west, southwest in the interconnected sand and gravel aquifer beneath the Site. The HRS indirectly considers this groundwater flow direction in evaluating targets by distance weighting the population served by potentially contaminated wells.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.21.2 Eligibility of Target Wells to be Scored as Subject to Potential Contamination

Comment: SSPA commented that three of the wells located within the area of observed release and used in scoring potential contamination at the Site have been deepened and no longer have detections of chlorinated solvents (wells F-3A, F-KIM1A and F-CHRI2). SSPA commented that the HRS scoring process considers these wells to be potentially at risk to be contaminated, but because the well screens have been moved to a deeper portion of the principal aquifer that has not had detections of chlorinated solvents, these wells should not be included in the Site scoring.

Response: The City of Fullerton wells F-3A, F-KIM1A and F-CHRI2 were evaluated at proposal as subject to potential contamination consistent with the HRS. These three wells were correctly evaluated as eligible target wells in Site scoring as they all draw water from the aquifer being evaluated, are within the TDL, and are subject to potential contamination.

In identifying the distance over which targets can be evaluated, HRS Section 3.0.1.1, *Ground water target distance limit*, in part states:

> The target distance limit defines the maximum distance from the sources at the site over which targets are evaluated. Use a target distance limit of 4 miles for the ground water migration pathway, except when aquifer discontinuities apply . . .
>
> For sites that consist solely of a contaminated ground water plume with no identified source, begin measuring the 4-mile target distance limit at the center of the area of observed ground water contamination. Determine the area of observed ground water contamination based on available samples that meet the criteria for an observed release.

HRS Section 3.3, Targets, states to:

> Evaluate the targets factor category for an aquifer based on four factors: nearest well, population, resources, and Wellhead Protection Area. Evaluate these four factors based on targets within the target distance limit specified in section 3.0.1.1 and the aquifer boundaries specified in section 3.0.1.2.

In determining the eligibility of potential target populations, HRS Section 3.3.2.4, *Potential contamination*, directs an evaluator to:

> Determine the number of people served by drinking water **from points of withdrawal subject to potential contamination**. Do not include those people already counted under the Level I and Level II concentrations factors. [emphasis added]
>
> Assign distance-weighted population values from table 3–12 to this population …

Page 55 of the HRS documentation record identifies the drinking water wells subject to potential contamination within the TDL and not beyond an aquifer discontinuity. It states:

> **3.3.2.4 Potential Contamination**
> The populations assigned to the wells are explained in Section 3.3.2 of this document; see Figure 2 for the location of the wells within the TDLs.

Distance Category (miles)	Public and Private Wells	Population Served	Reference	Distance-Weighted Population Value (Ref. 1, Table 3-12)
0 to -¼	**Total**	**0**		**0**
> ¼ to ½	**Total**	**0**		**0**
> ½ to 1	**Total**	**24,440.3**		**5,224**
	City of Fullerton Well F-3A	10,429.3	Ref. 21; Ref. 24; Ref 25, p. 3	
	City of Anaheim Well A-49	14,011	Ref. 21; Ref. 26; Ref. 27; Ref. 28	
> 1 to 2	**Total**	**14,201.9**		**2,939**
	City of Fullerton Well F-KIM1A	5,745.8	Ref. 21; Ref. 24; Ref 25, p. 3	

