

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LAHONTAN REGION**

**BOARD ORDER NO. R6-2022-0020**

**GENERAL WASTE DISCHARGE REQUIREMENTS  
FOR  
IN-SITU AND EX-SITU GROUNDWATER REMEDIATION PROJECTS**

Board Order R6-2022-0020 (General Order) regulates discharges of waste from in-situ and ex-situ projects implemented to remove pollutants from groundwater (remediation). The purpose of this General Order is to protect groundwater as a municipal source of drinking water and the other beneficial uses described in the Water Quality Control Plan for the Lahontan Region (Basin Plan).[\[Basin Plan - References | Lahontan Regional Water Quality Control Board \(ca.gov\)\]](#).

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I. REMEDIATION PROJECT CATEGORIES AND DETAILS

A. Project Types and Threat to Water Quality and Complexity Rating

This General Order regulates discharges of waste, as defined in the California Water Code (CWC), from remediation projects at polluted sites affected by man-made organic constituents, heavy metals, and inorganics. The in-situ and ex-situ remediation projects covered under the General Order are authorized to utilize amendments to eliminate pollutants from groundwater. For purposes of this General Order, "amendments" include biological, chemical, and organic compounds that help to advance/mediate degradation of groundwater pollutants and may be applied to a defined treatment zone or utilized for treatment of polluted groundwater above ground. The "treatment zone" means a three-dimensional area being targeted to receive authorized amendments to achieve cleanup goals and protect beneficial uses. Within the treatment zone, a spatial zone of impact exists in which water quality and beneficial uses are temporarily degraded.

Hereafter, operators of the remediation system and property owners are referred to as "Discharger." Pursuant to Title 23, section 2200, California Code of Regulations (CCR), Dischargers subject to this General Order must pay an annual fee based on the threat to water quality and complexity of the discharge.

This General Order establishes the threat to water quality and complexity ratings (TTWQ/CPLX) for full scale and pilot testing in-situ remediation, large scale ex-situ remediation, and pilot testing/small scale ex-situ remediation.

1. Full Scale and Pilot Test In-Situ Remediation

Full scale and pilot test in-situ groundwater remediation projects discharge those amendments referenced in section I.B directly to the vadose zone or groundwater basin to achieve regulatory compliance with cleanup levels and water quality objectives (WQO). Full scale remediation projects are designed to treat the entire extent and duration of pollution at the site. Pilot tests are

small preliminary studies used to test a proposed research study before a full-scale project is implemented.

In-situ groundwater remediation projects involving the application of amendments directly to the groundwater basin or vadose zone are expected to have the greatest potential to alter water quality. These projects have a TTWQ/CPLX of 2A.

2. Large Scale Ex-Situ Remediation

Large scale ex-situ remediation projects involve the physical extraction of polluted groundwater for treatment above ground. These projects involve the use of amendments referenced in section I.B and discharge of the waste via the methods described in section I.C.

Large scale ex-situ groundwater remediation projects are expected to have minimal pollutant concentrations in the discharge and pose a moderate threat to human health and the environment. These projects have a TTWQ/CPLX of 3B.

3. Small Scale and Pilot Test Ex-Situ Remediation Projects

Small scale and pilot test ex-situ remediation projects are those that have a discharge of less than 10,000 gallons per day, and do not discharge waste within one mile of a domestic, irrigation, industrial, or public water supply well. These projects involve the use of amendments referenced in section I.B. and discharge of the waste via the methods described in section I.C.

Small scale and pilot test ex-situ projects are expected to have minimal pollutant concentrations and pose a minor threat to human health and the environment. These Projects have a TTWQ/CPLX of 3C.

B. Authorized Injection Material Amendments

The amendments listed in Attachment A are authorized to be used for in-situ and ex-situ remediation purposes. The amendments listed in

Attachment A do not represent all chemical, organic, or biological compounds that could be used in remediation. Dischargers may propose to use an amendment that is not listed in Attachment A. If new amendments are proposed, the Dischargers are required to demonstrate the suitability of the materials to remediate the target pollutants and be protective of public health and the environment. Use of any other chemical, organic, or biological compound that is not listed in Appendix A must be approved by the Lahontan Regional Water Quality Control Board (Lahontan Water Board) Executive Officer.

C. Authorized Methods of Disposal of Treated Groundwater

1. Treated groundwater may be disposed of by subsurface infiltration, injection, surface infiltration, percolation trenches or basins, evaporation ponds, land spreading, spray disposal (e.g., for dust control), and irrigation.
2. Treated groundwater may be discharged to ephemeral drainages that are not waters of the United States. Ephemeral drainages are naturally formed non-perennial water drainage features that convey the flow of storm water across land during precipitation events within a specific watershed and have the potential to be hydrologically connected to the site-specific groundwater basin. If discharge to an ephemeral drainage is proposed, the Discharger is required to provide evidence of consultation with the United States Army Corps of Engineers to determine that the ephemeral drainage is a not a water of the United States and will not require a Federal Clean Water Act section 404 permit.
3. Discharge of treated groundwater must be limited to the same groundwater basin or an ephemeral drainage above the same groundwater basin from which the polluted groundwater was withdrawn.

II. APPLICATION AND PERMITTING PROCESS

A. Coverage Under the General Order

To obtain coverage under this General Order, the Discharger must provide the following:

1. A complete Report of Waste Discharge (ROWD) including a Notice of Intent (NOI) and a Remedial Action Plan (RAP). The NOI and RAP requirements are provided in Attachment B of this General Order;
2. A proposed Monitoring and Reporting Program (MRP) must be included in the RAP, based on Attachment C, incorporated herein by reference;
3. The first annual fee in accordance with the current version of the CCR, Title 23, Division 3, Chapter 9, Waste Discharge Reports and Requirements Article 1 – Fees based upon the project type’s TTWQ/CPLX. The check or money order must be made payable to the “State Water Resources Control Board”.
4. The discharge of waste must not commence until a Notice of Applicability (NOA) from the Executive Officer that includes a site-specific MRP for the remediation project has been issued to the Discharger.
5. A new discharge (new source) for which coverage under this General Order is being sought requires submittal of an updated ROWD and payment of the annual fee at least 30 days prior to initiation of a new discharge. The discharge must not commence until after receiving the written NOA or until the Lahontan Water Board has issued an individual permit for the discharge.
6. Any Discharger may request to be excluded from coverage under this General Order by applying for individual waste discharge requirements (WDR).

B. Eligibility Determination and Notice of Applicability

1. Upon review of the ROWD, Lahontan Water Board staff will determine if the discharge is eligible for coverage under the General Order and if coverage under the General Order is appropriate. The Executive Officer will issue an NOA and prescribe site-specific MRP requirements when coverage under the General Order has been authorized. The following factors will be considered to determine eligibility for enrollment under the General Order:
  - a. Projects anticipated to increase concentrations of inorganics greater than 10 percent over background concentrations at compliance points are not eligible for coverage under the General Permit.
  - b. The ex-situ remediation techniques will be able to produce water quality that is of equal or better water quality than that of the receiving water.
  - c. For proposed discharges to ephemeral drainages, the Discharger is required to consult with the United States Army Corps of Engineers to determine if the ephemeral drainage is a water of the United States.
    - i. If the US Army Corps of Engineers determines the ephemeral drainage is a water of the US, the applicant is not eligible for enrollment under the General Order.
    - ii. If the US Army Corps of Engineers determines the ephemeral drainage is not a water of the US and will not require a Federal Clean Water Act section 404 permit, those projects are eligible for coverage under the General Order and a copy of the determination from the US Army Corps of Engineers is required to be submitted with the NOI and RAP.

C. Termination of Coverage Under the General Order

Following the determination that the pollutant plume and discharge of waste associated with the remediation project no longer poses a threat to water quality, the Discharger may submit a Request for Termination, included in Attachment D of this General Order. The Discharger must electronically file the request presenting evidence that the project does not pose a threat to water quality prior to remediation system removal and destruction of monitoring/injection wells. Upon review of the Request for Termination, Lahontan Water Board staff will determine if the project no longer presents any threat to water quality and if it is appropriate to terminate coverage. If coverage termination is appropriate, then staff will issue a concurrence letter and require the remediation system be removed and that all monitoring and injection wells are properly destroyed. Upon completion of such tasks, the Discharger will submit a final report detailing well destruction and remediation system removal and site restoration. Termination of coverage under this General Order occurs when the Executive Officer issues a Termination of Coverage letter. Once the General Order is rescinded, discharge of waste will no longer be covered, and no discharge of waste may occur within Lahontan Water Board jurisdiction.

III. FINDINGS

The Lahontan Water Board finds:

A. Purpose of the General Order

1. Numerous unauthorized releases of pollutants including, but not limited to, petroleum hydrocarbons, chlorinated solvents, pesticides, herbicides, heavy metals, and other inorganic contaminants have contaminated groundwater in the Lahontan region.
2. In-situ and ex-situ treatment technologies involving the use of the amendments listed in Attachment A have proven successful at cleaning up harmful constituents in groundwater within and outside of the Lahontan Region.

3. The discharges regulated by this General Order are more appropriately regulated by general WDRs rather than individual WDRs because the Lahontan Water Board regulates many sites using these types of remediation processes, the cleanup of these types of sites is of high priority, the issuance of individual WDRs is time consuming without providing additional benefit, and the types of treatment used result in similar impacts that can reasonably be regulated with general WDRs.
4. The General Order: 1) simplifies the application process; 2) allows more efficient use of Lahontan Water Board staff time; 3) minimizes the time needed for Lahontan Water Board approval of WDRs by enabling the Executive Officer to notify the Discharger of the applicability of the general WDRs rather than presenting each individual WDR to the Board Members of the Lahontan Water Board; 4) preserves water resources by authorizing reinjection of treated groundwater into groundwater basins; and 5) provides a level of protection comparable to site-specific individual WDRs.

B. Authority to Issue General Waste Discharge Requirements

Division 7, section 13263(i), of the CWC authorizes the Lahontan Water Board to prescribe general WDRs for a category of discharges if the Lahontan Water Board finds or determines that all the following criteria apply to the discharges in that category:

1. “The discharges are produced by the same or similar operations.”  
  
Discharges associated with the General Order are produced by remediation operations (in-situ and ex-situ) that are implemented to protect human health and the environment. Discharges of treated groundwater that meet WQOs are limited to the area in the basin undergoing remediation.
2. “The discharges involve the same or similar types of waste.”  
  
“Waste”, as defined in CWC, section 13050(d), includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or



animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal. The wastes involved in groundwater remediation projects include liquid waste (i.e., from well development, groundwater monitoring, and the ex-situ treatment processes), and solid waste (i.e., from well installation, excavation and construction) which must be managed by similar methods. The discharge of wastes from in-situ and ex-situ remediation projects, including the use of amendments and discharge of treated groundwater, has the potential to cause unintended adverse impacts to water quality if the discharges remain unregulated and if an MRP is not established.

3. “The discharges require the same or similar treatment standards.”

In-situ and ex-situ remediation projects are designed to clean up groundwater pollutants to meet WQOs, which requires similar treatment standards. The discharges from the two types of activities (in-situ and ex-situ remediation) must have the same treatment standards because the discharges to land have the potential to affect the groundwater quality in the same manner as injection to the groundwater.

4. “The discharges are more appropriately regulated under general discharge requirements than individual discharge requirements.”

Projects eligible for coverage under the General Order have similar operations and discharge similar waste. The discharges from both types of remediation systems have certain common characteristics (e.g., similar potential impacts from amendments and constituents, disposal techniques, and treatment standards). General WDRs are more appropriate than individual WDRs because the similarity of the discharge types and requirements are more efficiently and consistently regulated by general WDRs than nearly identical individual WDRs. Therefore, the discharges are more appropriately regulated under general WDRs than individual WDRs.

C. The Basin Plan for the Lahontan Region

The Basin Plan was adopted on March 31, 1995, with subsequent amendments. The Basin Plan designates beneficial uses, establishes WQOs to protect beneficial uses, contains prohibitions, includes implementation plans and policies for protecting waters of the region, and incorporates by reference plans and policies adopted by the State Water Resources Control Board (State Water Board). Pursuant to Water Code section 13263(a), WDRs must implement relevant portions of the Basin Plan and take into consideration the beneficial uses to be protected. This General Order implements the Basin Plan, as amended.

