CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION

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WASTE DISCHARGE REQUIREMENTS ORDER

R8-2025-0032

ORDER INFORMATION

Status:	ADOPTED
Program:	Site Cleanup Program
Discharger(s):	Baker Hughes Company
Facility:	Centrilift
County:	Orange County
Prior Order(s):	(none)

CERTIFICATION

I, JAYNE JOY, Executive Officer, hereby certify that the following is a full, true, and correct copy of the order adopted by the California Regional Water Quality Control Board, Santa Ana Region, on June 13, 2025.

Jayne Joy
Digitally signed by Jayne Joy
Date: 2025.06.18 12:36:14 -07'00'
Water Boards

JAYNE JOY, P.E.
Executive Officer

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
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ORDER R8-2025-0032

WASTE DISCHARGE REQUIREMENTS FOR IN-SITU REMEDIATION OF GROUNDWATER AT CENTRILIFT FACILITY 5421 ARGOSY AVENUE, HUNTINGTON BEACH

FINDINGS

The Santa Ana Regional Water Quality Control Board (Santa Ana Water Board) hereby finds as follows:

INTRODUCTION

1. The Santa Ana Water Board is overseeing the cleanup and abatement of pollutants at the Centrilift facility, located at 5421 Argosy Avenue in Huntington Beach (Site). The Centrilift facility operated as a pump servicing and rebuilding facility for the petroleum and water development industries since 1976. Investigations conducted at the Site have identified volatile organic compounds (VOCs) and 1,4-dioxane as pollutants in groundwater at the Site. The Site is assigned GeoTracker Global Identification No. SL188063852.

2. Cleanups at polluted sites such as the Site may be accomplished in whole or in part via the addition (discharge) of chemicals and other reactive materials (amendments) to soil and groundwater (in-situ), to promote remediation. A person or entity applying or proposing to discharge such amendments to soil or groundwater to promote remediation within a specified treatment zone must file a report of waste discharge (ROWD) pursuant to Water Code section 13260 and obtain waste discharge requirements (WDRs) for the discharge from the Santa Ana Water Board.

3. Baker Hughes Company (Discharger) has proposed to conduct in-situ remediation in two areas, referred to as the Source Area and Bolsa Chica Reactive Zone (Attachment A). The Source Area remediation will utilize a pilot scale in-situ chemical oxidation (ISCO) to evaluate effectiveness of the remedy in addressing VOCs and 1,4-dioxane in groundwater within the identified 45-Foot Sand and 75-Foot Sand zones beneath the former source area of the Site. At the Source Area, the 45-Foot Sand zone is present from approximately 50 feet to 70 feet below ground surface (bgs). The 75-Foot Sand zone is encountered at depths ranging from approximately 75 feet to 105 feet bgs. The Bolsa Chica Reactive Zone remediation will utilize sorption technologies combined with in-situ chemical reduction to evaluate effectiveness of these technologies in addressing the concentrations of VOCs in groundwater within the identified 45-Foot Sand

zone located down-gradient of the former source area at the Site. The 45-Foot Sand Zone is present at the Bolsa Chica Reactive Zone from approximately 45 feet to 52 feet bgs.

4. The requirements for this Order were developed based upon the proposed scope of work, background information, and Site-specific data presented in the "Report of Waste Discharge – Order No. R8-2018-0092", dated August 30, 2024.

5. This Order consists of WDRs regulating in-situ remediation of the specified waste constituents, namely VOCs and 1,4-dioxane, in groundwater at the Site. The Santa Ana Water Board has determined that issuance of these individual WDRs is more appropriate than enrollment under Order R8-2018-0092, *General Waste Discharge Requirements for In-situ Groundwater Remediation at Sites Within the Santa Ana Region* (General Order*)*, given that the extent of the plume is beyond the treatment area and Compliance Points per the definition in the General Order must be outside of the plume boundary. Compliance Points outside of the plume boundary are not available at the Site because the groundwater plume originated from the Site has migrated to areas that are not accessible.

SOURCE AREA DISCHARGE CHARACTERISTICS

6. The first covered discharge, referred to as the Source Area, includes implementation of the pilot scale ISCO at a treatment area located in the vicinity of the former source areas to evaluate effectiveness of remedy in reducing concentrations of VOCs and 1,4-dioxane within the identified 45-Foot Sand and 75-Foot Sand zones using PerfulfOx® and sodium hydroxide[1].

7. The Source Area consists of two treatment areas. The treatment areas are referred to as the 45-Foot Sand Treatment Zone and the 75-Foot Sand Treatment Zone.

    a. The 45-Foot Sand Treatment Zone measures approximately 175 feet by 130 feet and consists of four injection wells with approximately 30-foot lateral spacing. The anticipated radius of influence (ROI) at the 45-Foot Sand Treatment Zone is approximately 20 feet (Attachment A – Plate 1). The treatment interval of the 45-Foot Sand Treatment Zone is approximately 52 to 72 feet bgs.

    b. The 75-Foot Sand Treatment Zone measures approximately 105 feet by 200 feet and consists of seven injection wells with approximately 30-foot lateral spacing. The anticipated ROI at the 75-Foot Sand Treatment Zone

[1] Chemical Abstracts Service (CAS) Number: 1310-73-0032

is approximately 20 feet (Attachment A – Plate 2). The treatment interval of the 75-Foot Sand Treatment Zone is approximately 78 to 110 feet bgs.

8. Injection of amendment in the Source Area will be conducted during two separate injection events. The first injection event is referred to as Stage 1 Injections. The second injection event is referred to as Stage 2 Injections.

    a. Stage 1 Injections will include injection of the amendment solution at each injection well and allow advective transport to distribute the solution through the treatment zones.

    b. Stage 2 Injections will include injection of amendment solution at each injection well combined with temporary groundwater extraction. Extracted groundwater will be treated above-ground using liquid granular activated carbon. The extracted groundwater will also be amended with the amendment solution and re-injected into the target treatment zone.

9. Implementation of Stage 2 Injections in the 45-Foot Sand and 75-Foot Sand Treatment Zones is subject to explicit written approval from Santa Ana Water Board Executive Officer.

10. Stage 1 Injections in 45-Foot Sand Treatment Zone: Up to a total of 15,200 gallons of amendment solution per injection well, consisting of 12,550 pounds of PersulfOx® (83 percent weight by volume), 14,100 gallons of water, and 1,100 gallons of 25 percent sodium hydroxide solution will be injected at wells INJ-1-45S and INJ-1-45D through INJ-3-45D during a single mobilization (Attachment A – Plate 1).

11. Stage 1 Injections in 75-Foot Sand Treatment Zone: Up to a total of 7,600 gallons of amendment solution per injection well, consisting of 6,280 pounds of PersulfOx® (83 percent weight by volume), 7,050 gallons of water, and 550 gallons of 25 percent sodium hydroxide solution will be injected at wells INJ-1-75S, INJ-2-75S, INJ-4-75S and INJ-1-75D through INJ-4-75D during a single mobilization (Attachment A – Plate 2).

12. Stage 2 Injections in 45-Foot Sand Treatment Zone: Up to a total of 15,200 gallons of amendment solution per injection well, consisting of 12,550 pounds of PersulfOx® (83 percent weight by volume), 14,100 gallons of water, and 1,100 gallons of 25 percent sodium hydroxide solution will be injected at wells INJ-1-45S and INJ-1-45D through INJ-3-45D (Attachment A – Plate 1).

13. Stage 2 Injections in 75-Foot Sand Treatment Zone: Up to a total of 7,600 gallons of amendment solution per injection well, consisting of 6,280 pounds of PersulfOx® (83 percent weight by volume), 7,050 gallons of water, and 550 gallons of 25 percent sodium hydroxide solution will be injected at wells INJ-1-

75S, INJ-2-75S, INJ-4-75S and INJ-1-75D through INJ-4-75D (Attachment A – Plate 2).

14. Amendments will be injected via injection wells within the Source Area Treatment area as indicated in Table 1a of the accompanying Monitoring and Reporting Program (M&RP) R8-2025-0032, depicted in Attachment B. The injections will target the 45-Foot Sand zone from approximately 52 to 70 feet bgs and the 75-Foot Sand zone from approximately 78 to 110 feet bgs.

15. The injections will be conducted with a maximum flow rate of 10 gallons per minute (gpm) and an injection pressure of 1 pound per square inch (psi) per foot of injection depth interval. The maximum injection pressure shall not exceed 70 psi.

16. Limited groundwater extraction will be conducted at six extraction wells (EXT-1-45S, EXT-1-45D, EXT-2-45S, EXT-2-45D, EXT-1-75, EXT-2-75) and three injection wells (INJ-2-45-S, INJ-2-45D, and INJ-2-75S), beginning approximately six months after completing the Stage 1 Injections to enhance the distribution of the amendment solution within each treatment zone. Extraction activities will occur on a continuous basis for an estimated duration of approximately ten days. Groundwater will be extracted at a maximum rate of 50 gpm per extraction well in the 45-Foot Sand Treatment Zone and 10 gpm per extraction well in the 75-Foot Sand Treatment Zone.

17. A network of 27 groundwater wells will be monitored before and after the implementation of the Source Area remediation to evaluate the groundwater quality within and outside the treatment areas. The groundwater monitoring wells are identified in Table 1c of the accompanying M&RP R8-2025-0032. Similarly, Tables 2a through 2d of the M&RP states that baseline samples will be collected for all constituents prior to implementation of in-situ remediation and post-implementation samples will be collected for select constituents on a monthly and quarterly basis. All groundwater samples must be collected following United States Environmental Protection Agency (US EPA) guidance for low-flow purging and sampling.

BOLSA CHICA REACTIVE ZONE DISCHARGE CHARACTERISTICS

18. The second covered discharge, referred to as the Bolsa Chica Reactive Zone, includes in-situ chemical reduction at a treatment area located down-gradient of the on-Site former source areas to evaluate the performance of the remedy in reducing concentrations of VOCs within the identified 45-Foot Sand zone using PlumeStop® and S-MicroZVI® and prevent of further migration of the groundwater plume to downgradient areas.