Distance Category (miles)	Public and Private Wells	Population Served	Reference	Distance-Weighted Population Value (Ref. 1, Table 3-12)
	City of Fullerton Well F-CHRI2	8,456.1	Ref. 21; Ref. 24; Ref 25, p. 3	
> 2 to 3	**Total**	**72,326.6**		**6,778**
	City of Fullerton Well F-AIRP	8,456.1	Ref. 21; Ref. 24; Ref 25, p. 3	
	City of Fullerton Well F-KIM2	5,745.8	Ref. 21; Ref. 24; Ref 25, p. 3	
	City of Fullerton Well F-10	5,745.8	Ref. 21; Ref. 24; Ref 25, p. 3	
	City of Buena Park Well BP-BOIS	10,345.9	Ref. 21; Ref. 36; Ref. 37, p. 3; Ref. 38	
	City of Anaheim Well A-48	14,011	Ref. 21; Ref. 26; Ref. 27; Ref. 28	
	City of Anaheim Well A-54	14,011	Ref. 21; Ref. 26; Ref. 27; Ref. 28	
	City of Anaheim Well A-56	14,011	Ref. 21; Ref. 26; Ref. 27; Ref. 28	
> 3 to 4	**Total**	**114,125.6**		**13,060**
	GSWC Well SCWC-PBF3	5,844.7	Ref. 21; Ref. 30; Ref. 31, p. 2; Ref. 32	
	GSWC Well SCWC-PBF4	5,844.7	Ref. 21; Ref. 30; Ref. 31, p. 2; Ref. 32	
	GSWC Well SCWC-PRU	5,844.7	Ref. 21; Ref. 30; Ref. 31, p. 2; Ref. 32	
	GSWC Well SCWC-PLJ2	5,844.7	Ref. 21; Ref. 30; Ref. 31, p. 2; Ref. 32	
	City of Anaheim Well A-40	14,011	Ref. 21; Ref. 26; Ref. 27; Ref. 28	
	City of Anaheim Well A-46	14,011	Ref. 21; Ref. 26; Ref. 27; Ref. 28	
	City of Anaheim Well A-55	14,011	Ref. 21; Ref. 26; Ref. 27; Ref. 28	
	City of Anaheim Well A-51	14,011	Ref. 21; Ref. 26; Ref. 27; Ref. 28	
	City of Anaheim Well A-53	14,011	Ref. 21; Ref. 26; Ref. 27; Ref. 28	
	City of Buena Park Well BP-SM	10,345.9	Ref. 21; Ref. 36; Ref. 37, p. 3; Ref. 38	
	City of Buena Park Well BP-LIND	10,345.9	Ref. 21; Ref. 36; Ref. 37, p. 3; Ref. 38	
			Sum of Distance-Weighted Population Values:	**28,001.0**

Sum of Distance-Weighted Population Values: 28,001.0
Sum of Distance-Weighted Population Values/10: 2,800.1

Potential Contamination Factor Value: 2,800.1

Regarding the aquifer being evaluated and relevant wells in the delineated plume, the descriptions of the geology in the Site area is provided in section 3.0 of the HRS documentation record at proposal beginning on page 27 through page 28, which state:

Groundwater contamination in this area is primarily found in shallower monitoring wells screened at less than 200 feet bgs; **however, VOC-impacted groundwater has migrated downward into the deeper portion of the aquifer tapped by drinking water production wells. The contamination continues to migrate both laterally and vertically, threatening downgradient production wells** (Ref. 22, pp. 8, 32-34, 167-169; Ref. 23, pp. 180, 186). Six public drinking water production wells sampled by EPA during the 2016 SI field sampling are located within the plume and contain one or more of the above hazardous substances at concentrations significantly above background (see Figure 2 and Section 3.1.1). Four drinking water production wells have been shut down and destroyed due to the contamination: Fullerton wells F-FS13 (2002), F-KIM1 (2002); Anaheim well A-23 (2001); and private well BAST-F (2013) (Ref. 23, p. 180; Ref. 103; Ref. 109). Fullerton well F-7 was placed on inactive status in February 2015 due to VOCs exceeding MCLs, and is planned for destruction in the future (Ref. 126; Ref. 127; Ref. 131). **An additional 22 active drinking water production wells operated by the City of Fullerton, City of Anaheim, Page Avenue Mutual Water Company, Golden State Water Company, and the City of Buena Park are located within the target distance limit from the site** (Figure 2; Ref. 21; Ref. 130).