D. Water Quality Standards

The water quality standards are defined as the “beneficial uses” and “water quality objectives” outlined in Chapters 2 and 3 of the Basin Plan. The water quality objectives have been incorporated into the waste discharge requirements outlined under section IV of this General Order and are subject to subsequent Basin Plan amendments. The beneficial uses for groundwaters and surface waters are defined in Findings E and F of this General Order and are subject to subsequent Basin Plan amendments.

E. Beneficial Uses of Groundwater

The Lahontan Water Board established beneficial uses of groundwater for each groundwater basin throughout the region. Designated beneficial uses of groundwater underlying the region are described in Chapter 2 of the Basin Plan and include:

- a) Agricultural water supply (AGR);
- b) Aquaculture (AQUA);
- c) Freshwater replenishment to surface waters (FRSH);
- d) Industrial service supply (IND);
- e) Municipal and domestic water supply (MUN); and
- f) Wildlife Habitat (WILD).

F. Beneficial Uses of Surface Water

The Lahontan Water Board established beneficial uses of surface waters for each hydrologic unit throughout the region. Designated beneficial uses of surface waters underlying the region are described in Chapter 2 of the Basin Plan and include:

- a) Agricultural water supply (AGR);
- b) Aquaculture (AQUA);
- c) Preservation of Biological Habitats of Special Significance (BIOL);
- d) Cold Freshwater Habitat (COLD);
- e) Commercial and Sport Fishing (COMM);
- f) Tribal Tradition and Culture (CUL);
- g) Flood Peak Attenuation/Flood Water Storage (FLD);
- h) Freshwater Replenishment (FRSH);
- i) Groundwater Recharge (GWR);
- j) Industrial Service Supply (IND);
- k) Migration of Aquatic Organisms (MIGR);
- l) Municipal and Domestic Supply (MUN);
- m) Navigation (NAV);
- n) Hydropower Generation (POW);
- o) Industrial Process Supply (PRO);
- p) Rare, Threatened, or Endangered Species (RARE);
- q) Water Contact Recreation (REC-1);
- r) Noncontact Water Recreation (REC-2);

- s) Inland Saline Water Habitat (SAL);
- t) Spawning, Reproduction, and Development (SPWN);
- u) Subsistence Fishing (SUB);
- v) Tribal Subsistence Fishing (T-SUB);
- w) Warm Freshwater Habitat (WARM);
- x) Wildlife Habitat (WILD); and
- y) Water Quality Enhancement (WQE).

G. Waste Discharge Prohibitions

Chapter 4 of the Basin Plan contains waste discharge prohibitions that apply to the entire Lahontan Region. Chapter 4 and 5 of the Basin Plan contain watershed-specific waste discharge prohibitions.

H. California Water Code Section 13267 Considerations

CWC section 13267 provides the Lahontan Water Board with the authority to require technical and monitoring reports. The General Order, the ROWD, the request for termination, and the MRP require the Discharger to submit technical and monitoring reports. The technical and monitoring reports are necessary to determine compliance with the conditions of the General Order and to determine the impacts from discharges, if any, on groundwater and public health. As such, the burden, including costs, of this monitoring bear a reasonable relationship to the need for that information and the benefits to be obtained from that information.

I. California Water Code Section 13241 Considerations

CWC section 13263 states each Regional Board must consider the provisions of section 13241 when prescribing WDRs. Factors to be considered include, but are not limited to, the following:

1. "Past, present and probable beneficial uses of water."

Past, present, and probable beneficial uses of water within the Lahontan Region are described in Chapter 2 of the Basin Plan. There are twenty-two beneficial uses of waters within the Lahontan Region. It is the primary responsibility of the Lahontan Water Board to protect all twenty-two beneficial uses. Prohibitions, provisions, WDRs, and an MRP have been incorporated into the General Order to protect those beneficial uses by regulating the discharges of the waste associated with groundwater remediation projects and requiring routine monitoring of the remediation system and water quality.

2. “Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto.”

The Lahontan Region includes over 700 lakes, 3,170 miles of streams, and 19,710 square miles of groundwater basins that are hydrologically disconnected from the Pacific Ocean with drainage to the interior of the region. The climate of the Lahontan Region is considered arid and located generally in a rain shadow of the mountains along the western regional boundary, but precipitation amounts can be high (up to 70 inches annually) at higher elevations due to the orographic lift effect of the Sierra Nevada. Due to the arid nature of the environment, many ephemeral drainages have been formed. Research indicates ephemeral drainages provide maximum groundwater recharge during precipitation events in arid environments. Therefore, discharge of treated groundwater to ephemeral drainages that are not a water of the United States (water of the US) is authorized under this General Order.

The hydrogeologic conditions allow salts and other inorganics to accumulate in some lakes and groundwater basins. Much of the water quality is considered high quality; however, impacts by elevated concentrations of constituents due to naturally occurring processes or anthropogenic activities have resulted in some areas.

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

The purpose of the General Order is to regulate discharges of waste associated with in-situ and ex-situ remediation of pollution in groundwater implemented to improve water quality conditions. The assessment of the assimilative capacity of the groundwater basin, background water quality, and salt concentrations and byproducts included in some amendments will result in greater protection of existing and probable future beneficial uses to the maximum benefit of the people of the State of California that are not currently being employed at existing groundwater remediation sites. The requirements and prohibitions included in the General Order formulate a concise strategy for the Discharger to characterize the site and develop a coordinated plan to control all factors that may affect water quality before the discharge occurs.

4. “Economic considerations.”

The General Order is designed to protect water quality while the Discharger remediates groundwater pollutants. Remediation improves the environmental characteristics which indirectly improves quality of life and the economy.

5. “The need for developing housing within the region.”

The General Order would not directly affect housing availability in the region. The remediation activities have the potential to clean up contaminated areas that may have been previously prohibited from use for housing in the past.

6. “The need to develop and use recycled water.”

Recycled water means water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur and is therefore considered a valuable resource (CWC, §13050(n)). Coverage under the General Order is limited to treated groundwater that meets cleanup goals for non-

potable uses and must be discharged to the same groundwater basin from which it originated.

J. Antidegradation Policy – Resolution No. 68-16

State Water Board Resolution No. 68-16, the Statement of Policy with Respect to Maintaining High Quality of Waters in California requires that:

*“Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies.*

*Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or proposes to discharge to existing high quality waters will be required to meet WDRs which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.”*

Waste as defined in the California Water Code, section 13050(d), is sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed, within containers of whatever nature prior to, and for purposes of, disposal.

This General Order authorizes the discharge of waste associated with groundwater remediation activities to the groundwater bodies and ephemeral drainages within the Lahontan Water Board’s jurisdiction. As described in the Basin Plan, each watershed and groundwater basin has its own specific characteristics, water quality objectives and beneficial

uses (water quality standards). Many of these waterbodies are considered high quality under Resolution No. 68-16.

Authorized temporary and short-term degradation is limited to in-situ groundwater remediation projects within a defined treatment zone within the groundwater basin requiring corrective action. Degradation outside the treatment zone is not authorized and the existing high quality must be maintained as a source of drinking water. The temporary degradation is consistent with the maximum benefit to the people of the State because the purpose of the degradation is to accelerate and enhance remediation of groundwater pollution. The restrictions on in-situ groundwater remediation projects set forth in this General Order, including monitoring, ensure protection of water quality and will result in the best practical treatment and control.

Ex-situ groundwater remediation projects are encouraged to promote groundwater recharge through the surface disposal of the treated groundwater to numerous waters of the State including ephemeral drainages (i.e., that are not waters of the US). Dischargers are not authorized to dispose of treated groundwater that contains detectable levels of man-made organic compounds, inorganics and heavy metals above background concentrations, or in a manner that increases naturally occurring water quality constituents above background concentrations, discharges contaminants to the groundwater basin, causes erosion, scouring, flooding, disturbs sensitive habitat, or moves, splits, and otherwise spreads contaminant plume(s). Site maintenance and monitoring is required to determine degradation at the earliest possible instance and confirm the remediation alternative provides the best practicable treatment or control. The water quality of the discharge effluent must be continually monitored prior to disposal and a diversion plan implemented in the event the discharge does not meet cleanup goals.

K. Right to Safe, Clean, Affordable, and Accessible Water

CWC, section 106.3, establishes a state policy that every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes and directs state



agencies to consider this policy when adopting regulations pertinent to those uses of water. The purpose of this General Order is to regulate the discharges of waste that are intended to restore beneficial uses and compliance with WQOs by reducing and eliminating existing groundwater pollutants. This General Order also has provisions to control the lateral and vertical extent of treatment zones, beyond which, amendment migration is prohibited.

L. California Code of Regulations, Title 27, Considerations

The discharges authorized in this General Order are exempt from the requirements of *Consolidated Regulations for Treatment, Storage, Processing, or Disposal of Solid Waste*, set forth in CCR, Title 27, section 20005 et seq., which allows a conditional exemption from some or all of the provisions of Title 27.

Pursuant to CCR, Title 27, section 20090(b), discharges of wastewater to land, including but not limited to evaporation ponds or percolation ponds, are exempt from title 27 if the following conditions are met: (1) the Regional Board has issued a WDR; (2) the discharge is in compliance with the Basin Plan, and (3) the wastewater does not need to be managed according to Chapter 11, Division 4.5, Title 22 of this code as a hazardous waste. For purposes of this General Order, “wastewater” means treated groundwater that meets cleanup goals. The exemption is based on the following:

1. The Lahontan Water Board is issuing WDRs.
2. The discharge is in compliance with the Basin Plan.
3. The wastewater does not need to be managed as a hazardous waste.

Pursuant to CCR, title 27, section 20090(d), Regional Board remediation requirements are exempt from the State Water Board Resources Control Board (SWRCB) provisions if the activity meets and, continues to meet the following preconditions:

1. The cleanup actions are taken by or at the direction of public agencies to cleanup or abate conditions of pollution or nuisance resulting from unintentional or unauthorized releases of waste or pollutants to the environment.
2. Provided that wastes, pollutants, or contaminated materials removed from the immediate place of release shall be discharged according to the SWRCB-promulgated sections of Article 2, Subchapter 2, Chapter 3, Subdivision 1 of this division (§20200 et seq.).
3. Remedial actions intended to contain such wastes at the place of release shall implement applicable SWRCB-promulgated provisions of this division to the extent feasible.

M. Groundwater Remedial Goals

Groundwater remedial goals (cleanup goals) are site-specific numeric and narrative water quality standards that are established for the groundwater remediation site. The cleanup goals are based on factors such as assimilative capacity and existing background water quality; therefore, site-specific cleanup goals are more realistically established on a case-by-case basis. Assimilative capacity is the ability for pollutants, including amendment byproducts, to be absorbed by the groundwater basin environment without detrimental effects to water quality and beneficial uses. Background water quality, as defined in the Basin Plan, is the concentrations of constituents in natural waters that are unaffected by waste management practices or contamination/pollution incidents. The cleanup goals approved by the Lahontan Water Board must be included in the NOA.

N. Financial Assurance

The Discharger must maintain adequate financial assurance for known eventualities including operation, maintenance, closure and post-closure of the remediation site, upgrades to the remediation system, and corrective action in the event of an unauthorized release from the remediation system. A copy of the financial assurance mechanism must

be provided with a detailed explanation verifying the amount of funds is sufficient to perform the above-described tasks. Evidence of financial assurance will be required to be reported annually and included in the preliminary and final closure plans. The Discharger must demonstrate in the annual reports that the amount of financial assurance is adequate and to increase the amount of financial assurance, as appropriate for inflation.

O. Permit History

General Board Order No. 6-93-106 was adopted on November 19, 1993 to regulate the discharges of waste to land from a groundwater treatment unit. General Order No. 6-93-106A1 was adopted on September 9, 1999, amending General Order No. 6-93-106 to reflect changes in groundwater contaminant laboratory detection limits and effluent/discharge limitations for total petroleum hydrocarbons, methyl tertiary-butyl ether, and tertiary butyl alcohol. General Order R6T-2004-0015 was adopted on May 24, 2004, to reflect additional changes in groundwater contaminant laboratory detection limits and effluent/discharge limitations for several constituents of concern and to streamline the MRP program. This General Order rescinds the above-mentioned General Orders.