19. The Bolsa Chica Reactive Zone will be approximately 840 feet long with a treatment interval from approximately 38 to 55 feet bgs within the identified 45-Foot Sand Zone. Amendments will be injected via direct-push technology at 105 locations within the treatment area as indicated in Table 1d of the accompanying M&RP R8-2025-0032, depicted in Attachment B. Injection locations will have an approximate 8-foot spacing based on an estimated radius of influence of 5 feet.

20. Up to a total of 785 gallons of amendment solution per injection point, consisting of 80 gallons of PlumeStop®, 20 gallons of S-MicroZVI®, and 685 gallons of water, is authorized to be injected at points IP-1 through IP-105 (Attachment A – Plate 3).

21. The injections will be conducted with a maximum flow rate of 5 gpm and an injection pressure of 52 psi. The maximum injection pressure shall not exceed 70 psi.

22. A network of 15 groundwater wells will be monitored before and after the Bolsa Chica Reactive Zone remediation to evaluate performance of the remedy within and outside the treatment area. The groundwater monitoring wells are identified in Table 1e of the accompanying M&RP R8-2025-0032. Similarly, Table 2e of the M&RP states that baseline samples will be collected for all constituents prior to implementation of in-situ remediation and post-implementation samples will be collected for select constituents on a monthly and quarterly basis. All groundwater samples must be collected following US EPA guidance for low-flow purging and sampling.

BASIN PLAN AND RELATED REGULATORY CONSIDERATIONS

23. Water Code section 13263 authorizes the Santa Ana Water Board to prescribe WDRs as to the nature of any proposed or existing discharge with relation to the conditions existing in the disposal area or receiving waters upon, or into, which the discharge is made or proposed. The WDRs must implement relevant water quality control plans (Basin Plans) and take into consideration the beneficial uses of water to be protected, the water quality objectives reasonably required for that purpose, other waste discharges, the need to prevent nuisance, and the provisions of Water Code section 13241.

24. The Santa Ana Water Board adopted a revised Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) on March 11, 1994. The Basin Plan was subsequently approved by the State Water Resources Control Board (State Water Board) on July 21, 1994. Subsequent revisions to the Basin Plan have also been adopted by the Santa Ana Water Board and approved by the State Water Board as recently as November 2022. The Basin Plan identifies beneficial uses and water quality objectives for waters within the Santa Ana Region, including various Groundwater Management Zones (GMZs).

25. The Site is located within the Orange GMZ. The Basin Plan states that the beneficial uses of groundwater in the Orange GMZ are:

    a. Municipal and Domestic Supply (MUN),

    b. Agricultural Supply (AGR),

    c. Industrial Service Supply (IND), and

    d. Industrial Process Supply (PROC).

26. This Order establishes WDRs pursuant to division 7, chapter 4, article 4 of the Water Code for discharges that are not subject to regulation under Clean Water Act section 402 (33 U.S.C. § 1342). These WDRs implement numeric and narrative water quality objectives for groundwater and surface waters established by the Basin Plan and other applicable state and federal laws and policies.

27. It is the policy of the State of California that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes. Both the State Water Board and the Santa Ana Water Board recognized this right in Resolution No. 2016-0010 and Resolution R8-2019-0079, respectively. This Order supports the human right to water by including conditions to ensure proper cleanup and remediation of pollutants at the Site.

28. Consistent with Water Code section 13241, the Santa Ana Water Board, in establishing the requirements contained herein, considered factors including, but not limited to, the following:

    a. Past, present, and probable future beneficial uses of water.

    b. Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto.

    c. Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area.

    d. Economic considerations.

    e. The need for developing housing within the region.

    f. The need to develop and use recycled water.

29. Water Code section 13267 authorizes the Santa Ana Water Board to require technical and monitoring reports. M&RP R8-2025-0032 establishes monitoring

and reporting requirements necessary to evaluate compliance with the terms and conditions of this Order and to ensure protection of waters of the state. The burden, including costs of preparing the technical and monitoring reports, bears a reasonable relationship to the need for the reports and benefits to be obtained from them.

30. In accordance with California Code of Regulations, title 23, section 2200, a discharger for whom WDRs have been prescribed is required to submit an annual fee to the State Water Board. The annual fee is based on (1) the threat to water quality and (2) the complexity of the discharge, in accordance with the ratings in the annual fee schedule contained in section 2200. It is expected that the discharge covered by this Order will have a threat to water quality of Category 3 and a complexity rating of B, for a combined rating of 3-B. Category 3 is the lowest threat to water quality category, and Category B is the middle complexity rating, for dischargers that have a physical, chemical or biological treatment system, and do not meet the higher complexity rating definition for Category A. Discharges with a rating of 3-B contain pollutants that could degrade water quality or cause a minor impairment of designated beneficial uses within the treatment zone of the receiving groundwater.

ANTIDEGRADATION ANALYSIS

31. Pursuant to State Water Board Resolution No. 92-49, the Santa Ana Water Board must require actions for cleanup and abatement of discharges that cause or threaten to cause pollution or nuisance to conform to the provisions of State Water Board Resolution No. 68-16 (Resolution No. 68-16), *Statement of Policy with Respect to Maintaining High Quality Water in California*, and the Basin Plan. The Santa Ana Water Board must ensure that Dischargers are required to cleanup and abate the effects of discharges in a manner that promotes attainment of background water quality, or if background levels of water quality cannot be restored, the best water quality that is reasonable and complies with the Basin Plan, including applicable water quality objectives.

32. Resolution No. 68-16 generally prohibits the Santa Ana Water Board from authorizing discharges that will result in the degradation of high quality waters, unless it is demonstrated that any change in water quality will: (a) be consistent with maximum benefit to the people of the state, (b) not unreasonably affect beneficial uses, and (c) not result in water quality less than that prescribed in state and regional policies (e.g., the violation of one or more water quality objectives). The Discharger must also employ best practicable treatment or control (BPTC) to minimize the degradation of high-quality waters.

33. The temporary degradation allowed by this Order within the in-situ treatment zone is consistent with Resolution No. 68-16 because: (a) the purpose of discharging amendments to groundwater is to accelerate and enhance

remediation of groundwater pollution, and such remediation will benefit the people of the state; (b) the degradation is limited in scope and duration; (c) best practicable treatment and control, including adequate monitoring and hydraulic control to assure protection of water quality, are required by this Order; and (d) the proposed discharge is not anticipated to cause water quality objectives to be exceeded beyond the observation monitoring well network, and potential increases in concentrations above water quality objectives within the zone of distribution are expected to be temporary, and not result in any long-term deleterious effects on water quality.

CEQA AND PUBLIC PARTICIPATION

34. The Santa Ana Water Board is the lead agency pursuant to the California Environmental Quality Act (CEQA; Public Resources Code, section 21100 et seq.). The issuance of WDRs for the cleanup of the Site is exempt from CEQA in accordance with California Code of Regulations, title 14, sections 15301, 15308 and 15330.

35. The Santa Ana Water Board has notified interested agencies and persons of its intent to prescribe WDRs for the discharge associated with the in-situ remediation of groundwater at the Site and has provided them with an opportunity to submit written comments.

36. The Santa Ana Water Board, in a public meeting held on June 13, 2025, heard and considered all oral comments pertaining to the WDRs.

REQUIREMENTS

IT IS HEREBY ORDERED, pursuant to Water Code sections 13263 and 13267, that the Discharger shall comply with the following:

A. Discharge Prohibitions

1. The discharge of amendments or waste in a manner other than as described in this Order is prohibited.

2. The discharge of treated or untreated solid or liquid waste to surface waters or tributaries of surface waters is prohibited, unless authorized under a separate permit issued by the Santa Ana Water Board or State Water Board.

3. The use of any amendment other than the compounds identified in Findings 6 and 18 above is prohibited.

4. The discharge of any radiological, chemical, or biological warfare agent or high-level radiological waste is prohibited.

5. Discharges to groundwater and the surrounding geological formation that are conducted in a manner that increases the mobility and/or extent of the contaminants in groundwater through fracturing of the geologic formation are prohibited. Additionally, fracturing of an aquitard that separates two distinct water-bearing zones is prohibited under any condition.

6. The discharge of amendments or waste to property that is not owned or under the control of the Discharger is prohibited. The property “under the control” of the Discharger includes the horizontal borders of the treatment zone where the Discharger holds an access agreement with the overlying property owner for purposes of investigation and remediation.

B. Discharge Limitations and Specifications

1. The amendment injection program shall be implemented in such a manner as to minimize or prevent the surfacing of wastes or an overflow of wastes or chemicals used in the treatment process. Any injection that results in excessive surfacing of waste shall be discontinued, and measures shall immediately be taken to eliminate further surfacing.

2. The discharge of amendments shall not cause the total dissolved solids (TDS) concentration to exceed 580 milligrams per liter (mg/L), as specified in Table 4-1 of the Basin Plan for the Orange GMZ, at any location outside the treatment area, with compliance determined at the upgradient and downgradient wells specified in the M&RP. If the background TDS levels prior to injection of amendment exceed the water quality objective for TDS in the Orange GMZ, the discharge of amendments shall not cause increases of this parameter over the background levels.

3. The discharge of amendments shall not cause nitrogen as nitrate-nitrogen (NO_3-N) concentration to exceed 3.4 mg/L, as specified in Table 4-1 of the Basin Plan for the Orange GMZ, at any point outside the treatment area, with compliance determined at the upgradient and downgradient wells specified in the M&RP. If the background NO_3-N levels prior to injection of amendment exceed the water quality objective for NO_3-N in the Orange GMZ, the discharge of amendments shall not cause increases of this constituent over the background levels.

4. The discharge of amendments shall not cause the pH of the receiving groundwater to either exceed or be below the range of 6 to 9, at any point outside the treatment area, with compliance determined at the upgradient and downgradient wells specified in the M&RP.

5. The discharge of amendments shall not cause the remediation-target constituents, including their intermediate degradation products, to exceed

background concentrations at any location outside of the treatment area, with compliance determined at the upgradient and downgradient wells specified in the M&RP.