The OCNB plume is located within the northern, Forebay Area of the Orange County Groundwater Basin. This portion of the Basin is bordered on the north by bedrock of the Coyote Hills, and slopes generally southwest to the Pacific Ocean. The Forebay refers to the area where most of the groundwater recharge occurs. **Highly-permeable interconnected sand and gravel deposits with few and discontinuous clay and silt deposits allow direct percolation** of Santa Ana River and other surface water into the subsurface (Ref. 22, p. 11; Ref. 23, pp. 51-54). **In the site vicinity, clay and silt aquitards are thin and discontinuous, allowing groundwater to flow between shallower and deeper portions of the aquifer where drinking water production wells are screened** (Ref. 22, p. 11; Ref. 23, pp. 51-54; Ref. 110, p. 19, 22, 40).

…

3.0.1.2 Aquifer Boundaries/Site Geology

Stratum 1: Interconnected Sand and Gravel Aquifer

The subsurface beneath the site consists of a complex series of interconnected sand and gravel deposits, with discontinuous lower-permeability clay and silt lenses that do not hydraulically isolate these water-bearing zones from each other (Ref. 22, pp. 11-12, 33; Ref. 23, pp. 52-53, 64; Ref. 110, pp. 19, 22, 40). The hydraulic gradient is locally amplified by production wells extracting water from the deeper portion of the aquifer. A downward hydraulic gradient allows VOC-impacted groundwater to migrate both laterally and vertically downward, largely in response to pumping-induced gradients (Ref. 22, p. 33). VOCs have been detected as deep as 600 feet bgs within 2 miles of the source (Ref. 22, pp. 12, 16, 45). [emphasis added]

Generalized geologic references for the Orange County Groundwater Basin describe the subsurface as being divided into Shallow, Principal, and Deep aquifers (Ref. 22, p. 11). However, as described above, **the generally-defined Shallow and Principal aquifers are not hydraulically separate aquifers in the site vicinity (Ref. 22, pp. 11-12, 33; Ref. 23, pp. 52-53, 64; Ref. 110, pp. 15, 17, 20-22, 35). Therefore, the Shallow and Principal aquifers beneath the OCNB site are evaluated as a single Interconnected Sand and Gravel Aquifer for HRS scoring purposes.** [emphasis added]

The City of Fullerton wells F-3A, F-KIM1A and F-CHRI2 are screened in the same aquifer that has been documented to be interconnected with the shallow zone. As further discussed in section 3.18, Aquifer Interconnection, of this support document, the shallow and principal aquifers in which these wells are screened

underlying the Site are properly determined to be one interconnected hydrological unit for HRS purposes. The well lithological information such as the location, elevation, and depth supporting the wells' placement in this interconnected aquifer and within the 4-mile TDL of the Site are presented in Figure 2 of the HRS documentation record at proposal; on page 4 of Reference 21[19] of the HRS documentation record at proposal; and on pages 127, 146, and 177 of the NODA posted in the EPA docket August 13, 2018 (https://www.regulations.gov/document?D=EPA-HQ-OLEM-2017-0603-0107). Well F3-A is screened at a depth of -432 to -1132.38 amsl; well F-KIM1A is screened at a depth of -328 to -1053 ft amsl; and well F-CHRI2 is screened data depth of -406 to -1216 ft amsl (see page 4 of Reference 21 of the HRS documentation record at proposal). These wells meet all HRS requirements to be included in the Site scoring. See section 3.18, Aquifer Interconnection, of this support document for a discussion of the interconnected aquifer evaluated in scoring the Site.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.21.3 Drinking Water Supply Sources

Comment: Ms. Stanley questioned the impact of the Site based on the quantity of area drinking water sourced from area wells. Ms. Stanley quoted an EPA summary fact sheet as stating "the groundwater plume provides much of the areas drinking water."[20] However, Ms. Stanley found this statement to likely be incorrect, noting that the City of Anaheim and parts of Fullerton obtain most of their drinking water from outside sources such as the Colorado River and California Aqueduct. Ms. Stanley offered to provide relevant information in the form of a City of Anaheim rate increase document that includes water source details.