P. Low Threat to Water Quality Discharges to Land

Projects that involve discharges to land with a low threat to water quality are low volume discharges with minimal pollutant concentrations from activities such as well installation/development, clear water discharges, small dewatering projects, inert solid waste disposal, and cooling discharge. Low threat discharges do not involve polluted groundwater. Therefore, low threat discharges are not covered under this General Order. These low threat discharges are covered under General Order WQO-2003-0003-DWQ.

Q. California Environmental Quality Act Compliance (CEQA)

The Lahontan Water Board prepared an Initial Study (IS) pursuant to CEQA Public Resources Code section 21000, et seq. Based on the IS, the Lahontan Water Board prepared a Negative Declaration (ND)

concluding that the General Order will have a less than significant effect on the environment and was circulated under State Clearinghouse No. 2022030276.

R. Notification of Interested Parties

The Lahontan Water Board notified interested agencies and persons of its intent to prescribe General WDRs for the discharges covered under this General Order and provided them with an opportunity to submit written comments and recommendations.

S. Consideration of Public Comments

The Lahontan Water Board heard and considered all comments pertaining to the proposed General Order, in a public meeting held on June 8, 2022, in Barstow, California.

**IT IS HEREBY ORDERED** that pursuant to California Water Code sections 13260, 13263 and 13267 that the dischargers covered under this General Order must comply with the following contents and specific requirements as follows.

IV. WASTE DISCHARGE REQUIREMENTS

A. Discharge Requirements for Injection Projects

Amendments and treated groundwater, that meets cleanup goals, are the only authorized wastes that may be injected to the site-specific groundwater basin. The following requirements pertain to those discharges:

1. Injection activities are limited to the basin undergoing remediation.
2. Injection activities must not alter the hydrogeologic and geochemical characteristics of the basin outside the treatment zone.
3. Injection of treated groundwater must not contain concentrations in excess of WQOs, including narrative and numeric, for each monitoring parameter and constituent of concern outside the treatment zone.

4. Injection must occur in a manner that will not increase the lateral or vertical extent of the pollutant plume.

B. Discharges Requirements for Ex-situ Remediation Projects

The following requirements pertain to discharges of treated groundwater to land, including to ephemeral drainages, from ex-situ groundwater remediation projects.

1. The discharge of treated groundwater must not contain concentrations in excess of cleanup goals for each monitoring parameter and constituent of concern.
2. The discharge of treated groundwater must not contain concentrations of man-made organic compounds above the laboratory method detection limit.
3. The discharge of treated groundwater must not increase concentrations of inorganics and heavy metals in the receiving water above background.
4. Discharge to ephemeral drainages must not scour or significantly change the hydrologic function of the drainage.
5. The discharge of treated groundwater must be in a manner that controls runoff, does not cause erosion or scouring and prevents offsite sediment deposition.
6. The discharge of treated groundwater to land must not destabilize (spread, split, move, etc.) the pollutant plume.

C. Groundwater Limitations

1. The injection or discharge of amendments and treated groundwater must not cause a long term or permanent decrease in the assimilative capacity of the receiving water.
2. The Discharger must not cause, under any circumstances, the presence of the following substances or conditions in

groundwaters of the Lahontan Region at the designated compliance points above the Basin Plan WQOs.

- a. Bacteria, Coliform - Groundwaters designated as MUN, the median concentration of coliform organisms, over a seven-day period, must be less than 1.1 Most Probable Number per 100 milliliters (MPN/100 mL).
- b. Chemical Constituents - Groundwaters must not contain concentrations of chemical constituents in excess of the maximum contaminant level (MCL) or secondary maximum contaminant level (SMCL) based upon drinking water standards specified in the following provisions of the CCR, Title 22 (with the exception of constituents which already exceed the MCL or SMCL at background locations): table 64431-A of section 64431 (Inorganic Chemicals), table 6444-A of section 64444 (Organic Chemicals), table 64449-A of section 64449 (SMCLs Consumer Acceptance Limits), and table 64449-B of section 64449 (SMCLs -Ranges). This incorporation-by-reference is prospective including future changes to the incorporated provisions as the changes take effect. Groundwaters must not contain concentrations of chemical constituents that adversely affect the water for beneficial uses.
- c. Radioactivity - Groundwater designated MUN must not contain concentrations of radionuclides in excess of the limits specified in CCR, Title 22, section 64442, Table 64442, and section 64443, Table 64443, including future changes as the changes take effect.
- d. Taste and Odors - Groundwaters must not contain taste or odor-producing substances in concentrations that cause nuisance or that adversely affect beneficial uses; For groundwaters designated as Municipal or Domestic Supply, at a minimum, concentrations must not exceed adopted SMCLs specified in the CCR, Title 22, section 64449, table 64449-A (SMCLs -Ranges), and table 64449-B

(SMCLs -Ranges), including future changes as the changes take effect.

3. The discharge of wastes must not cause the pH of the receiving groundwater at the compliance points, downgradient and outside the treatment and transition zone to exceed WQOs of the groundwater basin.
4. The discharge of wastes must not cause the groundwater to contain concentrations of amendments, byproducts, organics, heavy metals or salts in amounts that adversely affect any designated beneficial use outside the treatment zone.
5. The discharge of wastes shall not cause the remediation-target constituents, including their intermediate degradation products, in groundwater to exceed cleanup levels outside the treatment zone.
6. The discharge of wastes must be consistent with any Salt and Nutrient Management Plan developed for the site-specific groundwater basin.

D. Surface Water Limitations

The Discharger must not cause, under any circumstances, the presence of the following substances or conditions in surface waters of the Lahontan Region at the designated compliance points above the Basin Plan WQOs.

1. Ammonia – The neutral, un-ionized ammonia species ( $\text{NH}_3$ ) is highly toxic to freshwater fish. The fraction of toxic  $\text{NH}_3$  to total ammonia species ( $\text{NH}_4^+ + \text{NH}_3$ ) is a function of temperature and pH. Tables 3-1 to 3-4 were derived from USEPA ammonia criteria for freshwater. Ammonia concentrations shall not exceed the values listed for the corresponding conditions in these tables. For temperature and pH values not explicitly in these tables, the most conservative value neighboring the actual value may be used or criteria can be calculated from numerical formulas developed by the USEPA. For one-hour (1h- $\text{NH}_3$ ) and four-day (4d- $\text{NH}_3$ ) unionized ammonia criteria, the following equations apply:

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$$1\text{h-NH}_3 = 0.52 \div (\text{FT} \times \text{FPH} \times 2)$$

$$4\text{d-NH}_3 = 0.80 \div (\text{FT} \times \text{FPH} \times \text{RATIO})$$

where:

$$\text{FT} = 10^{[0.03(20-\text{TCAP})]}$$

for:  $\text{TCAP} \leq T \leq 30$

$$\text{FT} = 10^{[0.03(20-T)]}$$

for:  $0 \leq T \leq \text{TCAP}$

$$\text{FPH} = (1 + 10^{(7.4-\text{pH})}) \div 1.25$$

for:  $6.5 \leq \text{pH} \leq 8.0$

$$\text{FPH} = 1$$

for:  $8.0 \leq \text{pH} \leq 9.0$

$$\text{RATIO} = 20.25 \times (10^{(7.7-\text{pH})}) \div (1 + 10^{(7.4-\text{pH})})$$

for:  $6.5 \leq \text{pH} \leq 7.7$

$$\text{RATIO} = 13.5$$

for:  $7.7 \leq \text{pH} \leq 9.0$

and:

T = temperature in °C

TCAP = temperature cap in °C

For 1h-NH<sub>3</sub>, TCAP is 20°C with salmonids present and 25°C with salmonids absent. For 4d-NH<sub>3</sub>, TCAP is 15°C with salmonids present and 20°C with salmonids absent.

For interpolation of total ammonia (NH<sub>4</sub><sup>+</sup> + NH<sub>3</sub>) criteria, the following equations can be used:

$$n_{1\text{h}} = 1\text{h-NH}_3 \div f, \text{ or } n_{4\text{d}} = 4\text{d-NH}_3 \div f$$



where:

$n_{1h}$  is the one-hour criteria for total ammonia species ( $\text{NH}_4^+$  +  $\text{NH}_3$ )

$n_{4d}$  is the four-day criteria for total ammonia species ( $\text{NH}_4^+$  +  $\text{NH}_3$ )

$$f = 1 \div (10^{(\text{pKa}-\text{pH})} + 1)$$

$$\text{pKa} = 0.0901821 + [2729.92 \div (T+273.15)]$$

and:

$\text{pKa}$  is the negative log of the equilibrium constant for the  $\text{NH}_4^+ \rightleftharpoons \text{NH}_3 + \text{H}^+$  reaction

$f$  is the fraction of unionized ammonia to total ammonia species:  $[\text{NH}_3 \div (\text{NH}_4^+ + \text{NH}_3)]$

Values outside of the ranges 0-30°C or pH 6.5-9.0 cannot be extrapolated from these relationships. Site-specific objectives must be developed for these conditions. A microcomputer spreadsheet to calculate ammonia criteria was developed by Lahontan Water Board staff. An example of output from this program is given in Table 3-5. Contact the Lahontan Water Board if a copy is desired.

2. Bacteria, Coliform – Waters shall not contain concentrations of coliform organisms attributable to anthropogenic sources, including human and livestock wastes. The fecal coliform concentration during any 30-day period shall not exceed a log mean of 20/100 ml, nor shall more than 10 percent of all samples collected during any 30-day period exceed 40/100 ml. The log mean shall ideally be based on a minimum of not less than five samples collected as evenly spaced as practicable during any 30-day period. However, a log mean concentration exceeding 20/100 ml for any 30-day period shall indicate violation of this objective even if fewer than five samples were collected.
3. Biostimulatory Substances – Waters shall not contain biostimulatory substances in concentrations that promote aquatic

growths to the extent that such growths cause nuisance or adversely affect the water for beneficial uses.

4. Chemical Constituents – Water designated as MUN shall not contain concentrations of chemical constituents in excess of the maximum contaminant level (MCL) or secondary maximum contaminant level (SMCL) based upon drinking water standards specified in the following provisions of Title 22 of the California Code of Regulations, which are incorporated by reference into this plan: Table 64431-A of Section 64431 (Inorganic Chemicals), Table 64431-B of Section 64431 (Fluoride), Table 64444-A of Section 64444 (Organic Chemicals), Table 64449-A of Section 64449 (Secondary Maximum Contaminant Levels-Consumer Acceptance Limits), and Table 64449-B of Section 64449 (Secondary Maximum Contaminant Levels-Ranges). This incorporation by-reference is prospective including future changes to the incorporated provisions as the changes take effect. Waters designated as AGR shall not contain concentrations of chemical constituents in amounts that adversely affect the water for beneficial uses (i.e., agricultural purposes). Waters shall not contain concentrations of chemical constituents in amounts that adversely affect the water for beneficial uses.
5. Chlorine, Total Residual – For the protection of aquatic life, total chlorine residual shall not exceed either a median value of 0.002 mg/L or a maximum value of 0.003 mg/L. Median values shall be based on daily measurements taken within any six-month period.
6. Color – Waters shall be free of coloration that causes nuisance or adversely affects the water for beneficial uses.
7. Dissolved Oxygen – The dissolved oxygen concentration, as percent saturation, shall not be depressed by more than 10 percent, nor shall the minimum dissolved oxygen concentration be less than 80 percent of saturation. For waters with the beneficial uses of COLD, COLD with SPWN, WARM, and WARM with SPWN, the minimum dissolved oxygen concentration shall not be less than that specified in Table 3-6.
8. Floating Materials – Waters shall not contain floating material, including solids, liquids, foams, and scum, in concentrations that

cause nuisance or adversely affect the water for beneficial uses. For natural high-quality waters, the concentrations of floating material shall not be altered to the extent that such alterations are discernable at the 10 percent significance level.