6. The discharge of amendments shall not cause any other applicable water quality objectives specified in the Basin Plan to be exceeded in the affected groundwater at any point outside the treatment area, with compliance determined at the upgradient and downgradient wells specified in the M&RP. If the background levels for any constituents prior to injection of amendment exceed water quality objectives for the Orange GMZ, the discharge of amendments shall not cause increases of constituents over the background levels.

7. The discharge shall not cause groundwater to contain taste- or odor-producing substances at concentrations that cause a nuisance or adversely affect beneficial uses at any location outside the treatment area, with compliance determined at the upgradient and downgradient wells specified in the M&RP.

8. The discharge of amendments shall not cause the concentrations of chemical constituents of the receiving groundwater, which is designated for use as domestic and municipal supply, to exceed state or federal maximum contaminant levels (MCLs) and/or notification levels (NLs) for drinking water at any location outside treatment area, with compliance determined at the upgradient and downgradient wells specified in the M&RP. If the background levels for any constituents prior to injection of amendment exceed the state or federal MCLs and/or NLs, the discharge of amendments shall not cause increases of constituents over the background levels.

9. The injection or reuse of treated groundwater shall be limited to the same aquifer where the impacted groundwater was withdrawn for treatment. Re-injection of treated groundwater to which materials or amendments have been added shall be limited to the same aquifer and within the treatment zone.

C. Monitoring and Reporting Program

1. The Discharger shall submit technical and monitoring reports to the Santa Ana Water Board in accordance with the M&RP R8-2025-0032 and as amended by the Executive Officer.

2. Among other things, the M&RP requires the Discharger to evaluate changes in geochemistry that may alter the oxidation/reduction state of one or more constituents, and consequently may result in the production

of undesirable compounds (such as hexavalent chromium) during the oxidation or reduction process of the in-situ remediation under these WDRs. Anticipated negative impacts to geochemistry as a result of implementation of remediation at the Site shall be addressed pursuant to the Contingency Plan identified in item K of the ROWD.

D. Provisions

1. **Noncompliance** – The Discharger shall comply with all of the terms, requirements, and conditions of this Order and M&RP R8-2025-0032. Noncompliance is a violation of the Porter-Cologne Water Quality Control Act (Wat. Code, §13000 et seq.) and grounds for: (1) an enforcement action; (2) termination, revocation and reissuance, or modification of this Order; or (3) denial of an Order renewal application.

2. **Proper Operation and Maintenance** – The Discharger shall, at all times, properly operate and maintain all facilities and systems of management and control (and related appurtenances) installed or used by the Discharger to achieve compliance with this Order. Proper operation and maintenance include, but are not limited to, effective performance, sufficient funding, appropriate quality assurance procedures, proper operator staffing and training, and adequate process controls. This provision requires the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of this Order.

3. **Reporting of Noncompliance** – The Discharger shall report any noncompliance that may endanger the environment. Information shall be provided orally to the Santa Ana Water Board office and the Office of Emergency Services within 24 hours of when the Discharger becomes aware of the incident. If noncompliance occurs outside of business hours, the Discharger shall leave a message on the Santa Ana Water Board's office voicemail. A written report shall also be provided within five business days of the time the Discharger becomes aware of the incident. The written report shall contain a description of the noncompliance and its cause, the period of noncompliance, the anticipated time to achieve full compliance, and the steps taken or planned, to reduce, eliminate, and prevent recurrence of the noncompliance. All other forms of noncompliance shall be reported with the Discharger's next scheduled Monitoring Report, or earlier if requested by the Executive Officer.

4. **Duty to Mitigate** – The Discharger shall take all reasonable steps to minimize or prevent any discharge in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment.

5. **Familiarity with Order** – The Discharger shall ensure that all site-operating personnel are familiar with the content of this Order and maintain a copy of this Order at the Site.

6. **Material Changes** – Before initiating a new discharge or making a material change in the character, location, or volume of an existing discharge, the Discharger shall report all pertinent information in writing to the Santa Ana Water Board, and if required by the Santa Ana Water Board, obtain revised requirements before any modifications are implemented. A material change includes, but is not limited to, the following:

    a. An increase in area or depth to be treated beyond that specified in the Order; or

    b. A change in the type of amendment being used at the Site.

7. **Inspection and Entry** – The Discharger shall allow the Santa Ana Water Board or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

    a. Enter upon the premises regulated by this Order, or the place where records are kept under the conditions of this Order;

    b. Have access to and copy, at reasonable times, any records kept under the conditions of this Order;

    c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and

    d. Sample or monitor at reasonable times, for the purpose of assuring compliance with this Order, or as otherwise authorized by the Water Code, any substances or parameters at any location.

8. **Records Retention** – The Discharger shall retain copies of all reports required by this Order and the associated M&RP. Records shall be maintained for the duration of cleanup activities and a minimum of five years from the date of the sample, measurement, report, or application. Records may be maintained electronically. This period may be extended during the course of any unresolved litigation or when requested by the Santa Ana Water Board's Executive Officer.

9. **Change in Ownership** – This Order is not transferable to any person without written approval by the Santa Ana Water Board's Executive Officer. Prior to any change in ownership, the Discharger shall notify the

Executive Officer in writing at least 30 days in advance. The notice must include a written transfer agreement between the existing owner and the new owner. At a minimum, the transfer agreement must contain a specific date for transfer of responsibility for compliance with this Order and an acknowledgment that the new owner or operator is liable for compliance with this Order from the date of transfer. The Santa Ana Water Board may require modification or revocation and reissuance of this Order to change the name of the Discharger and incorporate other requirements as may be necessary under the Water Code.

10. **Monitoring Wells**– The Discharger shall comply with all notice and reporting requirements of the California Department of Water Resources and with any well permitting requirements imposed by a local agency regarding the construction, alteration, destruction, maintenance, or abandonment of any monitoring wells used for compliance with this Order and the accompanying M&RP, as required under Water Code sections 13751 and 13755 and local agency requirements.

11. **Qualified Professionals** – In accordance with Business and Professions Code sections 6735, 7835, and 7835.1, engineering and geologic evaluations and judgments shall be performed by or under the direction of California registered professionals (i.e., civil engineer, engineering geologist, geologist, etc.) competent and proficient in the fields pertinent to the required activities. All technical reports required under this Order that contain work plans, describe the conduct of investigations and studies, or contain technical conclusions and recommendations concerning engineering and geology shall be prepared by or under the direction of appropriately qualified professional(s), even if not explicitly stated. Each technical report submitted by the Discharger shall contain a statement of qualifications of the responsible licensed professional(s) as well as the professional's signature and/or stamp of the seal. Additionally, all field activities are to be conducted under the direct supervision of one or more of these professionals.

12. **Certification of Submitted Documents** – All documents submitted to the Santa Ana Water Board shall be signed and certified as follows:

    a. Documents shall be submitted with signatures from the following persons, depending on the type of Discharger:

        i. For a corporation – by a responsible corporate officer of at least the level of vice-president.

        ii. For a partnership or sole proprietorship – by a general partner or the proprietor, respectively.

iii. For a municipality, state, federal or other public agency – by either a principal executive officer or ranking elected official.

iv. For a military installation – by the base commander or the person with overall responsibility for environmental matters in that branch of the military.

b. A duly authorized representative of a person identified in subsection (a) of this provision may sign and certify documents only if:

i. The authorization is made in writing by the person described in subsection (a) of this provision;

ii. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity; and

iii. The written authorization is submitted to the Executive Officer.

c. Any person signing a document under this provision shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

13. **Compliance with Other Laws** – This Order does not authorize the violation of any other applicable federal, state, or local laws and regulations.

14. **Other Permits** – This Order does not alleviate the responsibility of the Discharger to obtain other applicable local, state, and federal permits necessary for compliance with this Order; nor does this Order prevent imposition of additional standards, requirements, or conditions by any other regulatory agency.

15. **No Vested Right to Discharge** – In accordance with Water Code section 13263(g), this Order does not create a vested right to continue to discharge and is subject to rescission and/or modification. The discharge of waste into the waters of the state is a privilege, not a right.

16. **Modification, Revocation, Termination** – This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for an Order modification, rescission, or reissuance, or the Discharger's notification of planned changes or anticipated noncompliance, does not stay any Order condition. Causes for modification include, but are not limited to, the violation of any term or condition contained in this Order, a material change in the character, location, or volume of discharge, a change in land application plans or disposal practices, or the adoption of new regulations by the State Water Board, Santa Ana Water Board (including revisions to the Basin Plan), or federal government.

17. **Severability** – The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.

18. **Effective Date** – This Order becomes effective on the date of adoption by the Santa Ana Water Board.

LIST OF ATTACHMENTS

Attachment A – Plate 1 – Source Area 45-Foot Sand Treatment Zone and Associated Injection and Monitoring Network

Plate 2 – Source Area 75-Foot Sand Treatment Zone and Associated Injection and Monitoring Network

Plate 3 – Bolsa Chica Reactive Zone and Associated Injection and Monitoring Network