Response: The apportionment of the target populations associated with the municipal well fields (City of Fullerton, City of Anaheim, Page Avenue Mutual Water Company, Golden State Water Company, City of Buena Park) was completed in accordance with the HRS, as explained in the HRS documentation record at proposal. In apportioning target populations associated with the blended municipal well systems, the HRS documentation record at proposal took into consideration the surface water intakes contribution to the water supply systems.

In apportioning population based on well contribution, HRS Section 3.3.2, *Population*, directs, in part:

> In determining the population served by a well, if the water from the well is blended with other water (for example, water from other groundwater wells or surface water intakes), apportion the total population regularly served by the blended system to the well based on the well's relative contribution to the total blended system. In estimating the well's relative contribution, assume each well and intake contributes equally and apportion the population accordingly, except: if the relative contribution of any one well or intake exceeds 40 percent based on average annual pumpage or capacity, estimate the relative contribution of the wells and intakes considering the following data, if available:
>
> - Average annual pumpage from the ground water wells and surface water intakes in the blended system.
> - Capacities of the wells and intakes in the blended system.

Pages 51 and 52 of the HRS documentation record at proposal describe the process for apportioning the contribution of municipal wells for the City of Fullerton and state:

[19] Reference 21 of the HRS documentation record at proposal: Orange County Water District, Water Resources Management System, Query: prodwells_generalwellinfo, generated on November 18, 2015, 18 pages.

[20] Although Ms. Stanley does not provide a specific citation for this fact sheet, she may be referring to the January 2018 EPA document Fact Sheet: Orange County North Basin Site Proposed for Superfund List, EPA Region 9: SEMS-RM DOCID # 100004527. Available at https://semspub.epa.gov/src/document/09/100004527.pdf. This fact sheet includes the statement quoted.

City of Fullerton

The City of Fullerton operates a drinking water system that serves approximately 138,307 people (Ref. 88, p. 2). Currently, the system consists of 10 active wells (Wells F-3A, F-4, F-5, F-6, F-8, F-10, F-AIRP, F-CHRI2, F-KIM1A, and F-KIM2) (Ref. 21; Ref. 24; **Ref 25, p. 3**; Ref. 88, p. 1; Ref. 130). Well F-7 was placed on inactive status in February 2015 due to VOCs exceeding MCLs, and is planned for destruction when funding is available (Ref. 126; Ref. 127; Ref. 131). Wells F-KIM1 and F-FS13 were destroyed due to the presence of VOCs (Ref. 109). However, the inactive and destroyed wells are not scored because they do not affect the listing decision. The population formerly served by those wells is included in the current total population served by the system.

The City of Fullerton Water System is divided into 12 service zones (Ref. 88, p. 2; Ref. 90). **Under typical operating conditions, only 6 of the service zones, Zones 1, 1A, 1B, 1C, 2, and 2A, receive drinking water from groundwater wells; the remaining zones are provided with 100% surface water from Metropolitan Water District (MWD). No one well or surface water intake provides more than 40% to any of the 6 service zones listed above** (Ref. 88, pp. 1-2; Ref. 129, p. 2). Under high demand conditions, the wells have the capacity to pump throughout the entire system; however, this capacity has never been used (Ref. 88, pp. 1-2; Ref. 132, pp. 1-2). [emphasis added]

Wells serving each service zone, as well as population served by each zone, are listed in the table below.