9. Oil and Grease – Waters shall not contain oils, greases, waxes or other materials in concentrations that result in a visible film or coating on the surface of the water or on objects in the water, that cause nuisance, or that otherwise adversely affect the water for beneficial uses. For natural high-quality waters, the concentration of oils, greases, or other film or coat generating substances shall not be altered.
10. Nondegradation of Aquatic Communities and Populations – All wetlands shall be free from substances attributable to wastewater or other discharges that produce adverse physiological responses in humans, animals, or plants; or that lead to the presence of undesirable or nuisance aquatic life. All wetlands shall be free from activities that would substantially impair the biological community as it naturally occurs due to physical, chemical and hydrologic processes.
11. pH – In fresh waters with designated beneficial uses of COLD or WARM, changes in normal ambient pH levels shall not exceed 0.5 pH units. For all other waters of the Region, the pH shall not be depressed below 6.5 nor raised above 8.5. The Regional Board recognizes that some waters of the Region may have natural pH levels outside of the 6.5 to 8.5 range. Compliance with the pH objective for these waters will be determined on a case-by-case basis.
12. Radioactivity – Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life or that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life. Waters designated as MUN shall not contain concentrations of radionuclides in excess of the limits specified in Table 4 of Section 64443 (Radioactivity) of Title 22 of the California Code of Regulations, which is incorporated by reference into this plan. This incorporation-by-reference is

prospective including future changes to the incorporated provisions as the changes take effect.

13. Sediment – The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect the water for beneficial uses.
14. Settleable Materials – Water shall not contain substances in concentrations that result in deposition of material that causes nuisance or that adversely affects the water for beneficial uses. For natural high-quality waters, the concentration of settleable materials shall not be raised by more than 0.1 milliliter per liter.
15. Suspended Materials – Waters shall not contain suspended materials in concentrations that cause nuisance or that adversely affects the water for beneficial uses. For natural high-quality waters, the concentration of total suspended materials shall not be altered to the extent that such alterations are discernible at the 10 percent significance level.
16. Taste and Odor – Waters shall not contain taste or odor-producing substances in concentrations that impart undesirable tastes or odors to fish or other edible products of aquatic origin, that cause nuisance, or that adversely affect the water for beneficial uses. For naturally high-quality waters, the taste and odor shall not be altered.
17. Temperature – The natural receiving water temperature of all waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such an alteration in temperature does not adversely affect the water for beneficial uses. For waters designated WARM, water temperature shall not be altered by more than five degrees Fahrenheit (5°F) above or below the natural temperature. For waters designated COLD, the temperature shall not be altered. Temperature objectives for COLD interstate waters and WARM interstate waters are as specified in the “Water Quality Control Plan for Control of Temperature in The Coastal and Interstate Waters and Enclosed Bays and Estuaries of California” including any revisions. This plan

is summarized in Chapter 6 (Plans and Policies), and included in Appendix B.

18. Toxicity – All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration and/or other appropriate methods as specified by the Regional Board. The survival of aquatic life in surface waters subjected to a waste discharge, or other controllable water quality factors, shall not be less than that for the same water body in areas unaffected by the waste discharge, or when necessary, for other control water that is consistent with the requirements for “experimental water” as defined in Standard Methods for the Examination of Water and Wastewater (American Public Health Association, et al. 2012, or subsequent editions).
19. Turbidity – Waters shall be free of changes in turbidity that cause nuisance or adversely affect the water for beneficial uses. Increases in turbidity shall not exceed natural levels by more than 10 percent.

E. Disposal Requirements for Investigation Derived Waste

The following requirements pertain to disposal of investigation derived waste:

1. All investigation derived waste including soil and groundwater must be containerized, characterized, and properly labeled.
2. All containerized waste must be transported from the remediation site with 90 days of waste generation and disposed of at an off-site location authorized to accept the waste.

V. WASTE DISCHARGE PROHIBITIONS

1. The continued discharge of pollutants is prohibited.

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2. The application of amendments outside the authorized treatment zone is prohibited.
3. Injection of treated groundwater with concentrations in excess of WQOs, including numeric and narrative, for each monitoring parameter and constituent of concern is prohibited outside the treatment zone.
4. Discharges of treated groundwater with concentrations of man-made organic compounds above the laboratory method detection limit is prohibited.
5. Treated groundwater and amendments discharged to all authorized sites must not contain trace elements, pollutants or contaminants, or combinations thereof in concentrations that are toxic or harmful to humans or to aquatic or terrestrial plant or animal life.
6. The discharge of untreated sewage, garbage, other solid wastes, or liquid wastes waste not covered under this General Order into surface waters, including to ephemeral drainages, is prohibited.
7. Discharges of treated groundwater to land by crop irrigation containing nutrients above crop agronomic rates is prohibited.
8. The discharge of waste that causes a violation of any narrative WQO contained in the Basin Plan is prohibited.
9. The discharge of waste that causes a violation of any numeric WQO contained in the Basin Plan is prohibited.
10. Where any numeric or narrative WQO contained in the Basin Plan is already being violated, the discharge of waste that causes further degradation or pollution is prohibited.
11. The exceedance of water quality standards for the site-specific hydrologic unit and groundwater basin is prohibited.
12. A long term or permanent decrease in the assimilative capacity of the groundwater basin is prohibited.
13. Remediation projects must not cause or contribute to a condition of pollution as defined in CWC section 13050(l), or nuisance as defined in CWC section 13050(m).

14. Injection of treated groundwater or amendments and disposal of treated groundwater in a manner that spreads, splits, or moves contaminant plume(s) is prohibited.
15. The injection of waste produced as a byproduct of the treatment process is prohibited, with the exception of treated groundwater that meets cleanup goals. Discharge of waste classified as 'hazardous' under CCR, Title 23, Chapter 15, Section 2521, or 'designated', as defined in CWC, Section 13173 is prohibited.
16. The overflow of wastes from the disposal system is prohibited.
17. Spills of wastes outside the treatment or disposal system are prohibited.
18. The disposal of wastes to property that is not an authorized part of the remediation project is prohibited.
19. The discharge of wastes to waters of the United States is prohibited.
20. The discharge of wastes to waters of the State that are perennial and discharges to wetlands are prohibited.
21. The discharge of wastes in a manner that causes runoff, off-site sediment deposition or that causes or could cause erosion, scouring or flooding is prohibited.
22. Adequate storm water control facilities must be provided to divert storm water away from the application area, treatment system, and waste storage areas to protect against overflow, washout, inundation, structural damage or a significant reduction in efficiency resulting from the maximum historic rain or flooding event.

VI. MONITORING AND REPORTING PROGRAM PROVISIONS

Pursuant to CWC, section 13267, the Discharger is required to establish an MRP. An MRP must be proposed and submitted with the RAP that includes the basic MRP provisions below and the specific requirements for each remediation type outlined in Attachment C. Other site-specific MRP requirements will be addressed during review of the RAP by Lahontan Water Board staff. The MRP will be approved and then issued with the NOA by the Executive Officer

providing coverage under the General Order. The basic MRP provisions for each enrollee are provided below.

- A. All technical reports required that involve planning, investigation, evaluation, design, or other work requiring interpretation or application of engineering or geologic sciences, must be prepared by, or under the direction of, persons qualified to conduct this work and registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835 and 7835.1. To demonstrate compliance with CCR, title 16, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) such that all work can be clearly attributed to the professional(s) responsible for the work.
- B. All sampling and sample preservation must be conducted according to approved quality assurance and quality control procedures to prevent cross contamination, meet laboratory hold times, and maintain adequate chain of custody procedures.
- C. All chemical, bacteriological, and bioassay analyses must be conducted by a laboratory certified for such analyses by the California Environmental Laboratory Accreditation Program (ELAP) or other state program authorized to undertake such certification.
- D. The Discharger must submit technical reports to the Lahontan Water Board documenting the work conducted according to the site-specific MRP program and other reports as required by the Executive Officer.
- E. When reporting, the Discharger must arrange all data in tabular form so that the date, constituents, and concentrations are readily discernible. The data must be summarized to demonstrate compliance with the discharge specifications and provisions of the General Order and identify incidents of non-compliance. Laboratory analytical data from any vadose zone and groundwater monitoring must be reported in Electronic Deliverable Format™ in accordance with CCR, title 23, section 3893.



- F. The Discharger must retain records of all monitoring information including copies of all reports required by this General Order, records of all data used to complete the application for this General Order, all calibration and maintenance records, sampling and measurement data including the date, exact location and time of sampling or measurement, individual(s) who conducted the sampling or measurement, the date the analyses were completed, analysts names and analytical techniques/methods used. Records must be maintained for a minimum of five years from the date of the sample, measurement, report, or application. This period may be extended during any unresolved litigation regarding the discharge or when requested by the Lahontan Water Board.
- G. The Discharger must submit a written report of any non-compliance with the requirements of this General Order to the Lahontan Water Board within five (5) days of identifying the non-compliance. The written report must identify the date(s) and time of the non-compliance, cause of the non-compliance, and a timetable of the corrective actions, undertaken or proposed, that will bring the discharge into full compliance as soon as possible.
- H. In the event the Discharger is unable to comply with the conditions of this General Order due to any of the following reasons, the discharger must notify the Lahontan Water Board by telephone within 24 hours followed by written notification within 5 business days:
1. Breakdown of remediation treatment equipment,
  2. Accident caused by human error or negligence,
  3. Site construction or development operations; or,
  4. Other causes such as acts of nature.
- I. The Discharger must notify the Lahontan Water Board by telephone within 24 hours of any adverse condition resulting from the discharge; such verbal notification must be confirmed in writing within 5 business days.
- J. The Discharger must submit a revised NOI and RAP to the Lahontan Water Board documenting any material change or proposed change in the character, location, or volume of the discharge.

- K. Whenever investigation derived wastes, including contaminated liquid and solid wastes, are transported offsite for disposal, the following must be documented in the monitoring report corresponding to the period of disposal: type and quantity of waste(s); name and address of the hauler; location of the final point(s) of disposal; waste profiling analytical report(s); and legible copies of any applicable bill of lading, waste manifest, and receipt.
- L. Each monitoring report must contain the following declaration:  
  
"All analyses were conducted by an ELAP-certified laboratory qualified to perform such analyses by and in accordance with current USEPA procedures or as specified in this Monitoring and Reporting Program."

VII. STANDARD PROVISIONS

- A. SOURCE CONTROL: Source control must be implemented at the remedial site as needed to control past and future discharges of pollutants to the environment.
- B. ENFORCEMENT: The Lahontan Water Board may initiate enforcement action against the Discharger should the discharge of waste be in a manner which creates, or threatens to create conditions of pollution, contamination, or nuisance, as defined in Water Code section 13050.
- C. DUTY TO COMPLY: The Discharger must comply with all conditions of this General Order and implement the measures identified in the RAP and MRP as approved by the Executive Officer in the NOA. Any noncompliance with this General Order or MRP constitutes a violation of the CWC and is grounds for: 1) enforcement action; 2) termination, revocation and reissuance, or modification of this General Order; or 3) denial of the ROWD in application for new or revised WDRs.
- D. OTHER REGULATORY REQUIREMENTS: Obtaining coverage under this General Order does not alleviate the Discharger of the responsibility to obtain all other applicable local, state, and federal permits to construct and operate remediation systems and facilities necessary for compliance with this General Order; nor does this General Order prevent imposition

of additional standards, requirements, or conditions by any other regulatory agency.

- E. ENTRY AND INSPECTION: The Discharger must allow the Lahontan Water Board, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to do the following:
1. To enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this General Order.
  2. Have physical access to and copy, at reasonable times, any records relating to the discharge or relating to compliance with this General Order.
  3. Inspect monitoring and control equipment, practices, or operations regulated or required under this General Order.
  4. Sample or monitor the substances or parameters at any location for purposes of assuring compliance with this General Order or as otherwise authorized by the CWC.
- F. PROPERTY RIGHTS: The General Order does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations, nor create a vested right for the Discharger to continue a waste discharge.
- G. PUBLIC ACCESS: General public access must be effectively excluded from the remediation system facilities.
- H. CIVIL MONETARY REMEDIES: The CWC provides that any person who intentionally or negligently violates WDRs issued, reissued, or amended by the Lahontan Water Board must be liable civilly in accordance with CWC section 13350 (d), (e), or (f).
- I. PENALTIES FOR INVESTIGATION, MONITORING OR INSPECTION VIOLATIONS: The CWC provides that any person failing or refusing to

furnish technical or monitoring program reports, as required under this General Order or the NOA, or falsifying any information provided in the monitoring reports is guilty of a misdemeanor and is subject to a civil liability in accordance with CWC section 13268.