Attachment B – Monitoring and Reporting Program R8-2025-0032

ENFORCEMENT

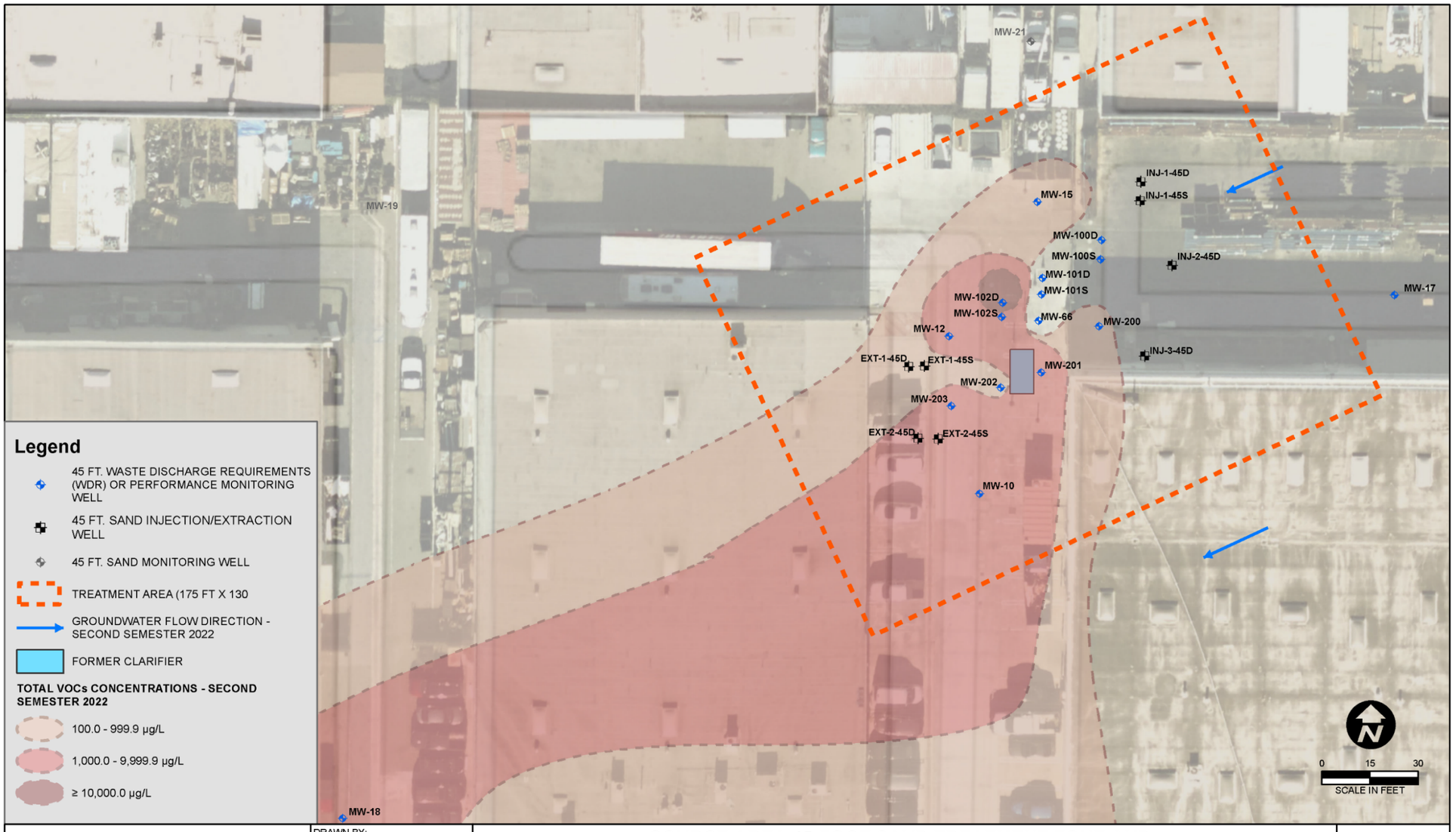
The Santa Ana Water Board reserves the right to take any enforcement action authorized by law. Accordingly, failure to timely comply with any provisions of this Order may subject the Discharger to enforcement action. Such actions include, but are not limited to, the assessment of administrative civil liability pursuant to Water Code

sections 13323, 13268, and 13350, a Time Schedule Order (TSO) issued pursuant to Water Code sections 13300 and 13308, or referral to the California Attorney General for recovery of judicial civil liability.

ADMINISTRATIVE REVIEW

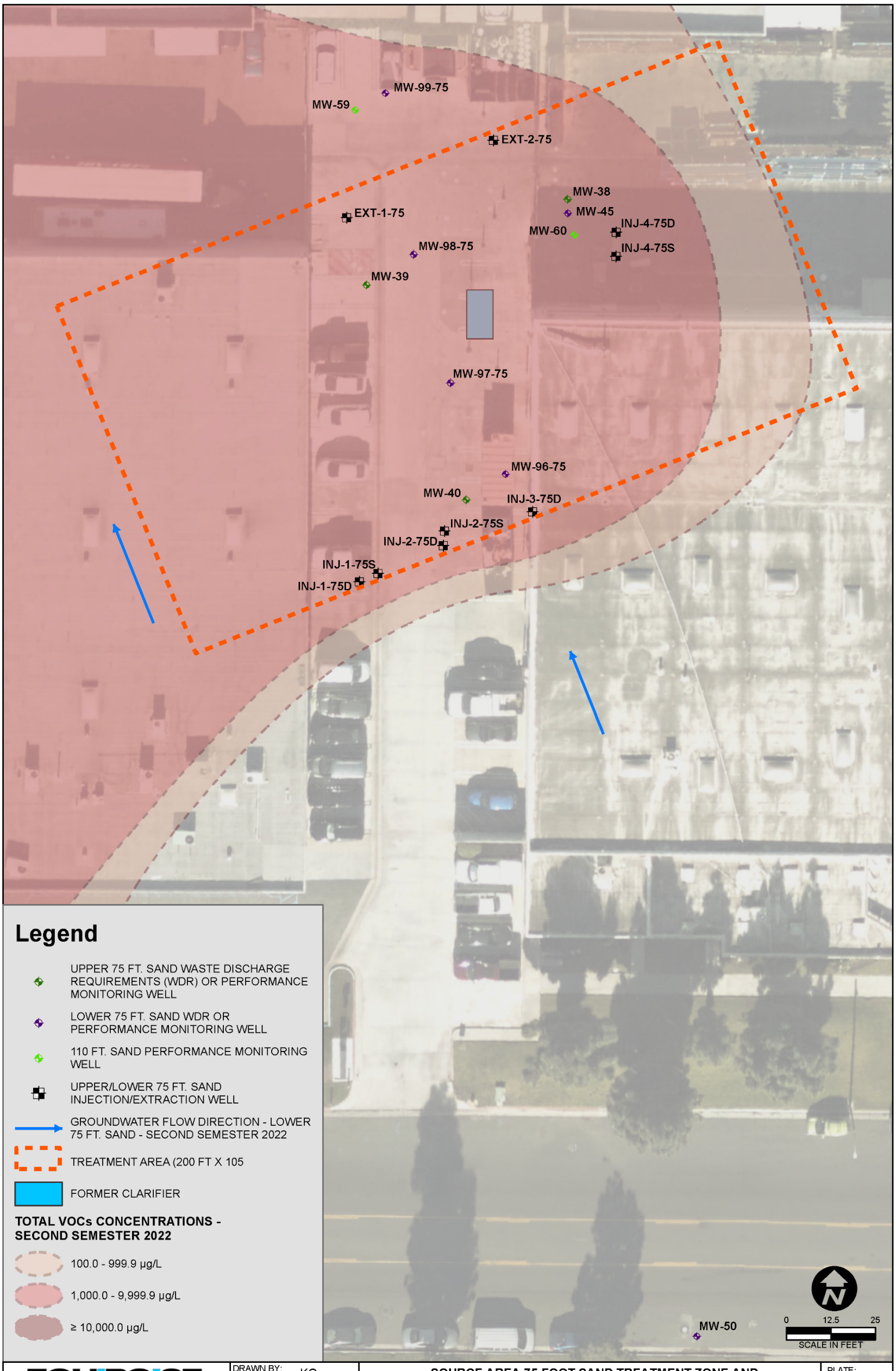
Any person aggrieved by this Santa Ana Water Board action may petition the State Water Board for review in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 2050 et seq. To be timely, the petition must be received by the State Water Board by 5:00 pm on the 30th day after the date of this Order; if the 30th day falls on a Saturday, Sunday or state holiday, the petition must be received by the State Water Board by 5:00 pm on the next business day. The law and regulations applicable to filing petitions are available on the State Water Board website (http://www.waterboards.ca.gov/public_notices/petitions/water_quality). Copies will also be provided upon request.

ATTACHMENT A - PLATE 1 – SOURCE AREA 45-FOOT SAND TREATMENT ZONE AND ASSOCIATED INJECTION AND MONITORING NETWORK



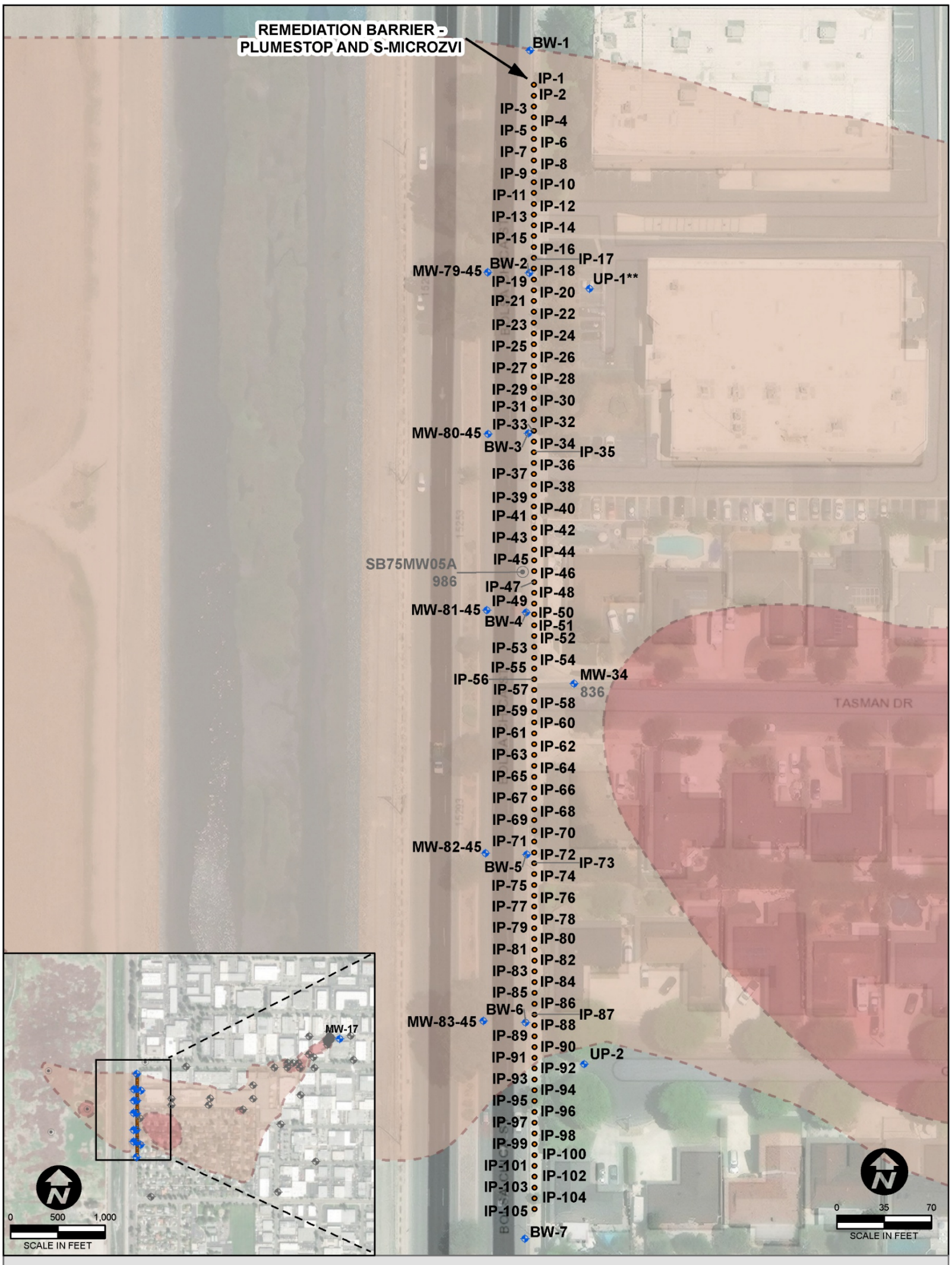
EQUIPOISE CORPORATION	DRAWN BY: KG	SOURCE AREA 45-FOOT SAND TREATMENT ZONE AND ASSOCIATED INJECTION AND MONITORING NETWORK	PLATE: 1
	CHECKED BY: SP	BAKER HUGHES CENTRILIFT FACILITY 5421 ARGOSY AVENUE, HUNTINGTON BEACH, CALIFORNIA	
FILE NAME: PLATE X-ZOOM PT LOCATIONS-45.MXD	DATE: APRIL 2025		