Calculations for Population Per Well by Service Zone						
Service Zone	**Population Served by Zone(s)**	**Names of Wells Serving Service Zone**	**Number of Wells Serving Service Zone**	**Number of Surface Water Intakes Serving Service Zone**	**Population Per Well or Intake = population/ (wells+intakes)**	**References**
1	40,129	F-3A, F-4, F-5, F-6, F-8	5	0	40,129/5 = 8,025.8	Ref. 88, pp. 1-2; Ref. 132, pp. 2-3
1A	10,027	F-10, F-KIM1A, F-KIM2	3	0	10,027/3 = 3,342.3	Ref. 88, pp. 1-2; Ref. 91, p. 2; Ref. 132, pp. 2-3
1B	16,990	F-AIRP, F-CHRI2	2	1	16,990/(2+1) = 5,663.3	Ref. 88, pp. 1-2; Ref. 91, p. 2; Ref. 132, pp. 2-3
1C	1,168	F-AIRP, F-CHRI2	2	1	1,168/(2+1) = 389.3	Ref. 88, pp. 1-2; Ref. 91, p. 2; Ref. 132, pp. 2-3
2	33,094	F-3A, F-4, F-5, F-6, F-8, F-10, F-AIRP, F-CHRI2, F-KIM1A, F-KIM2	10	4	33,094/(10+4) = 2,363.8	Ref. 88, p. 2; Ref. 129, pp. 1-2; Ref. 132, pp. 2-3
2A	557	F-3A, F-4, F-5, F-6, F-8,	10	4	557/(10+4) = 39.7	Ref. 88, p. 2; Ref. 129, pp.

		F-10, F-AIRP, F-CHRI2, F-KIM1A, F-KIM2				1-2; Ref. 132, pp. 2-3
The remaining service zones (3, 3A, 4, 4A, 4B, and 4C) are served by 100% MWD surface water. Therefore, calculations for these service zones are not included (Ref. 129, p. 2). [emphasis added]						

Based on the above calculations, the following populations are served by each well:

Total Population Served by Each Well		
Well Name	**Zones Served by Well**	**Total Population Served by Well**
F-3A	1, 2, 2A	8,025.8 + 2,363.8 + 39.7 = 10,429.3
F-4	1, 2, 2A	8,025.8 + 2,363.8 + 39.7 = 10,429.3
F-5	1, 2, 2A	8,025.8 + 2,363.8 + 39.7 = 10,429.63
F-6	1, 2, 2A	8,025.8 + 2,363.8 + 39.7 = 10,429.3
F-8	1, 2, 2A	8,025.8 + 2,363.8 + 39.7 = 10,429.3
F-10	1A, 2, 2A	3,342.3 + 2,363.8 + 39.7 = 5,745.8
F-KIM1A	1A, 2, 2A	3,342.3 + 2,363.8 + 39.7 = 5,745.8
F-KIM2	1A, 2, 2A	3,342.3 + 2,363.8 + 39.7 = 5,745.8
F-AIRP	1B, 1C, 2, 2A	5,663.3 + 389.3 + 2,363.8 +39.7 = 8,456.1
F-CHRI2	1B, 1C, 2, 2A	5,663.3 + 389.3 + 2,363.8 + 39.7 = 8,456.1

Pages 52 and 53 HRS documentation record at proposal describe the process for apportioning the contribution of municipal wells for the City of Anaheim and state:

> **City of Anaheim**
> The City of Anaheim operates a drinking water system that serves approximately 336,265 people. Currently, the system consists of 17 active wells (Wells A-40, A-41, A-42, A-43, A-44, A-45, A-46, A-47, A-48, A-49, A-51, A-52, A-53, A-54, A-55, A-56, and A-58) and one stand by well (Well A-39), **with no single well contributing more than 40% of the system** (Ref. 21; Ref. 26; Ref. 27; Ref. 28; Ref. 108, pp. 5-8; Ref. 130). In addition, well A-23 was closed due to the presence of VOCs (Ref. 109). However, this well is not scored because it does not affect the listing decision. The population formerly served by this well is included in the current total population served by the system. [emphasis added]
>
> **The City of Anaheim's water supply is a blend of groundwater and surface water imported by the MWD. Approximately 76 percent of the system is supplied by groundwater wells; the remaining 24 percent is imported from 6 surface water intakes** (Ref. 21; Ref. 26; Ref. 27; Ref. 28). [emphasis added]
>
> Calculation: 336,265 people/(**18 wells + 6 surface water intakes**) = 14,011 people per well [emphasis added]