- J. ENDANGERMENT OF HEALTH AND ENVIRONMENT: The Discharger must report any noncompliance that may endanger health or the environment. Any such information must be provided orally to the Lahontan Water Board within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission must also be provided within 5 days of the time the Discharger becomes aware of the circumstances. The written submission must contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Lahontan Water Board, or an authorized representative, may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.
- K. PRIOR NOTICE OF BYPASS: If a need for a discharge bypass is known in advance, the Discharger must submit prior notice (stating, at minimum, the purpose, anticipated dates, duration, level of treatment, and volume of bypass) and if at all possible, such notice must be submitted at least 10 days prior to the date of the bypass. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility to other than a sewer system.
- L. CORRECTIVE ACTION: The Discharger must take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this General Order, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the noncompliance.
- M. PROPER OPERATION AND MAINTENANCE: The Discharger must at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the Discharger to achieve compliance with the General Order.

Proper operation and maintenance include adequate laboratory control, where appropriate, and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by the Discharger, when necessary to achieve compliance with the conditions of the General Order.

- N. TREATMENT FAILURE: In an enforcement action, that halting or reducing the permitted activity would have been necessary to maintain compliance with this General Order must not be a defense for the Discharger. Upon reduction, loss, or failure of the treatment facility, the Discharger must, to the extent necessary to maintain compliance with this General Order, control production or all discharges, or both, until the facility is restored, or an alternative method of treatment is provided. This provision applies for example, when the primary source of power of the treatment facility is failed, reduced, or lost.
- O. HAZARDOUS RELEASES: Any person who, without regard to intent or negligence, causes or permits any hazardous substance or sewage to be discharged in or on any waters of the State or on land, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, must immediately notify the local health officer or the director of environmental health in accordance with California Health and Safety Code section 5411.5 and the Office of Emergency Services of the discharge in accordance with the spill reporting provision of the State toxic disaster contingency plan adopted pursuant to Article 3.7 (commencing with section 8574.7) of Chapter 7 of Division 1 of Title 2 of the Government Code, and immediately notify the Lahontan Water Board of the discharge as soon as (a) the person has knowledge of the discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures.
- P. PETROLEUM RELEASES: Any person who, without regard to intent or negligence, causes or permits any oil petroleum product to be discharge in or on any waters of the State or on land, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, must, as or on land, must immediately notify the local health officer or the director of environmental health in accordance with California Health and Safety Code section 5411.5 and the Office of Emergency

Services of the discharge in accordance with the spill reporting provision of the State toxic disaster contingency plan adopted pursuant to Article 3.7 (commencing with section 8574.7) of Chapter 7 of Division 1 of Title 2 of the Government Code, and immediately notify the Lahontan Water Board of the discharge as soon as (a) the person has knowledge of the discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures.

- Q. ORDER REPOSITORY: A copy of this General Order must always be maintained at the Discharger's facility and be available to operating personnel.
- R. AUTHORITY OF THE EXECUTIVE OFFICER: The Executive Officer is delegated the authority to:
1. Update the list of amendments in Attachment A by adding materials that are proven effective to remediate targeted constituents.
  2. Prescribe a site-specific MRP program for each authorized discharger and to require the discharger to submit technical reports associated with the project pursuant to the CWC, section 13267. The program may include participation in a regional monitoring program.
  3. Revoke coverage under this General Order at any time upon giving written notice to the discharger.
- S. ORDER REVISION: Coverage under this General Order may be modified, revoked and reissued, or terminated for cause including, but not limited to the following:
1. Violation of any terms or conditions of this General Order.
  2. Obtaining the General Order by misrepresentation or failure to disclose fully all relevant facts.
  3. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

- T. CHANGE IN DISCHARGE: Pursuant to CWC section 13260(c), any proposed material changes in the character of the waste, manner or method of treatment or disposal, increase of discharge, or location of discharge, requires submittal of an updated NOI and RAP and payment of the annual fee at least 30 days prior to initiation of a new discharge. This must include, but not be limited to, all significant soil disturbances, construction of groundwater monitoring or injection wells, changes in amendments, volume of discharge, or discharge location.
- U. CHANGE IN OWNERSHIP: This General Order is not transferable to any person except after notice to the Lahontan Water Board. The Discharger must submit a notice in writing at least 30 days in advance of any changes in facility operation including site operator, billing contact, facility owner and landowner. The notice must include a copy of the written agreement between the existing and new owner containing a specific date for the transfer of this General Order's responsibility and coverage between the current Discharger and the new owner. The Lahontan Water Board may require modification or revocation and reissuance of the NOA to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWC.
- V. INCOMPLETE REPORTS: Where the Discharger becomes aware that it failed to submit any relevant facts in a ROWD or submitted incorrect information in a ROWD or in any report to the Lahontan Water Board, it must promptly submit such facts or information.
- W. REPORT DECLARATION: All applications, reports, or information submitted to the Lahontan Water Board must be signed and certified as follows:
1. The ROWD must be signed and stamped by either a principal Executive Officer, a California-licensed Professional Engineer (Civil) or Professional Geologist or ranking elected official.
  2. All other reports required by this General Order and other information required by the Lahontan Water Board must be signed by a person designated in paragraph W.1., of this provision, or by

a duly authorized representative of that person. An individual is a duly authorized representative only if all the following are true:

- i. The authorization is made in writing by a person described in paragraph W.1., 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.
  - iii. The written authorization is submitted to the Lahontan Water Board.
3. Any person signing a document under this section must make the following certification:

“I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.”

- X. GENERAL REPORTING REQUIREMENT: The Discharger must furnish to the Lahontan Water Board, within a reasonable time, any information which the Lahontan Water Board may request to determine whether cause exists for modifying, revoking, and reissuing, or terminating this General Order. The Discharger must also furnish to the Lahontan Water Board, upon request, copies of record required to be kept by this General Order.
- Y. ELECTRONIC REPORTING REQUIREMENTS: Pursuant to Title 23, section 3893, CCR, all technical reports, laboratory analytical results (soil, soil vapor, groundwater, influent and effluent), groundwater monitoring well and injection well survey data, site maps, groundwater monitoring and injection well construction logs, boring logs, and depth to groundwater must be uploaded electronically over the internet to the State Water Resources Control Board GeoTracker website.



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GROUNDWATER REMEDIATION PROJECTS

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Z. SEVERABILITY: Provisions of the General Order are severable. If any provision of the requirements is found invalid, the remainder of the requirements must not be affected.

AA. RESCISSION OF OTHER GENERAL WDRS: General Board Order 6-93-106, 6-93-106A1, and R6T-2004-0015, are hereby rescinded.

VIII. CERTIFICATION

I, Michael R. Plaziak, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of a General Order adopted by the California Regional Water Quality Control Board, Lahontan Region, on June 8, 2022.



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MICHAEL R. PLAZIAK, P.G.  
EXECUTIVE OFFICER  
Lahontan Regional Water Quality Control Board

June 8, 2022

\_\_\_\_\_  
Date

**ATTACHMENT A**  
**LIST OF AUTHORIZED AMENDMENTS**

The list below does not represent any endorsement of products or materials by the California Regional Water Quality Control Board, Lahontan Region (Lahontan Water Board). Many of the products/materials listed are patented. Users of these products/materials must comply with any regulations and laws applicable to the use or the products/materials. Some products/materials may contain byproducts or impurities that the Lahontan Water Board does not authorize to be used. Compounds listed under one category can also be used under another category.

1. Chemical Oxidants

Fenton's reagent  
Hydrogen peroxide  
Ferrous iron catalyst  
pH buffer  
Hydrogen peroxide  
Ozone  
Potassium permanganate  
Potassium persulfate  
Sodium percarbonate  
Sodium permanganate  
Sodium persulfate

2. Chemical Oxidant Activators

Calcium hydroxide  
Chelating agents  
Ferric ethylenediaminetetraacetic acid (EDTA)  
Sodium citrate  
Sodium malonate  
Sodium phytate  
Silica and silicates  
Silicic acid  
Sodium silicate  
Silica gel  
Sodium hydroxide

3. Aerobic Bioremediation Enhancement Compounds

Calcium oxide/peroxide  
Calcium oxyhydroxide  
Magnesium  
    Oxide/hydroxide/peroxide  
Methane (dissolved phase)  
Propane (dissolved phase)

4. Anaerobic Degradation Enhancement Compounds

Ammonium chloride  
Ammonium nitrate  
Ammonium sulfate  
Calcium sulfate  
    Gypsum  
Cheese whey  
Complex organic materials  
    Starch  
    Wood chips  
    Yeast extract  
    Grain milling products  
    Chitin  
    Compost  
Complex sugars  
Corn syrup  
Disodium phosphate  
Emulsified vegetable oil  
Ethanol  
Glucose  
Glycerol esters of fatty acids and polylactates  
Glycerol polylactate/tripolylactate  
Glycerol, xylitol, sorbitol  
Guar  
Hematite  
Lactose  
Lecithin  
Magnesium sulfate

Milk whey  
Methanol  
Molasses  
Monosodium phosphate  
Nitrous oxide  
Organic acids (acetate, lactate, propionate, benzoate, and oleate)  
Orthophosphoric salts  
Phosphoric acid  
Polyphosphate salts  
Potassium phosphate  
Potassium sulfate  
Propanol  
Sodium trimetaphosphate  
Sorbitol cysteinate/cysteine  
Triethyl phosphate

5. Reduction Degradation Enhancement Compounds

Ferrous chloride  
Ferrous gluconate  
Ferrous sulfate  
Sodium dithionite  
Zero-valent iron

6. Metals Precipitation/Stabilization

Calcium phosphate  
Calcium polysulfide  
Ferrous sulfate  
Sodium tripolyphosphate (STPP)

7. Sorption/Biodegradation Biomatrix

Liquid activated carbon

8. Surfactants/Co-solvents

Benzenesulfonic acid  
Dioctyl sodium sulfosuccinate

D-limonene  
Ethoxylated castor oils surfactants  
Ethoxylated cocamides surfactants  
Ethoxylated coco fatty acid surfactants  
Ethoxylated octylphenolic surfactants  
Sorbitan monooleate  
Xanthan gum

9. Bioaugmentation Organisms

*The Discharger must prove that any bacterial genomes in original injection form, its degradation form, impurities, or byproduct must not be human/animal pathogens. Genetically modified organisms (GMO) must not be used.*

Dehalococcoides spp.  
Dehalobacter spp.  
Geobacter  
Methanomethylovorans  
Desulfovibrio  
Desulfobacterium

10. Tracer Study Compounds

*The tracer compounds must be highly contrasting and not reactive with current contaminants to be treated. The tracers may be chloride-, bromide-, or fluoride-based salts, or similar materials as approved by the Executive Officer.*

Calcium bromide  
Calcium chloride  
Eosin dyes  
Fluoride salts  
Iodide  
Potassium bromide  
Potassium iodide  
Sodium bromide  
Sodium chloride  
Sodium fluorescein

11. Buffer Solutions and pH Adjusters

Calcium carbonate  
Calcium magnesium carbonate  
Potassium bicarbonate  
Sodium (carbonate/bicarbonate)

12. Biofouling Control Agents

Chlorine dioxide  
Calcium hypochlorite  
Sodium hypochlorite  
Hydroxyacetic acid  
Sulfamic acid  
Acetic acid  
Glycolic acid

13. Adsorption Injectants

Organic Carbon Products

**ATTACHMENT B**  
**NOTICE OF INTENT AND REMEDIAL ACTION PLAN REQUIREMENTS**

All requested information is required – Please type or print clearly in ink

Mark Only One Item	
1.	<input type="checkbox"/> New Discharge [ <input type="checkbox"/> In-situ or <input type="checkbox"/> Ex-situ or <input type="checkbox"/> Small Scale Ex-situ]
2.	<input type="checkbox"/> Change in Discharge [Revised RAP Required]
3.	<input type="checkbox"/> Change of Contact Information – WDID Number:

**Landowner Contact Information**

Name
Mailing Address
Phone Number
Contact Person

**Facility Owner Contact Information**

Name
Mailing Address
Phone Number
Contact Person

**Billing Information**

Name
Mailing Address
Phone Number
Contact Person

**Site Operator**

Name
Mailing Address
Phone Number
Contact Person

**Project Location**

Street Address
City/County
Nearest Cross Street(s)
Total Size of Project (acres)
Latitude/Longitude (from center)
Township/Range/Section
Accessor Parcel Number

**Discharge Information**

Project Type <sup>1</sup>
Amendment Type(s) and Byproduct <sup>2</sup>
Method of Discharge <sup>3</sup>
Volume of Discharge (Gal/day, gal)
Pollutants/Constituents Present in the Discharge and Approximate Concentration (mg/L)
Land Use Zone
Adjacent Land Use Zone

**Remedial Action Plan Requirements**

Dischargers must submit a RAP with submittal of the NOI. At a minimum, the RAP must comply with the requirements of any applicable Cleanup and Abatement Order or Health and Safety Code Order issued by the Lahontan Regional Water Quality Control Board (Lahontan Water Board) and must be signed and stamped by an appropriately

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<sup>1</sup> - See section I.A of General Order No. R6-2022-0020  
<sup>2</sup> - See Attachment A of General Order No. R6-2022-0020  
<sup>3</sup> - See section I.C of General Order No. R6-2022-0020



experienced California-licensed Civil Engineer or Geologist. Items to be included in the RAP include:

PROJECT DESCRIPTION

A detailed description of the project including the following:

- a. Purpose of the project, project type (see General Order No. R6-2022-0020, section I, for details), and proposed time schedule to implement and complete the project.
- b. A description of the source control measures implemented at the site.
- c. A list of the pollutants and a narrative and graphical representation of the vertical and lateral extent of pollutants in the vadose zone and groundwater including plume (iso-concentration contour) maps and cross sections for contaminants in all affected subsurface and groundwater basin zones.
- d. The vertical and lateral extent of the treatment zone and zone of distribution to be used for the remediation project. Treatment zone is defined as the three-dimensional area being targeted to receive authorized amendments to achieve cleanup goals and protect beneficial uses. Zone of distribution is defined as the lateral and vertical spaces beyond the treatment zone in which the amendment and byproducts of the reactions with the pollutant of concern and background groundwater geochemistry could migrate, either through physical advection or chemical diffusion processes.
- e. A list of amendments to be used for the remediation project, copies of referenced pilot studies (if applicable) and a detailed description of the mechanism for the reaction.
- f. An evaluation of the salt concentrations and byproducts included in the proposed amendment(s). An examination of the potential to produce and mobilize naturally occurring constituents such as chromium (VI) and other metals, salts, nutrients, etc.
- g. An evaluation of application rate(s) and concentrations for proposed amendment(s) including nitrogen compounds, total dissolved solids, sulfate,

- chloride compounds, and any other proposed amendments with respect to employing hydraulic control to maintain cleanup goals.
- h. The volume/rate of amendments to be discharged and the radius of influence.
  - i. The Safety Data Sheet for all amendments and byproducts.
  - j. Site-specific and generally available information about the potential for adverse impacts to groundwater quality due to the application of the proposed amendment and an evaluation of the persistence and mobility of any pollutant breakdown products and amendment degradation byproducts.
  - k. Evidence that groundwater gradient, seepage velocity and flow direction have been determined.
  - l. Hydraulic control(s) to be employed to ensure WQOs will not be violated at compliance points.
  - m. Demonstration that sufficient drawdown by ex-situ remediation activities will result to establish adequate capture zones.
  - n. A list and explanation of the proposed equipment including injection wells, extraction wells, groundwater monitoring wells, and all above ground and below ground piping and utilities. Identify the wells to be used to determine water quality upgradient, within, and at compliance points outside (i.e. downgradient) of the treatment zone and within the transition zone.
  - o. Chemical and physical characteristics of the proposed discharge water quality.
  - p. A description of disposal method(s) and location(s) for treated groundwater.
  - q. The proposed siting and construction of the structure(s) which will house chemicals, remediation equipment and other related equipment with consideration for health hazards, security, accessibility, noise, odor control, etc.
  - r. Remediation system operation requirements.
  - s. A demonstration that the proposed remediation technology is effective in remediating the site-specific constituents which are the subject of the

remediation, such as the results of any pilot or bench scale testing performed for the proposed treatment technology.

- t. An evaluation of the cleanup levels that can be achieved at the site by the proposed treatment process.
- u. Site map of the proposed remediation project. The site map must include the following items at minimum:
  - i. Property boundary and Assessor Parcel Number;
  - ii. Polluted zone;
  - iii. Treatment zone;
  - iv. Transition zone;
  - v. Discharge locations;
  - vi. Existing and proposed locations of the groundwater and vadose zone monitoring network including a graphical depiction of the direction and gradient of groundwater flow;
  - vii. Location of the remediation system including injection wells, extraction wells, and remediation equipment housing structures;
  - viii. All streams (denote whether ephemeral, intermittent, or perennial) and wetlands.
  - ix. Schematic of all buried utilities and other preferential flow paths.
  - x. Locations of features within one mile of the site area that may influence the proposed remediation, such as limits of waste for all landfills, surface impoundments, composting piles, agricultural fields, dairies, existing known contaminant/pollutant plumes, and other groundwater monitoring, domestic supply and public supply wells.
  - xi. A north arrow and scale bar.

MONITORING AND REPORTING PROGRAM

A monitoring and reporting program (MRP) that will adequately assess the effectiveness of the project management measures to prevent impacts to the quality and beneficial uses of the groundwater downgradient of the contaminant plume. An MRP template that may be used by Lahontan Water Board staff is included in Attachment C for reference. The proposed MRP must include the following at minimum:

- a. A summary of the MRP history conducted to adequately establish water quality trends.
- b. Groundwater well construction details for all existing wells to be included in the remediation project.
- c. A figure indicating the location of the treatment zone, transition zone, compliance points, monitoring wells, injection wells/trenches, extraction wells, treated groundwater (effluent) disposal locations, direction of groundwater flow, topography and surface water features including ephemeral drainages.
- d. A list of wells (including well number/name) included in the remediation project and identify the objective for each well listed (i.e., compliance, background, injection, extraction, treatment zone, and transition zone).
- e. A list of constituents of concern (COCs) including the pollutants, amendment(s), breakdown constituents, and byproducts of the amendment(s) that can be expected in groundwater and in effluent.
- f. A Groundwater Sampling and Analysis Plan that includes the sampling locations, sampling frequency for each monitoring parameter and COC, sample collection methods, and quality assurance/quality control measures that will be implemented.
- g. An Effluent Sampling and Analysis Plan that includes the volume of treated groundwater discharged, the method of discharge, discharge locations, sampling locations, sampling frequency for each COC and monitoring parameter, sample collection methods, and quality assurance/quality control measures that will be implemented.

- h. For proposed discharges to ephemeral drainages submit:
  - i. A copy of the determination made by the United States Army Corp of Engineers that the drainage is not a water of the US and does not require a Clean Water Act section 404 permit.
  - ii. A Surface Water Monitoring plan for those projects that have the potential to discharge to any surface water during a precipitation event.
  - iii. An Ephemeral Drainage Monitoring and Maintenance Plan that includes a time schedule to routinely monitor the drainage and a narrative and graphical description of the best management practices that will be implemented to prevent erosion, scouring, flooding and sediment deposition downstream.
- i. A Treated Groundwater Diversion Plan to divert the treated groundwater from ex-situ groundwater remediation projects that does not meet cleanup goals.
- j. The background water quality numerical values for pollutants, heavy metals, and inorganics including pH, electrical conductivity, total dissolved solids, and dissolved oxygen. If background has not been determined, the Discharger must submit a proposal to develop the background concentrations.
- k. A remediation system performance monitoring plan and schedule including: the operation and maintenance of injection wells, extraction wells, monitoring wells, and above ground remediation equipment; methods to measure progress toward cleanup goals including a list of chemical constituents and microbial populations to be monitored and the monitoring locations; the sampling frequency, and the media to be monitored including groundwater, soil, soil gas, air, and effluent.
- l. A rebound monitoring plan and schedule to determine if modifications to the treatments system is warranted to improve performance.
- m. The groundwater reporting frequency.
- n. The provisions outlined in section VI of the General Order must be included.

### BACKGROUND WATER QUALITY

An evaluation of the background water quality of the basin at or near the groundwater remediation site(s) including constituents which are the subject of the remediation, pollutant breakdown products, and amendment degradation byproducts (as applicable); total dissolved solids, sulfates, chlorides, phosphorus, potassium, nitrogen species (NH<sub>4</sub><sup>+</sup>, NO<sub>3</sub><sup>-</sup>, NO<sub>2</sub><sup>-</sup>), iron, arsenic, chromium (III and VI), chemical oxygen demand, biochemical oxygen demand, pH, Title 22 dissolved metals, dissolved oxygen, dissolved carbon dioxide, methane, temperature, conductivity, and oxidation-reduction potential. Provide tabulated laboratory analytical data with a column for comparison of relevant water quality objectives (WQOs) from the Basin Plan, corresponding laboratory reports, and any statistical analysis, if available, to support the evaluation.

### SALT AND NUTRIENT MANAGEMENT AND PROTECTION PLAN

An evaluation of the proposed amendments and byproducts produced as a result of the treatment process that may violate the adopted Salt and Nutrient Management Plan adopted for the site-specific groundwater basin. The evaluation must include the protection strategy that will be implemented to comply with the adopted plan including all additional monitoring measures that will be implemented to ensure such protection.

### WATER QUALITY PROTECTION STANDARD

A Water Quality Protection Standard (WQPS) is required to assure the earliest possible detection of a release from remediation system failure, over application of amendments, effluent with concentration of pollutants above cleanup goals, and other site-specific remedial activities. The WQPS consists of all COCs, the concentration limits for each COCs, the point of compliance, all water quality monitoring points and proposed cleanup goals. Include the methodology for determining the concentration limits for each COC identified.

### PRELIMINARY CLOSURE AND POST-CLOSURE MONITORING AND MAINTENANCE PLAN

A Preliminary Closure and Post-Closure Maintenance Plan (PCPCMP) is required to restore the remediation site to pre-project conditions and conduct routine monitoring of compliance points to ensure cleanup goals have been met and the site does not pose a threat to human health and the environment prior to acceptance of a request for

termination of coverage under the General Order. The PCPCMP must include: a timeline to destroy all groundwater monitoring, extraction, and injection wells; a timeline to remove all remediation equipment and restore the site to pre-project conditions (such as revegetation and recontouring); and a copy of the financial assurance mechanism to ensure operation, monitoring and maintenance of the site throughout the life of the remediation project. The PCPCMP may need to be updated periodically to reflect current conditions at the site.

#### FINANCIAL ASSURANCES FOR OPERATION, MAINTENANCE, CLOSURE AND POST-CLOSURE

Financial Assurance must be provided to ensure adequate funds are available by the Discharger for known eventualities including operation, maintenance, closure and post-closure of the remediation site, upgrades to the remediation system, and corrective action in the event of an unauthorized release from the remediation system. A copy of the financial assurance mechanism must be provided with a detailed explanation verifying the amount of funds is sufficient to perform the above-described tasks. Evidence of financial assurance will be required to be reported annually and included in the preliminary and final closure plans.

#### HYDROLOGIC REPORT

A hydrologic report of site-specific hydrology and hydrogeology of the groundwater basin (lithology and physical parameters including infiltration rate) where remediation and discharge of waste is proposed including natural recharge locations; depth to groundwater; velocity, gradient, and direction of groundwater flow, subsurface media type(s) and range of hydraulic conductivities. The hydrologic report must also include an evaluation of the following hydrologic conditions:

- a. Potential effects on supply wells and nearby contaminant plumes due to groundwater extraction within one mile of the remediation site.
- b. The zone of influence on the contaminant plume from supply wells within one mile of the remediation site.
- c. Recharge locations and regional direction of groundwater flow.