ATTACHMENT A - PLATE 2 – SOURCE AREA 75-FOOT SAND TREATMENT ZONE AND ASSOCIATED INJECTION AND MONITORING NETWORK



EQUIPOISE CORPORATION	DRAWN BY: KG CHECKED BY: SP	SOURCE AREA 75-FOOT SAND TREATMENT ZONE AND ASSOCIATED INJECTION AND MONITORING NETWORK	PLATE: 2
FILE NAME: PLATE X-PORTRAIT PT LOCATIONS-75.MXD	DATE: APRIL 2025	BAKER HUGHES CENTRILIFT FACILITY 5421 ARGOSY AVENUE, HUNTINGTON BEACH, CALIFORNIA	

ATTACHMENT A - PLATE 3 – BOLSA CHICA REACTIVE ZONE AND ASSOCIATED INJECTION AND MONITORING NETWORK



Legend

- 45 FT. SAND WASTE DISCHARGE REQUIREMENTS (WDR) OR PERFORMANCE MONITORING WELL
- 45 FT. SAND MONITORING WELL
- DIRECT PUSH INJECTION POINT - RADIUS OF INFLUENCE (ROI) = 5 FEET
- 986 TOTAL VOLATILE ORGANIC COMPOUNDS (V0Cs) CONCENTRATIONS IN MICROGRAMS PER LITER (µg/L)

TOTAL VOCs CONCENTRATIONS - SECOND SEMESTER 2022

- 100.0 - 999.9 µg/L
- 1,000.0 - 9,999.9 µg/L
- ≥ 10,000.0 µg/L

NOTES:
**PLANNING AND COORDINATION FOR INSTALLATION OF WELL UP-1 IS ONGOING AS OF 12/20/2024.
CHEMICAL ANALYTICAL RESULTS USED FROM GROUNDWATER MONITORING WELLS OWNED AND SAMPLED BY OTHER PARTIES.

EQUIPOISE CORPORATION	DRAWN BY: KG CHECKED BY: SP	BOLSA CHICA REACTIVE ZONE AND ASSOCIATED INJECTION AND MONITORING NETWORK	PLATE: 3
FILE NAME: PLATE X-PORTRAIT - WDR AND PMW.MXD	DATE: APRIL 2025	BAKER HUGHES CENTRILIFT FACILITY 5421 ARGOSY AVENUE, HUNTINGTON BEACH, CALIFORNIA	

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SANTA ANA REGION

MONITORING AND REPORTING PROGRAM R8-2025-0032 FOR IN-SITU REMEDIATION OF GROUNDWATER AT CENTRILIFT FACILITY 5421 ARGOSY AVENUE, HUNTINGTON BEACH

This Monitoring and Reporting Program (M&RP) is issued to Baker Hughes Company (Discharger) pursuant to Water Code section 13267. The monitoring requirements in this M&RP are necessary to determine if the Discharger is in compliance with Waste Discharge Requirements (WDRs) Order R8-2025-0032 (Order) authorizing in-situ remediation of groundwater at Centrilift Facility, 5421 Argosy Avenue in the City of Huntington Beach (Site). The Discharger shall not implement any changes to this M&RP unless a revised M&RP is issued by the California Regional Water Quality Control Board, Santa Ana Region (Santa Ana Water Board) or its Executive Officer.

A. Monitoring Requirements

1. **Testing and Analytical Methods.** All sampling, sample preservation, transport and analyses must be conducted in according with the current edition of "Standard Methods for the Examination of Water and Wastewater" (American Public Health Association) and/or with U.S. Environmental Protection Agency's guidelines for sampling, collection, and preservation, unless other test procedures have been specified in this M&RP or by the Executive Officer.

2. **Laboratory Certification.** Unless otherwise permitted by the Executive Officer, all analyses shall be conducted at a laboratory certified to perform such analyses by the State Water Resources Control Board, Division of Drinking Water's Environmental Laboratory Accreditation Program (ELAP). Certified laboratories can be found at the following website: www.waterboards.ca.gov\elap.

3. **Reporting Levels.** Laboratory data must quantify each constituent down to the approved reporting levels for specific constituents. All analytical data shall be reported with method detection limits (MDLs) and with either the reporting level or limits of quantitation (LOQs) according to 40 Code of Federal Regulations part 136, Appendix B.

4. **Increased Monitoring Frequency.** If the Discharger monitors any pollutants more frequently than required by this M&RP, using applicable test procedures, or as specified in this Order, the results of this monitoring shall be included in

the calculation and reporting of the data submitted in the Discharger's monitoring report. The increased frequency of monitoring shall also be reported.

5. **Quality Assurance of Data.** Monitoring data collected to meet the requirements of this M&RP must be collected and analyzed in a manner that ensures the quality of the data. The Discharger must follow sampling and analytical procedures as specified in the approved Quality Assurance Project Plan (QAPP). Any internal quality control data associated with each sample must be reported when requested by the Executive Officer. The Santa Ana Water Board will reject the quantified laboratory data if quality control data are unavailable or unacceptable.

6. **Instrumentation and Calibration.** All monitoring instruments and devices which are used by the Discharger shall be properly maintained and calibrated as necessary to ensure their continued accuracy.

7. **Representative Sampling.** Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

8. **Monthly Samples.** Monthly samples shall be collected on any representative day of each month.

9. **Records Retention.** The Discharger shall assure that records of all monitoring information are maintained and accessible for a period of at least five years from the date of the sample, report, or application. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge or by the request of the Executive Officer at any time. Records of monitoring information shall include:

    a. The date, exact place, and time of sampling or measurements;
    b. The individual(s) who performed the sampling, and/or measurements;
    c. The methods used for groundwater purging/sampling;
    d. The date(s) analyses were performed;
    e. The individual(s) who performed the analyses;
    f. The analytical techniques or method used; and
    g. All sampling and analytical results, including –
        i. units of measurement used;
        ii. minimum reporting limit for the analysis (minimum level);

iii. results less than the reporting limit but above the method detection limit (MDL);

iv. data qualifiers and a description of the qualifiers;

v. quality control test results (and a written copy of the laboratory quality assurance plan);

vi. dilution factors, if used; and

vii. sample matrix type.

B. Monitoring Plan

A sampling station shall be established for each point of discharge and shall be located where representative samples of the discharge can be obtained. Tables 1a and 1d specify each point of injection. Table 1b specifies each point of extraction. The following monitoring wells specified in Tables 1c and 1e shall be used for the monitoring program. Tables 2a through 2e provide the monitoring parameters that must be sampled and the required frequency of sampling.

Table 1a. Source Area Injection Well Location Information

Injection Point Identification Number	Latitude	Longitude	Elevation[1]
INJ-1-45S	33.74198	-118.03480	18.8
INJ-1-45D	33.74200	-118.03480	18.8
INJ-2-45D	33.74193	-118.03477	18.8
INJ-3-45D	33.74185	-118.03479	19.4
INJ-1-75S	33.74164	-118.03501	18.4
INJ-1-75D	33.74163	-118.03503	18.7
INJ-2-75S	33.74167	-118.03495	19.0
INJ-2-75D	33.74166	-118.03495	18.9
INJ-3-75D	33.74168	-118.03487	19.5
INJ-4-75S	33.74188	-118.03480	19.1
INJ-4-75D	33.74190	-118.03480	19.0

Notes:

1. Elevation is estimated from the ground surface in feet above mean sea level (amsl).

Table 1b. Source Area Extraction Well Location Information

Injection Point Identification Number	Latitude	Longitude	Elevation[1]
EXT-1-45S	33.74184	-118.03502	18.6
EXT-1-45D	33.74184	-118.03504	18.8
EXT-2-45S	33.74178	-118.03500	18.2
EXT-2-45D	33.74178	-118.03503	18.6
EXT-1-75	33.74191	-118.03505	18.7
EXT-2-75	33.74197	-118.03491	18.5

Notes:

1. Elevation is estimated from the ground surface in feet above mean sea level (amsl).

Table 1c. Source Area Monitoring Well Information

Well ID	Latitude	Longitude	TOC Elevation[1]
MW-10	33.74173	-118.03496	18.9
MW-12	33.74187	-118.03500	18.0
MW-15	33.74198	-118.03491	18.5
MW-17	33.74191	-118.03448	19.3
MW-18	33.74144	-118.03561	18.7
MW-38	33.74193	-118.03484	18.7
MW-39	33.74186	-118.03503	18.5
MW-40	33.74169	-118.03493	19.1
MW-45	33.74192	-118.03484	18.8
MW-50	33.74105	-118.03470	17.1
MW-59	33.74199	-118.03504	18.5
MW-60	33.74190	-118.03483	19.0
MW-66	33.74188	-118.03490	18.6
MW-96-75	33.74171	-118.03489	19.2
MW-97-75	33.74178	-118.03495	18.5
MW-98-75	33.74188	-118.03498	18.2
MW-99-75	33.74201	-118.03501	18.7
MW-100S	33.74193	-118.03484	18.7

Well ID	Latitude	Longitude	TOC Elevation[1]
MW-100D	33.74195	-118.03484	18.6
MW-101S	33.74190	-118.03490	18.6
MW-101D	33.74192	-118.03490	18.6
MW-102S	33.74188	-118.03494	18.6
MW-102D	33.74190	-118.03494	18.3
MW-200	33.74188	-118.03484	19.2
MW-201	33.74184	-118.03490	19.0
MW-202	33.74182	-118.03494	18.7
MW-203	33.74181	-118.03499	18.1

Notes:

1. Elevation is measured from the top of the well casing (TOC) in feet amsl.

Table 1d. Bolsa Chica Reactive Zone Direct-Push Injection Point Location[1] Information

Injection Point Identification Number	Latitude	Longitude	Elevation[2]
IP-1	33.74080	-118.04157	14.1
IP-2	33.74078	-118.04157	14.1
IP-3	33.74076	-118.04157	14.1
IP-4	33.74073	-118.04157	14.1
IP-5	33.74071	-118.04157	14.1
IP-6	33.74069	-118.04157	14.1
IP-7	33.74067	-118.04157	14.1
IP-8	33.74065	-118.04157	14.1
IP-9	33.74062	-118.04157	14.1
IP-10	33.74060	-118.04157	14.1
IP-11	33.74058	-118.04157	14.1
IP-12	33.74056	-118.04157	14.0
IP-13	33.74054	-118.04157	14.0
IP-14	33.74051	-118.04157	14.0
IP-15	33.74049	-118.04157	14.0
IP-16	33.74047	-118.04157	14.0

Injection Point Identification Number	Latitude	Longitude	Elevation[2]
IP-17	33.74045	-118.04157	14.0
IP-18	33.74043	-118.04157	14.0
IP-19	33.74040	-118.04156	14.0
IP-20	33.74038	-118.04156	14.0
IP-21	33.74036	-118.04156	14.0
IP-22	33.74034	-118.04156	14.0
IP-23	33.74032	-118.04156	14.0
IP-24	33.74029	-118.04156	14.0
IP-25	33.74027	-118.04156	14.0
IP-26	33.74025	-118.04156	14.0
IP-27	33.74023	-118.04156	14.0
IP-28	33.74021	-118.04156	14.0
IP-29	33.74018	-118.04156	14.0
IP-30	33.74016	-118.04156	13.8
IP-31	33.74014	-118.04156	13.8
IP-32	33.74012	-118.04156	13.8
IP-33	33.74010	-118.04156	13.8
IP-34	33.74007	-118.04156	13.8
IP-35	33.74005	-118.04156	13.8
IP-36	33.74003	-118.04156	13.8
IP-37	33.74001	-118.04156	13.8
IP-38	33.73999	-118.04156	13.8
IP-39	33.73996	-118.04156	13.8
IP-40	33.73994	-118.04155	13.8
IP-41	33.73992	-118.04155	13.8
IP-42	33.73990	-118.04155	13.8
IP-43	33.73988	-118.04155	13.8
IP-44	33.73985	-118.04155	13.8
IP-45	33.73983	-118.04155	13.5
IP-46	33.73981	-118.04155	13.5
IP-47	33.73979	-118.04155	13.5
IP-48	33.73977	-118.04155	13.5
IP-49	33.73974	-118.04155	13.5
IP-50	33.73972	-118.04155	13.5
IP-51	33.73970	-118.04155	13.5
IP-52	33.73968	-118.04155	13.5
IP-53	33.73966	-118.04155	13.5

Injection Point Identification Number	Latitude	Longitude	Elevation[2]
IP-54	33.73963	-118.04155	13.5
IP-55	33.73961	-118.04155	13.5
IP-56	33.73959	-118.04155	13.5
IP-57	33.73957	-118.04155	13.5
IP-58	33.73955	-118.04155	13.5
IP-59	33.73952	-118.04155	13.5
IP-60	33.73950	-118.04155	13.5
IP-61	33.73948	-118.04155	13.5
IP-62	33.73946	-118.04154	13.5
IP-63	33.73944	-118.04154	13.5
IP-64	33.73941	-118.04154	13.5
IP-65	33.73939	-118.04154	13.3
IP-66	33.73937	-118.04154	13.3
IP-67	33.73935	-118.04154	13.3
IP-68	33.73933	-118.04154	13.3
IP-69	33.73930	-118.04154	13.3
IP-70	33.73928	-118.04154	13.3
IP-71	33.73926	-118.04154	13.3
IP-72	33.73924	-118.04154	13.3
IP-73	33.73922	-118.04154	13.3
IP-74	33.73919	-118.04154	13.3
IP-75	33.73917	-118.04154	13.3
IP-76	33.73915	-118.04154	13.3
IP-77	33.73913	-118.04154	13.3
IP-78	33.73911	-118.04154	13.3
IP-79	33.73908	-118.04154	13.3
IP-80	33.73906	-118.04154	13.3
IP-81	33.73904	-118.04154	13.3
IP-82	33.73902	-118.04154	13.3
IP-83	33.73900	-118.04153	13.3
IP-84	33.73897	-118.04153	13.2
IP-85	33.73895	-118.04153	13.2
IP-86	33.73893	-118.04153	13.2
IP-87	33.73891	-118.04153	13.2
IP-88	33.73889	-118.04153	13.2
IP-89	33.73886	-118.04153	13.2
IP-90	33.73884	-118.04153	13.2

Injection Point Identification Number	Latitude	Longitude	Elevation[2]
IP-91	33.73882	-118.04153	13.2
IP-92	33.73880	-118.04153	13.2
IP-93	33.73878	-118.04153	13.2
IP-94	33.73875	-118.04153	13.2
IP-95	33.73873	-118.04153	13.2
IP-96	33.73871	-118.04153	13.2
IP-97	33.73869	-118.04153	13.2
IP-98	33.73867	-118.04153	13.2
IP-99	33.73864	-118.04153	13.2
IP-100	33.73862	-118.04153	13.2
IP-101	33.73860	-118.04153	13.2
IP-102	33.73858	-118.04153	13.2
IP-103	33.73856	-118.04153	13.2
IP-104	33.73854	-118.04152	13.2
IP-105	33.73851	-118.04152	13.2

Notes:

1. Latitude, longitude, and elevation for direct push injection locations are approximate.
2. Elevation is estimated from the ground surface in feet above mean sea level (amsl).

Table 1e. Bolsa Chica Reactive Zone Monitoring Well Information

Well ID	Latitude	Longitude	TOC Elevation[1]
UP-1*	33.74031	-118.04143	14.0
UP-2	33.73873	-118.04141	13.3
BW-1	33.74079	-118.04158	14.1
BW-2	33.74034	-118.04157	14.0
BW-3	33.74001	-118.04157	13.8
BW-4	33.73965	-118.04157	13.5
BW-5	33.73915	-118.04156	13.3
BW-6	33.73881	-118.04155	13.2
BW-7	33.73837	-118.04154	13.2
MW-34	33.73950	-118.04145	13.5

Well ID	Latitude	Longitude	TOC Elevation[1]
MW-79-45	33.74034	-118.04168	14.6
MW-80-45	33.74001	-118.04167	14.5
MW-81-45	33.73965	-118.04166	14.5
MW-82-45	33.73916	-118.04166	14.2
MW-83-45	33.73881	-118.04166	14.0

Notes:

1. Elevation is measured from the top of the well casing (TOC) in feet amsl.

* denotes proposed monitoring well ID

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Table 2a. Source Area – 45-Foot Sand – Stage 1 Injections Monitoring[1] Parameters and Frequency[2,3]

Sample Parameters	Parameter Type	Unit	Method of Analysis[4]	Sample Locations	Baseline	Week 2	Month 1 and Month 2	Quarterly[5]
Field Parameters[6]	General Groundwater Parameters	-[7]	Field Measurement	MW-10, MW-12, MW-15, MW-17, MW-18, MW-66, MW-100S, MW-100D, MW-101S, MW-101D, MW-102S, MW-102D, MW-200, MW-201, MW-202, MW-203	X	X[8]	X	X
Volatile Organic Compounds (VOCs)	Contaminants of Concern	µg/L	EPA Method 8260B	MW-10, MW-12, MW-15, MW-17, MW-18, MW-66, MW-100S, MW-100D, MW-101S, MW-101D, MW-102S, MW-102D, MW-200, MW-201, MW-202, MW-203	X	X	X	X
1,4-Dioxane	Contaminants of Concern	µg/L	EPA Method 8270C SIM	MW-10, MW-12, MW-15, MW-17, MW-18, MW-66, MW-100S, MW-100D, MW-101S, MW-101D, MW-102S, MW-102D, MW-200, MW-201, MW-202, MW-203	X	X	X	X
Hexavalent Chromium	By Product of ISCO	µg/L	EPA Method 7199	MW-10, MW-12, MW-15, MW-17, MW-18, MW-66, MW-100S, MW-100D, MW-101S, MW-101D, MW-102S, MW-102D, MW-200, MW-201, MW-202, MW-203	X	X	X	X
Carbon Dioxide	Dissolved Gases	µg/L	RSK-175M	MW-12, MW-15, MW-66, MW-100S, MW-100D, MW-102S, MW-102D, MW-200, MW-201, MW-203	X	X	X	X
Sodium	Reaction By-Product	mg/L	EPA Method 6010B	MW-12, MW-15, MW-66, MW-100S, MW-100D, MW-102S, MW-102D, MW-200, MW-201, MW-203	X	X	X	X
Alkalinity	Water Quality Parameter	mg/L	SM 2320B	MW-12, MW-15, MW-100S, MW-100D, MW-101S, MW-101D, MW-200, MW-201, MW-203	X	X	X	X
Title 22 Metals	Metals	mg/L	EPA Method 6010B	MW-12, MW-15, MW-100S, MW-100D, MW-101S, MW-101D, MW-200, MW-201, MW-203	X	X	X	X

Abbreviations: µg/L = micrograms per liter, mg/L = milligrams per liter, µS/cm = microsiemens per centimeter, mV = millivolts, NTU = nephelometric turbidity units, °F = degrees Fahrenheit, ISCO = In-Situ Chemical Oxidation.