The target population in the HRS documentation record at proposal accounted for the apportioning of ground water and surface water sources for both the Cities of Fullerton and Anaheim. The HRS documentation record at proposal explains that the City of Fullerton obtains water from both groundwater and surface water, and that 6 of the 12 city drinking water zones source from groundwater wells and only these zones are scored. Page 3 of Reference 25[21] of the HRS documentation record at proposal explains that, "Your drinking water is a blend of mostly groundwater from the Orange County groundwater basin and also surface water imported by the

[21] Reference 25 of the HRS documentation record at proposal: City of Fullerton *Water, Your 2015 Water Quality Report*, 2015, 8 pages.

Metropolitan Water District of Southern California (MWD). MWD's imported water sources are a blend of State Water Project water from northern California and water from the Colorado River Aqueduct." Reference 25, page 3 is cited in the City of Fullerton water system description on page 51 of the HRS documentation record at proposal (see quote above), in the tables showing the Level I and Level II concentrations populations (i.e., page 54), and in the potential contamination population (i.e., page 55) sections of the HRS documentation record at proposal.

The target population in the HRS documentation record at proposal also accounted for the apportioning of groundwater and surface water sources for the City of Anaheim. The HRS documentation record at proposal identifies that the City of Anaheim obtains its drinking water from a blend of groundwater and surface water, with groundwater representing 76% and surface water representing the remaining 24%. Among the references cited to support the description and subsequent apportioning of targets in the City of Anaheim water system, page 5 of Reference 27[22] of the HRS documentation record at proposal states, "Anaheim's water supply is a blend of groundwater from our own wells, as well as water imported from Northern California and the Colorado River by the Metropolitan Water District of Southern California (MWD). Customers may also receive water from Anaheim's owned and operated Lenain Water Treatment Facility." Reference 27 is cited in the City of Anaheim water system description on pages 52 and 53 of the HRS documentation record at proposal (see quote above) as well as in the tables showing the Level II concentrations populations (page 54) and in the potential contamination population (page 55) sections of the HRS documentation record at proposal.

The HRS documentation record at proposal also similarly acknowledges that the Golden State Water Company and the City of Buena Park also operate drinking water systems that are a blend of ground water and surface water. Those water system descriptions and target population apportionment are provided on pages 53 and 55 of the HRS documentation record at proposal. Of the drinking water system evaluated in scoring of the OCNB site, only the Page Avenue Mutual Water Company sources its drinking water solely from groundwater and this is provided in its description and population apportionment on pages 53, 54, and 55 of the HRS documentation record at proposal.

This comment results in no change to the HRS score and no change in the decision to place the Site on the NPL.

3.22 Revisions to the HRS Package

The HRS documentation record has been revised at promulgation to reflect three changes: an update to the Superfund Chemical Data Matrix (SCDM), an addition of Appendix I to the SI report included as Reference 4 of the HRS documentation record, and corrections to figures included in Reference 22 of the HRS documentation record.

Regarding SCDM, the Site was proposed to the NPL on January 18, 2018. On February 10, 2020, the EPA updated SCDM. As part of this update, the cancer screening concentration benchmark for TCE was changed[23]. The reason for this change is a change in the data reporting approach for SCDM, from truncating reported screening concentration benchmarks to instead rounding to three figures. The updated cancer concentration benchmark for TCE has been revised to 1.19 µg/l (previously 1.1 µg/l at proposal). However, as explained below, although some scoring factors are affected, this change to the cancer screening concentration benchmark for TCE **does not** impact the HRS site score of 50.00 assigned at proposal; the HRS site score remains 50.00 at promulgation.