### SENSITIVE RECEPTOR SURVEY AND PROTECTION PLAN

A Sensitive Receptor Survey and Protection Plan identifying all sensitive receptors and measures to protect sensitive receptors. The document must include all biological resources, cultural resources (including unique paleontological resources), surface waters (including waters of the State and waters of the US), schools, day care centers, residences and water supply wells (municipal and private domestic water supply, agricultural supply, industrial supply, etc.) located onsite and within one mile of the remediation project. Applicants are encouraged to contact the California Historical Resources Information Center for information related to historical resources located at the site of the proposed remediation project. If there is the potential to have a substantial adverse effect on species identified as a candidate, sensitive, or special status species (protected species) in local or regional plans, policies, or regulation, or by the California Department of Fish and Wildlife (CDFW) or United States Fish and Wildlife Service (USFW), coordination will be recommended with the applicable agency to avoid impacts prior to qualifying for the General Order.

### HEALTH AND SAFETY PLAN

A Health and Safety Plan (HSP) identifying the amendments, other materials, and wastes being transported to or from the site, and stored and used onsite; possible exposure risks; and the mitigation measures that will be incorporated throughout the life of the project to protect workers and the general public from exposure to hazardous material/hazardous waste.

### REMEDIATION SYSTEM FAILURE CONTINGENCY PLAN

A Remediation System Failure Contingency Plan (RSFCP) must indicate the procedures that will be implemented to respond to any emergencies caused by an unauthorized release due to failure of the remediation system. Mitigation measures to prevent exposure of hazardous material/hazardous waste from a release to land or groundwater must be incorporated to protect human health and the environment. The contingency plan must detail who is responsible for responding to any emergencies, their contact information, and the qualification of responding personnel.



### OPERATIONS AND MAINTENANCE PLAN

An Operations and Maintenance Plan (OMP) addressing the day-to-day activities that will be conducted to monitor the remediation equipment, damage after weather or other events, and prevent unauthorized access to the site.

### STORM WATER MANAGEMENT PLAN

A Storm Water Management Plan (SWMP) identifying measures to control storm water run-on and to limit erosion and migration of materials and waste offsite from storm water run-off. The SWMP must include a site map of existing and proposed storm water control facilities, detailed description of the containment structure(s) construction material, a detailed description of the conveyance systems, and a list of water quality monitoring parameters and constituents of concern. Containment structure refers to any berm, ditch, working surface, detention pond, or other mechanism approved by the Lahontan Water Board at a Remediation Site designed, constructed, and maintained to control and capture storm water run-on and runoff.

### EMERGENCY RESPONSE PLAN

The Emergency Response Plan (ERP) must include a detailed narrative description of the hazards associated with the remediation project and must include a site map of the project location relative to known geologic hazard zones including earthquake, liquefaction, and flood zones. The ERP must provide the actions that will be taken in the event of an emergency from the remediation project (e.g. unauthorized release) and from a natural disaster from any identified geologic hazards and wildfires.

### IRRIGATION MANAGEMENT PLAN

An Irrigation Management Plan (IMP) must be submitted if the waste is used for irrigation of land used for grazing or irrigation of crops. The IMP components must include the following as applicable:

- a. A detailed description of measures to maintain adequate cover to reduce erosion and sedimentation, rest-rotation grazing strategies, balance the number of animals to the available forage value, increase the use of range riders to improve animal distribution and use of forage, fencing sensitive areas to exclude grazing, develop non-lakeshore and off-stream watering sites, construct

physical improvement projects such as check dams, and restore riparian habitat.

- b. A detailed description of the crop type, irrigation method, volume of water discharged, watering schedule, acreage of application, and a list of compost, manure, fertilizer, pesticides, and herbicides used to include the associated material safety data sheet for each compound.
- c. An evaluation of the crop agronomic rate to balance the amount of water applied and the amount of nutrients removed through crop uptake and measures implemented to minimize leaching past the root zone.
- d. An evaluation of the concentrations of naturally occurring heavy metals and inorganic constituents to include tabulated analytical data and analytical laboratory reports.

**ATTACHMENT C**

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
LAHONTAN REGION**

**MONITORING AND REPORTING PROGRAM**

**NO. R6-2022-0020**

**WDID NO. [Waste Discharge ID #]**

**FOR**

**[NAME OF DISCHARGER]**

**[NAME OF PROJECT]**

**[LOCATION]**

The following Monitoring and Reporting Program (MRP) is a template. The final MRP included with the NOA must be customized by Lahontan Regional Water Quality Control Board (Lahontan Water Board) staff to fit the site-specific needs of the project. Constituents to be sampled, sampling locations, sampling frequency and reporting frequency need to be specified for the project. Attachment A is a generic template and likely constituent lists that need to be modified to meet the site-specific needs. Attachment B is reserved for a Site map. Attachment C is the General Provisions for Monitoring and Reporting. The text in blue font is information that can be updated for a complete site-specific MRP.

This Monitoring and Reporting Program (MRP) is issued to [Name of Discharger] for the [name of site and location] (Site), pursuant to Water Code Section 13267, and incorporates requirements for [types of monitoring (i.e., groundwater monitoring, remediation system performance, maintenance, effluent discharge, injection, extraction, reporting, and financial assurances)]. The Discharger must not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. As appropriate, Lahontan Regional Water Quality Control Board (Lahontan Water Board) staff must approve specific sample locations prior to implementation of sampling activities. The technical reports required by General Order No. R6-2022-0020 and MRP No. R6-2022-0020 are necessary to ensure compliance with the Waste Discharge Requirements (WDRs). Therefore, the burden, including costs, of these reports bears a reasonable relationship to the need for the report and the benefits to be obtained from the reports.

I. WATER QUALITY PROTECTION STANDARD

A Water Quality Protection Standard (WQPS) is required to assure the earliest possible detection of a release from the remediation project to the soil and/or groundwater. The WQPS consists of all constituents of concern (COCs), the concentration limits for each COC, the point of compliance, and all water quality monitoring points. The Executive Officer shall review and approve the WQPS, or any modification thereto, for each monitored medium.

A. Constituents of Concern

The COCs include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from the waste discharge [[site specific sources of waste \(i.e., amendments, amendment byproducts, effluent\)](#)]. The COCs for each monitored medium are listed in Attachment A, which is made part of this MRP. The Discharger must monitor all COCs at the sampling frequency and reporting frequency listed in Attachment A, which is made part of this MRP.

B. Monitoring Parameters

Monitoring parameters are those COCs that provide a reliable indication of a release from the remediation system and monitor remediation system performance. The monitoring parameters for each monitored medium are listed in this MRP, Attachment A. The Discharger must monitor all monitoring parameters at the sampling frequency and reporting frequency listed in Attachment A.

C. Concentration Limits

Concentration limits are established for each COC and are intended to reflect background ambient conditions of surface and subsurface media that are unaffected by a release from the remediation system. At any given time, the concentration limit for each COC must be equal to the background data set of the constituent unless a concentration limit greater than background (CLGB) has been established.

1. The Discharger is using the following methodologies to determine concentration limits for the groundwater monitoring program.
  - a. [\[Type Of Statistical Analysis – Intrawell or Interwell\]](#) – Describe statistical analysis used by the Discharger.
  - b. [\[Non-Statistical Comparison\]](#) – For inorganic COCs either not detected in the background well or only detected at trace concentrations and for man-made organic COCs, the concentration limit is set at method detection limit for the analytical method used.

If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the Site, the Discharger may request modification of the WQPS concentration limits to provide seasonal or reason-specific concentration limits (background data sets) for each COC at each monitoring point.

D. Point of Compliance and Monitoring Points

The point of compliance and monitoring points for the [\[specific media \(i.e., groundwater, unsaturated zone, etc.\)\]](#) are shown on Attachment B of this MRP. The Discharger may add monitoring points, as needed, to comply with the monitoring program.

The point of compliance is [\[describe point of compliance locations\]](#).

E. Compliance Period

The compliance period is the number of years equal to the active life of the remediation project plus any post-closure monitoring and maintenance period until the Lahontan Water Board finds that the Site no longer poses a threat to water quality. The compliance period is the minimum period during which the Discharger must conduct a water quality monitoring program after a release. The compliance period must begin anew each time the Discharger initiates remedial actions. The compliance period may be extended if the Site is not in compliance with the WQPS.

The Discharger plans to [describe proposed actions to close and restore the site].

## II. MONITORING

The Discharger must comply with the monitoring requirements outlined below. The Discharger must monitor the groundwater and [other monitoring points (i.e., effluent, discharge locations)]. All monitoring and inspection activities must be documented, and all sampling must be conducted in accordance with the approved Sampling and Analysis Plan (SAP) and as described in the General Provisions for Monitoring and Reporting (Attachment C of this MRP).

The Discharger must operate and maintain a monitoring system that complies with the approved Remedial Action Plan (RAP). Monitoring of the groundwater, waste disposal locations, and [other monitoring media] must be conducted to provide the best assurance of an early detection of a release from the groundwater remediation system and impacts to downgradient receptors. Changes to the remediation system requires submittal of an updated Notice of Intent (NOI) and revised RAP.

All samples collected in accordance with this MRP, except for field parameters must be analyzed by a California state-certified laboratory using United States Environmental Protection Agency (USEPA) analytical methods or the most recently approved SW-846 USEPA method or other equivalent USEPA method. An alternate method may be used if acceptable to the Executive Officer.

### A. Point of Compliance Groundwater Monitoring

The groundwater monitoring program monitors the quality of groundwater that passes through the point of compliance as well as monitors the quality of water upgradient, cross-gradient, and downgradient [other compliance monitoring (e.g. treatment zone, transition zone)] of the Site through the collection of groundwater samples for laboratory analysis and field measurement of water quality parameters. The Discharger must demonstrate the groundwater quality at the compliance points is not being impacted by the discharge.

#### 1. Monitoring Points

Groundwater monitoring points are shown on MRP, Attachment B.

2. Depth to Groundwater

Prior to purging and sampling, the Discharger must measure and record the depth below the ground surface of the static groundwater elevation (feet below ground surface [bgs]) in all groundwater monitoring wells. The measurements must be accurate to the nearest 0.01 foot.

3. Groundwater Purging and Sampling

Prior to sampling, all groundwater monitoring wells must be purged using either standard or low-flow techniques until dissolved oxygen (DO), electrical conductivity, pH, temperature, and turbidity of extracted well water have stabilized. These parameters will be considered stable when three consecutive readings have pH values within +/- 0.1 pH units, temperature values within +/- two (2) degrees Celsius, and electrical conductivity values within +/- three (3) percent.

Field sampling logs must include the stabilization readings, well screen interval, pump location within the well screen interval, type of pump used, and purge rate.

4. Monitoring Parameters and Constituents of Concern

The Discharger must monitor, at each groundwater monitoring well, all COCs and monitoring parameters in accordance with the frequencies listed in Attachment A. Should any non-monitoring parameter COC exceed their respective concentration limit by a measurably significant amount at any given point, that non-monitoring parameter COC will become a monitoring parameter at that monitoring point.

5. Field Parameters

The Discharger must monitor the groundwater for all field parameters in accordance with the frequencies listed in Attachment A.

6. Aquifer Characteristics

The Discharger must calculate, and illustrate on a site plan and/or aerial photograph, the following aquifer characteristics: the depth to groundwater (feet bgs) in each groundwater monitoring well; the static water level (feet above mean sea level) in each groundwater monitoring well; the slope of the groundwater gradient (feet/feet); the direction of groundwater gradient beneath and around the Site (degrees from true north); the velocity of groundwater flow (feet/year); and the current groundwater elevation isocontours for that monitoring period.

7. Calibration Documentation

Annually, the Discharger must submit documentation of instrument calibration and performance checks to verify proper operation of the field monitoring equipment.

B. In-Situ Remediation Monitoring

The Discharger must monitor the groundwater within the treatment and transition zones through the collection of liquid samples for laboratory analysis, measurement of product thickness, and collection of field monitoring parameters, [other site-specific monitoring]. The Discharger is also responsible for monitoring the volume and type of amendment discharged to the groundwater basin.

1. Amendment Analysis

Prior to use, amendments must be analyzed for the constituents listed in Attachment A. The analysis should be done on a mixture of the amendment and deionized water at the estimated concentration that would be injected during the pilot project.



2. Monitoring Points

The injection and observation well locations are shown on Attachment B.