Notes:

1. Groundwater monitoring samples must be collected following U.S. Environmental Protection Agency guidance for low-flow purging and sampling.
2. Monitoring parameters and frequency are subject to modification by the Executive Officer.
3. Sampling events must be conducted as required by this M&RP upon completion of the Stage 1 injection event during a single mobilization.
4. Samples shall be analyzed using methods approved by State Water Resources Control Board, Division of Drinking Water's Environmental Laboratory Accreditation Program (ELAP).
5. A minimum of two quarterly post-injection events are required upon completion of the Stage 1 injection event during a single mobilization.
6. Field parameters include dissolved oxygen (mg/L), oxidation-reduction potential (mV), electrical conductivity (µS/cm), turbidity (NTU), temperature (°F), and pH (standard unit [SU]).
7. See the description of field parameters.
8. X denotes sampling and analysis for the underlined wells only.

Table 2b. Source Area – 75-Foot Sand – Stage 1 Zone Monitoring[1] Parameters and Frequency[2,3]

Sample Parameters	Parameter Type	Unit	Method of Analysis[4]	Sample Locations	Baseline	Week 2	Month 1 and Month 2	Quarterly[5]
Field Parameters[6]	General Groundwater Parameters	-[7]	Field Measurement	MW-38, MW-39, MW-40, MW-45, MW-50, MW-59, MW-60, MW-96-75, MW-97-75, MW-98-75, MW-99-75	X	X[8]	X	X
Volatile Organic Compounds (VOCs)	Contaminants of Concern	µg/L	EPA Method 8260B	MW-38, MW-39, MW-40, MW-45, MW-50, MW-59, MW-60, MW-96-75, MW-97-75, MW-98-75, MW-99-75	X	X	X	X
1,4-Dioxane	Contaminants of Concern	µg/L	EPA Method 8270C SIM	MW-38, MW-39, MW-40, MW-45, MW-50, MW-59, MW-60, MW-96-75, MW-97-75, MW-98-75, MW-99-75	X	X	X	X
Hexavalent Chromium	By Product of ISCO	µg/L	EPA Method 7199	MW-38, MW-39, MW-40, MW-45, MW-50, MW-59, MW-60, MW-96-75, MW-97-75, MW-98-75, MW-99-75	X	X	X	X
Carbon Dioxide	Dissolved Gases	µg/L	RSK-175M	MW-38, MW-39, MW-40, MW-45, MW-60, MW-96-75, MW-98-75	X	X	X	X
Sodium	Reaction By-Product	mg/L	EPA Method 6010B	MW-38, MW-39, MW-40, MW-45, MW-60, MW-96-75, MW-98-75	X	X	X	X
Alkalinity	Water Quality Parameter	mg/L	SM 2320B	MW-38, MW-39, MW-40, MW-45, MW-50, MW-60, MW-96-75, MW-97-75, MW-98-75	X	X	X	X
Title 22 Metals	Metals	mg/L	EPA Method 6010B	MW-38, MW-39, MW-40, MW-45, MW-50, MW-60, MW-96-75, MW-97-75, MW-98-75	X	X	X	X

Abbreviations: µg/L = micrograms per liter, mg/L = milligrams per liter, µS/cm = microsiemens per centimeter, mV = millivolts, NTU = nephelometric turbidity units, °F = degrees Fahrenheit, ISCO = In-Situ Chemical Oxidation.

Notes:

1. Groundwater monitoring samples must be collected following U.S. Environmental Protection Agency guidance for low-flow purging and sampling.
2. Monitoring parameters and frequency are subject to modification by the Executive Officer.
3. Sampling events must be conducted as required by this M&RP upon completion of the Stage 1 injection event during a single mobilization.
4. Samples shall be analyzed using methods approved by State Water Resources Control Board, Division of Drinking Water's Environmental Laboratory Accreditation Program (ELAP).
5. A minimum of two quarterly post-injection events are required upon completion of the Stage 1 injection event during a single mobilization.
6. Field parameters include dissolved oxygen (mg/L), oxidation-reduction potential (mV), electrical conductivity (µS/cm), turbidity (NTU), temperature (°F), and pH (standard unit [SU]).
7. See the description of field parameters.
8. X denotes sampling and analysis for the underlined wells only.

Table 2c. Source Area – 45-Foot Sand – Stage 2 Zone Monitoring[1] Parameters and Frequency[2,3]

Sample Parameters	Parameter Type	Unit	Method of Analysis[4]	Sample Locations	Week 2	Month 1 and Month 2	Quarterly[5]
Field Parameters[6]	General Groundwater Parameters	-[7]	Field Measurement	MW-10, MW-12, MW-15, MW-17, MW-18, MW-66, MW-100S, MW-100D, MW-101S, MW-101D, MW-102S, MW-102D, MW-200, MW-201, MW-202, MW-203	X	X	X[8]
Volatile Organic Compounds (VOCs)	Contaminants of Concern	µg/L	EPA Method 8260B	MW-10, MW-12, MW-15, MW-17, MW-18, MW-66, MW-100S, MW-100D, MW-101S, MW-101D, MW-102S, MW-102D, MW-200, MW-201, MW-202, MW-203	X	X	X
1,4-Dioxane	Contaminants of Concern	µg/L	EPA Method 8270C SIM	MW-10, MW-12, MW-15, MW-17, MW-18, MW-66, MW-100S, MW-100D, MW-101S, MW-101D, MW-102S, MW-102D, MW-200, MW-201, MW-202, MW-203	X	X	X
Hexavalent Chromium	By Product of ISCO	µg/L	EPA Method 7199	MW-10, MW-12, MW-15, MW-17, MW-18, MW-66, MW-100S, MW-100D, MW-101S, MW-101D, MW-102S, MW-102D, MW-200, MW-201, MW-202, MW-203	X	X	X
Carbon Dioxide	Dissolved Gases	µg/L	RSK-175M	MW-12, MW-15, MW-66, MW-100S, MW-100D, MW-102S, MW-102D, MW-200, MW-201, MW-203	X	X	X
Sodium	Reaction By-Product	mg/L	EPA Method 6010B	MW-12, MW-15, MW-66, MW-100S, MW-100D, MW-102S, MW-102D, MW-200, MW-201, MW-203	X	X	X
Alkalinity	Water Quality Parameter	mg/L	SM 2320B	MW-12, MW-15, MW-100S, MW-100D, MW-101S, MW-101D, MW-200, MW-201, MW-203	X	X	X
Title 22 Metals	Metals	mg/L	EPA Method 6010B	MW-12, MW-15, MW-100S, MW-100D, MW-101S, MW-101D, MW-200, MW-201, MW-203	X	X	X

Abbreviations: µg/L = micrograms per liter, mg/L = milligrams per liter, µS/cm = microsiemens per centimeter, mV = millivolts, NTU = nephelometric turbidity units, °F = degrees Fahrenheit, ISCO = In-Situ Chemical Oxidation.

Notes:

1. Groundwater monitoring samples must be collected following U.S. Environmental Protection Agency guidance for low-flow purging and sampling.
2. Monitoring parameters and frequency are subject to modification by the Executive Officer.
3. Sampling events must be conducted as required by this M&RP upon completion of the Stage 2 injection event during a single mobilization.
4. Samples shall be analyzed using methods approved by State Water Resources Control Board, Division of Drinking Water's Environmental Laboratory Accreditation Program (ELAP).
5. A minimum of four quarterly post-injection events are required upon completion of the Stage 2 injection event during a single mobilization.
6. Field parameters include dissolved oxygen (mg/L), oxidation-reduction potential (mV), electrical conductivity (µS/cm), turbidity (NTU), temperature (°F), and pH (standard unit [SU]).
7. See the description of field parameters.
8. X denotes sampling and analysis for the underlined wells only.

Table 2d. Source Area – 75-Foot Sand – Stage 2 Zone Monitoring[1] Parameters and Frequency[2,3]

Sample Parameters	Parameter Type	Unit	Method of Analysis[4]	Sample Locations	Week 2	Month 1 and Month 2	Quarterly[5]
Field Parameters[6]	General Groundwater Parameters	-[7]	Field Measurement	MW-38, MW-39, MW-40, MW-45, MW-50, MW-59, MW-60, MW-96-75, MW-97-75, MW-98-75, MW-99-75	X	X	X
Volatile Organic Compounds (VOCs)	Contaminants of Concern	µg/L	EPA Method 8260B	MW-38, MW-39, MW-40, MW-45, MW-50, MW-59, MW-60, MW-96-75, MW-97-75, MW-98-75, MW-99-75	X	X	X
1,4-Dioxane	Contaminants of Concern	µg/L	EPA Method 8270C SIM	MW-38, MW-39, MW-40, MW-45, MW-50, MW-59, MW-60, MW-96-75, MW-97-75, MW-98-75, MW-99-75	X	X	X
Hexavalent Chromium	By Product of ISCO	µg/L	EPA Method 7199	MW-38, MW-39, MW-40, MW-45, MW-50, MW-59, MW-60, MW-96-75, MW-97-75, MW-98-75, MW-99-75	X	X	X
Carbon Dioxide	Dissolved Gases	µg/L	RSK-175M	MW-38, MW-39, MW-40, MW-45, MW-60, MW-96-75, MW-98-75	X[8]	X	X
Sodium	Reaction By-Product	mg/L	EPA Method 6010B	MW-38, MW-39, MW-40, MW-45, MW-60, MW-96-75, MW-98-75	X	X	X
Alkalinity	Water Quality Parameter	mg/L	SM 2320B	MW-38, MW-39, MW-40, MW-45, MW-50, MW-60, MW-96-75, MW-97-75, MW-98-75	X	X	X
Title 22 Metals	Metals	mg/L	EPA Method 6010B	MW-38, MW-39, MW-40, MW-45, MW-50, MW-60, MW-96-75, MW-97-75, MW-98-75	X	X	X

Abbreviations: µg/L = micrograms per liter, mg/L = milligrams per liter, µS/cm = microsiemens per centimeter, mV = millivolts, NTU = nephelometric turbidity units, °F = degrees Fahrenheit, ISCO = In-Situ Chemical Oxidation.