As shown on page 51 of the HRS documentation record at proposal, section 3.3, Targets, included two wells scored as subject to Level I concentrations: F-5 with a TCE concentration of 1.6 µg/l and F-6 with a concentration

[22] Reference 27 of the HRS documentation record at proposal: Anaheim Public Utilities, *Water Quality Report, 2015*, 16 pages.
[23] For more information on SCDM and the January 2020 revisions, please visit the EPA's website located at: http://www.epa.gov/superfund/sites/npl/hrsres/tools/scdm.htm

of 1.1 µg/l, based on those concentrations equaling/exceeding the relevant benchmark of 1.1 µg/l at proposal (per HRS sections 3.3.1, *Nearest well*, and 2.5.2, *Comparison to benchmarks*). As shown on page 54 of the HRS documentation record at proposal, the populations associated with these two wells were accordingly included in calculating the Level I concentrations factor value of 208,586.

Based on the updated TCE cancer screening concentration benchmark of 1.19 µg/l, the TCE concentration in well F-6 of 1.1 µg/l is no longer considered subject to Level I concentrations at promulgation. This resulted in the following changes to the HRS documentation record at promulgation:

- As shown on page 51 of the HRS documentation record at promulgation, well F-6 is removed from the list of wells subject to Level I concentrations.
- As shown on page 54 of the HRS documentation record at promulgation, the population apportioned to well F-6 was removed from the population scored as subject to Level I (reducing the Level I concentrations factor value from 208,586 at proposal to 104,293 at promulgation) and moved to the population scored as subject to Level II (increasing the Level II concentrations factor value from 34,984.6 at proposal to 45,413.9 at promulgation).
- As shown on page 5 of the HRS documentation record at promulgation, these changes are implemented on lines 8a and 8b of the HRS groundwater migration pathway scoresheet, resulting in a revised line 8d population factor value of 152,507 (previously 246,370.7 at proposal) and line 11 targets factor category value of 152,577 (previously 246,440.7 at proposal).

However, the aquifer score and pathway score shown in lines 12 and 13 of the scoresheet remain at the maximum value of 100, as they were at proposal. Therefore, the HRS site score calculated on page 4 of the HRS documentation record at promulgation remains 50.00.

Regarding the SI report included as Reference 4 of the HRS documentation record at proposal, Appendix I of the SI report has been added to Reference 4 at promulgation to show the OCWD dataset results discussed in section 3.19.4, Sampling Bias, of this support document.

Regarding Reference 22 of the HRS documentation record at proposal, this reference includes the February 18, 2015 report titled *Conceptual Model Refinement, North Basin Groundwater Modeling Project*. Following proposal, it was discovered that for Figures 6.2, 6.4, 6.5, and 6.6 of the report, information in the figure legends identifying the date of data used to generate the figures was incorrect; however, the dates in the titles of the figures were correct (Figures 6.2, 6.4, 6.5, and 6.6 are titled as showing data for 2008, 2013, 2013, and 2013 respectively; corrected figures show that Figure 6.2 used monitoring well data from October 2006-October 2008, and Figures 6.4, 6.5, and 6.6 used monitoring well data from October 2012-September 2013). These errors have been explained and corrected in updated copies of the figures attached to a memorandum included with Reference 22 at promulgation. The original figures (on pages 167, 169, 170, and 171 of Reference 22) are cited in multiple locations in the HRS documentation record at proposal (i.e., pages 19, 27, 43) as part of discussions on the general location of groundwater contamination and the locations of facilities that are possible contributors to the comingled plume. Those HRS documentation record citations have been updated to include the memorandum. The figure legend errors identified have no effect on associated HRS documentation record statements and no effect on the HRS score for the Site.

These updates and corrections result in no change to the HRS site score and no change in the decision to place the Site on the NPL.

4. Conclusion

The original HRS score for this Site was 50.00. Based on the above responses to public comments, the score remains unchanged. The final scores for the Orange County North Basin site are:

Ground Water:	100.00
Surface Water:	NS
Soil Exposure:	NS
Air Pathway:	NS
HRS Score:	50.00