Notes:

1. Groundwater monitoring samples must be collected following U.S. Environmental Protection Agency guidance for low-flow purging and sampling.
2. Monitoring parameters and frequency are subject to modification by the Executive Officer.
3. Sampling events must be conducted as required by this M&RP upon completion of the Stage 2 injection event during a single mobilization.
4. Samples shall be analyzed using methods approved by State Water Resources Control Board, Division of Drinking Water's Environmental Laboratory Accreditation Program (ELAP).
5. A minimum of four quarterly post-injection events are required upon completion of the Stage 2 injection event during a single mobilization.
6. Field parameters include dissolved oxygen (mg/L), oxidation-reduction potential (mV), electrical conductivity (µS/cm), turbidity (NTU), temperature (°F), and pH (standard unit [SU]).
7. See the description of field parameters.
8. X denotes sampling and analysis for the underlined wells only.

Table 2e. Bolsa Chica Reactive Zone Monitoring[1] Parameters and Frequency[2,3]

Sample Parameters	Parameter Type	Unit	Method of Analysis[4]	Sample Locations	Baseline	Month 1 and Month 2	Quarterly[5]
Field Parameters[6]	General Groundwater Parameters	-[7]	Field Measurement	UP-1, UP-2, BW-1, BW-2, BW-3, BW-4, BW-5, BW-6, BW-7, MW-34, MW-79-45, MW-80-45, MW-81-45, MW-82-45, MW-83-45	X	X[8]	X
Volatile Organic Compounds (VOCs)	Contaminants of Concern	µg/L	EPA Method 8260B	UP-1, UP-2, BW-1, BW-2, BW-3, BW-4, BW-5, BW-6, BW-7, MW-34, MW-79-45, MW-80-45, MW-81-45, MW-82-45, MW-83-45	X	X	X
Total Dissolved Solids	Water Quality Parameter	mg/L	EPA Method 160.1	UP-1, UP-2, BW-1, BW-2, BW-3, BW-4, BW-5, BW-6, BW-7, MW-34, MW-79-45, MW-80-45, MW-81-45, MW-82-45, MW-83-45	X	X	X
Total Organic Carbon	Carbon Substrate	mg/L	SM 5310D	UP-1, UP-2, BW-1, BW-2, BW-3, BW-4, BW-5, BW-6, BW-7, MW-34, MW-79-45, MW-80-45, MW-81-45, MW-82-45, MW-83-45	X	X	X
Ferrous Iron	Potential by-product of remediation	mg/L	SM 3500-Fe B	BW-2, BW-4, BW-6, MW-79-45, MW-80-45, MW-81-45, MW-82-45, MW-83-45	X	X	X
Soluble Sulfide	Potential by-product of remediation	mg/L	SM 4500-S^{2-} D	BW-2, BW-4, BW-6, MW-79-45, MW-80-45, MW-81-45, MW-82-45, MW-83-45	X	X	X
Nitrogen as Nitrate, Chloride, and Sulfate	Competing Electron Acceptors	mg/L	EPA Method 300.0	BW-2, BW-4, BW-6, MW-79-45, MW-81-45, MW-83-45	X	X	X
Fe, Mn, As	Total and Dissolved Metals	mg/L	EPA Method 6010B	BW-2, BW-4, BW-6, MW-79-45, MW-81-45, MW-83-45	X	X	X
Methane, Ethane, Ethene	Dissolved Gases	µg/L	RSK-175M	BW-2, BW-4, BW-6, MW-79-45, MW-81-45, MW-83-45	X	X	X

Abbreviations: µg/L = micrograms per liter, mg/L = milligrams per liter, µS/cm = microsiemens per centimeter, mV = millivolts, NTU = nephelometric turbidity units, °F = degrees Fahrenheit.

Notes:

1. Groundwater monitoring samples should be collected following U.S. Environmental Protection Agency guidance for low-flow purging and sampling.
2. Monitoring parameters and frequency are subject to modification by the Executive Officer.
3. Sampling events must be conducted as required by this M&RP on a monthly and quarterly basis from completion of the injection event.
4. Samples shall be analyzed using methods approved by State Water Resources Control Board, Division of Drinking Water's Environmental Laboratory Accreditation Program (ELAP).
5. A minimum of eight quarterly post-injection events are required.
6. Field parameters include dissolved oxygen (mg/L), oxidation-reduction potential (mV), electrical conductivity (µS/cm), turbidity (NTU), temperature (°F), and pH (standard unit [SU]).
7. See the description of field parameters.
8. X denotes sampling and analysis for the underlined wells only.

C. Reporting Requirements

1. Quarterly monitoring reports shall include, at a minimum, the following:

    a. **Cover Letter.** A transmittal letter summarizing the essential points in the report.

    b. **Summary of Monitoring Data.** Discharge monitoring data shall be submitted in a format that is acceptable to the Executive Officer and must be arranged in a manner that clearly demonstrates compliance and/or noncompliance with this Order. Monitoring results shall be reported in a tabulated format which identifies all applicable chemical constituents required to be analyzed under the monitoring program and presents the associated sample collection dates and analytical detections for each compound in relation to waste discharge limitations and requirements established by the Order.

    c. **Compliance Summary.** For every item of monitoring data where the requirements are not met, the monitoring report shall include a statement discussing the reasons for noncompliance, and of the actions undertaken or proposed which will bring the discharge into full compliance with requirements at the earliest time, and an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Executive Officer by letter when compliance with the time schedule has been achieved.

    d. **Recommended Program Changes.** Conclusions and recommendations regarding continuation of the existing monitoring program or any proposed modifications thereto shall be clearly presented for agency consideration, along with appropriate supporting justification or rationale.

2. As specified in Provision D.11 of the Order, all reports, plans and documents required under the Order and this M&RP shall be prepared under the direction of appropriately qualified professionals. The lead professional performing engineering and geologic evaluations and judgments shall sign and affix their professional geologist or civil engineering license stamp to all technical reports, plans or documents submitted to the Santa Ana Water Board.

3. As specified in Provision D.12 of the Order, all reports and/or information submitted to the Executive Officer shall be signed by a responsible officer or duly authorized representative of the Discharger and shall be submitted under penalty of perjury.

4. All monitoring reports submitted to the Executive Officer in compliance with this M&RP in paper copy format must also be submitted electronically via the Internet into the State Water Board's GeoTracker database. To comply with state regulations, the update to the GeoTracker database must include the following minimum information:

    a. The elevation of groundwater in any permanent monitoring well relative to the surveyed elevation.

    b. A site map or maps showing the location of all sampling points referred to in the report.

    c. The depth to the screened interval and the length of screened interval of any permanent monitoring well.

    d. Boring logs, in PDF format.

    e. Laboratory analytical data from any soil testing and/or groundwater monitoring shall be reported in Electronic Deliverable Format (EDF) in accordance with Water Code section 13195 et seq. requirements, if applicable.

    f. A complete copy of the report, in PDF format, which includes the signed transmittal letter and professional certification.

    The GeoTracker website address is: https://geotracker.waterboards.ca.gov. Deadlines for electronic submittals are the same as deadlines for paper copy submittals.

D. Report Schedule

Monitoring reports shall include all data collected during the monitoring period, and shall be submitted on a quarterly basis to Santa Ana Water Board staff in accordance with the following schedule:

Monitoring Period	***Report Due***
January – March	May 1
April – June	August 1
July – September	November 1
October – December	February 1

The Executive Officer has the authority to change the report submittal schedule, if deemed necessary, based on changes to the Site conditions.

Monitoring reports shall be submitted:

To: Executive Officer
California Regional Water Quality Control Board
Santa Ana Region
3737 Main Street, Suite 500
Riverside, CA 92501

I, JAYNE JOY, Executive Officer, hereby certify that the following is a full, true, and correct copy of the Monitoring and Reporting Program adopted by the California Regional Water Quality Control Board, Santa Ana Region, on June 13, 2025.

Jayne Joy
Digitally signed by Jayne Joy
Date: 2025.06.18 12:37:03 -07'00'
Water Boards

JAYNE JOY, P.E.
Executive Officer

ENFORCEMENT

The Santa Ana Water Board reserves the right to take any enforcement action authorized by law. Accordingly, failure to timely comply with any provisions of this Monitoring and Reporting Program may subject the Discharger to enforcement action. Such actions include, but are not limited to, the assessment of administrative civil liability pursuant to Water Code sections 13323, 13268, and 13350, a Time Schedule Order (TSO) issued pursuant to Water Code sections 13300 and 13308, or referral to the California Attorney General for recovery of judicial civil liability.

ADMINISTRATIVE REVIEW

Any person aggrieved by this Santa Ana Water Board action may petition the State Water Board for review in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 2050 et seq. To be timely, the petition must be received by the State Water Board by 5:00 pm on the 30th day after the date of this Order; if the 30th day falls on a Saturday, Sunday or state holiday, the petition must be received by the State Water Board by 5:00 pm on the next business day. The law and regulations applicable to filing petitions are available on the State Water Board website (http://www.waterboards.ca.gov/public_notices/petitions/water_quality). Copies will also be provided upon request.