3. Measure Free Product Thickness and Depth to Groundwater

Prior to purging and sampling, the Discharger must measure and record the free product thickness and depth below the ground surface of the static groundwater elevation (feet below ground surface [bgs]) in all groundwater monitoring wells. The measurements must be accurate to the nearest 0.01 foot.

4. Free Product Removal and Groundwater Purging and Sampling

Prior to purging and sampling, the discharger must remove the free product. After free product removal, all wells must be purged using either standard or low-flow techniques until dissolved oxygen (DO), electrical conductivity, pH, temperature, and turbidity of extracted well water have stabilized. These parameters will be considered stable when three consecutive readings have pH values within +/- 0.1 pH units, temperature values within +/- two (2) degrees Celsius, and electrical conductivity values within +/- three (3) percent.

Field sampling logs must include the stabilization readings, well screen interval, pump location within the well screen interval, type of pump used, and purge rate.

5. Monitoring Parameters and Constituents of Concern

The Discharger must monitor, at each injection and observation well, all COCs and monitoring parameters in accordance with the frequencies listed in Attachment A. Should any non-monitoring parameter COC exceed their respective concentration limit by a measurably significant amount at any given point, that non-monitoring parameter COC will become a monitoring parameter at that monitoring point.

6. Field Parameters

The Discharger must monitor each well for all field parameters each time a well is sampled in accordance with the frequencies listed in Attachment A.

7. Flow Rate Characteristics

The Discharger must record the following flow rate characteristics of water and amendments that are injected into the groundwater aquifer: injected volume in gallons per day; amendments added in pounds per day; and biocide added in pounds per day [if applicable].

C. Ex-situ Remediation Monitoring

The Discharger must monitor the groundwater extraction system through the collection of liquid samples for laboratory analysis of the influent and effluent, recording the volume of influent to the remediation system, the volume of treated groundwater (effluent) disposed to the authorized disposal areas, inspection of discharge locations [other applicable monitoring].

The following influent, effluent and receiving water monitoring detail the constituents to analyzed and the sampling frequency.

1. Remediation System Startup Monitoring

Prior to disposal of any effluent, the Discharger shall conduct startup monitoring to confirm that the remediation system will produce effluent that complies with standards prescribed in the Waste Discharge Requirements (WDRs). During startup monitoring, the Discharger must direct the effluent to a temporary impervious storage container. Startup monitoring must be conducted until two consistent, consecutive sample results indicate system stability and compliance with WDRs. Samples must be taken a minimum of twelve (12) hours apart and a maximum of seventy-two (72) hours apart. Only treatment plant effluent is required to be analyzed during startup monitoring.

2. Remediation System Flow Monitoring

The following information must be recorded in a permanent logbook:

- a. The total volume, in gallons, of groundwater extracted for each day.
- b. The total volume, in gallons, of groundwater extracted for each month.
- c. The average flow rate, in gallons per day, of groundwater extracted calculated for each month.
- d. The total volume, in gallons, of effluent to the disposal facility for each month.
- e. If applicable, the freeboard (distance from the top of the lowest part of the dike to the surface impoundment) must be measured each month in each pond. If a pond does not contain effluent, indicate that it is empty.
- f. The remediation system non-operation time in hours of each non-operation period and in total hours of non-operation during the reporting period.

3. Groundwater Extraction System Monitoring

The Discharger must monitor the hydrologic effect on the groundwater basin and the success of the hydraulic containment implemented to maintain plume stability [[other applicable monitoring](#)].

a. Monitoring Points

The extraction wells, observation wells, [[other types of hydraulic containment \(i.e., pumping, and injection wells\)](#)], are shown on Attachment A.

b. Hydraulic Containment

Hydraulic containment is accomplished by [types of hydraulic containment (i.e., capture zone, pressure ridge, physical barrier)]. The Discharger must monitor the following: the hydraulic head, groundwater quality, pumping rates, and volume of water being extracted or injected, [other such as tracer testing].

c. Measure Free Product Thickness and Depth to Groundwater

Prior to purging and sampling, the Discharger must measure and record the free product thickness and depth below the ground surface of the static groundwater elevation (feet below ground surface [bgs]) in all groundwater monitoring wells. The measurements must be accurate to the nearest 0.01 foot.

4. Influent Monitoring

The Discharger must monitor the quality entering the remediation system, [other applicable monitoring].

a. Monitoring Points

The extraction wells are shown on Attachment B.

b. Measure Free Product Thickness and Depth to Groundwater

Prior to purging and sampling, the Discharger must measure and record the free product thickness and depth below the ground surface of the static groundwater elevation (feet below ground surface [bgs]) in all groundwater monitoring wells. The measurements must be accurate to the nearest 0.01 foot.

c. Free Product Removal and Groundwater Purging and Sampling

Prior to purging and sampling, the discharger must remove the free product. After free product removal, all wells must be purged using either standard or low-flow techniques until dissolved oxygen (DO), electrical conductivity, pH, temperature, and turbidity of extracted well water have stabilized. These parameters will be considered stable when three consecutive readings have pH values within +/- 0.1 pH units, temperature values within +/- two (2) degrees Celsius, and electrical conductivity values within +/- three (3) percent.

Field sampling logs must include the stabilization readings, well screen interval, pump location within the well screen interval, type of pump used, and purge rate.

d. Monitoring Parameters and Constituents of Concern

The Discharger must monitor the quality of water being extracted for treatment at the remediation system according to the schedule provided in Attachment A.

e. Field Parameters

The Discharger must monitor each well for all field parameters each time a well is sampled in accordance with the frequencies listed in Attachment A.

5. Effluent Monitoring

The Discharger must monitor the quality and volume of effluent discharged to the [authorized disposal systems (i.e., agricultural fields, groundwater basin via injection, etc.)] through the collection of liquid samples for laboratory analysis. All observations and measurements must be recorded in a permanent logbook kept onsite. Effluent that does not meet the discharge specifications (cleanup goals) must be diverted from groundwater recharge

locations such as irrigation fields, percolation ponds, ephemeral drainages, etc.

a. Monitoring Points

The monitoring points are shown on Attachment B. A liquid grab sample will be collected from the treated groundwater conveyance system at a location upgradient from the point of discharge to the [disposal system (i.e., percolation pond, ephemeral drainage, etc.)]. The sample location must be documented for each sampling event.

b. Monitoring Parameters and Constituents of Concern

The Discharger must monitor the treated groundwater for all COCs and monitoring parameters in accordance with the frequencies listed in Attachment A.

c. Field Parameters

The Discharger must monitor treated groundwater for all field parameters in accordance with the frequencies listed in Attachment A.

d. Calibration Documentation

Annually, the Discharger must submit documentation of instrument calibration and performance checks to verify proper operation of all field monitoring equipment.

6. Disposal Monitoring

The Discharger must monitor the composition of water discharged to the [containment structure] through the collection of liquid and [other applicable media such as soil] for laboratory analysis. All observations and measurements must be recorded in a permanent logbook kept onsite.

a. Monitoring Points

A liquid grab sample must be collected from [discharge location] at a location, as specified herein: [specify locations].

b. Monitoring Parameters and Constituents of Concern

The Discharger must monitor [discharge location] liquids for all monitoring parameters and COCs in accordance with the frequencies listed on Attachment A.

c. Field Parameters

The Discharger must monitor [discharge location] liquids for all field parameters in accordance with the frequencies listed in Attachment A.

d. Calibration Documentation

Annually, the Discharger must submit documentation of instrument calibration and performance checks to verify proper operation of all field monitoring equipment.

e. Dikes and Liners

The Discharge must visually inspect each dike and exposed liners at a regular frequency (such as daily) to determine if there are any indication of loss of integrity. Should the inspection indicate that any unauthorized discharge has occurred, or may occur, the Discharger must notify the Lahontan Water Board with 24 hours of the inspection, followed by confirmation in writing within 7 days.

f. Diversion Monitoring

The Discharger must visually inspect the diversion area for the treated groundwater that does not meet cleanup goals. The inspect results must be recorded and kept in a permanent logbook.

7. Ephemeral Drainage Monitoring

The Discharger must monitor the integrity of the ephemeral drainage and monitor the quality of water discharged.

a. Monitoring Points

A liquid grab sample must be collected at a location within the drainage positioned downgradient from the discharge point.

b. Monitoring Parameters and Constituents of Concern

The Discharger must monitor the liquids for all monitoring parameters and COCs in accordance with the frequencies listed on Attachment A.

c. Field Parameters

The Discharger must monitor the liquids for all field parameters in accordance with the frequencies listed in Attachment A.

d. Calibration Documentation

Annually, the Discharger must submit documentation of instrument calibration and performance checks to verify proper operation of all field monitoring equipment.

e. Ephemeral Drainage Inspections

The Discharger must visually inspect the ephemeral drainage at a regular frequency (such as daily) to determine if there are any indication of loss of integrity, erosion, scouring, and sediment transport downstream. Should the inspection indicate that any unauthorized discharge has occurred, or may occur, the Discharger must notify the Lahontan Water Board with 24 hours of the inspection, followed by confirmation in writing within 7 days.



D. Surface Water Monitoring

The Discharger must implement the surface water monitoring program according to the approved RAP that was prepared for those discharges that have the potential to impact waterbodies.

1. Visual Inspections

The Discharge must visually inspect the receiving water according to the approved RAP according to the inspection frequency.

2. Monitoring Points

The monitoring locations are listed on Attachment B.

3. Sampling Locations

The Discharger must sample the locations according to the sampling frequency included in the approved RAP and listed on Attachment A.

4. Monitoring Parameters and Constituents of Concern

The Dischargers must have the surface water samples analyzed for all COCs and monitoring parameters listed on Attachment A.

E. Storm Water Monitoring

The Discharger must monitor storm water discharges according to the approved RAP.

1. Visual Inspections

The Discharger must visually inspect the storm water monitoring locations according to the frequency indicated in the approved RAP.

2. Monitoring Points

The monitoring points are included on Attachment B.

3. Sampling Locations

The sampling locations are included on Attachment B.

4. Monitoring Parameters and Constituents of Concern

The monitoring parameters and COCs are those listed on Attachment C.

III. DATA ANALYSIS

All data analysis methods (statistical and non-statistical) must meet the requirements for determining rebound, source control, and remedial progress. [\[Provide site-specific information\]](#).

IV. REPORTING REQUIREMENTS

The Discharger must comply with the following reporting requirements.

A. Scheduled Reports to be Filed with the Lahontan Water Board

Pursuant to CCR, title 23, section 3890 (et al.) the Discharger must submit all the monitoring data and technical reports electronically over the internet to the State Water Resources Control Board's GeoTracker database in Electronic Data Format (EDF). This requirement is in addition to, and not superseded by, any other applicable reporting requirement.

1. Quarterly Monitoring Reports

Each quarterly report must include but not be limited to, the following information.

- a. All data collected during the reporting period in accordance with the approved SAP for the [\[each monitoring location\]](#) as outlined in MRP, section II.
- b. Tabulated results of sampling and laboratory analyses for each monitoring point, including historical (last ten years at minimum) and current reporting period data, as well as the concentration limit for each monitoring parameter and an identification of each sample that exceeds its respective concentration limit at any given monitoring point.

- c. A map and/or aerial photograph showing the perimeters of the remediation system, treatment zone and ancillary facilities as well as locations of monitoring points and background monitoring points, observation stations, and the surface trace of the point of compliance.
- d. Describe, calculate, and illustrate on a map and/or aerial photograph the static groundwater surface elevation (feet above mean sea level) in each groundwater monitoring well, the groundwater gradient (feet/feet) and the direction of the groundwater gradient beneath and around the surface impoundments, the velocity of groundwater flow (feet/year), and the current groundwater isocontours for that monitoring period.
- e. Isoconcentration maps for each COC depicting the aerial extent of the plume from the date the release was identified and compared to current data.
- f. Cross sections of each COC in the subsurface depicting the vertical extent of pollution in the subsurface.
- g. All data and visual observations associated with monitoring of the [monitoring points].
- h. A narrative description of any modifications to, additions to, maintenance of, or operational problems associated with the remediation system and disposal facilities.
- i. Copies of all field monitoring and well sampling data sheets. All sampling data sheets must include the groundwater purge rate and location of the pump within the screened interval.
- j. Time-series plots of the analytical results from [monitored media (i.e., groundwater, etc.)] at each monitoring point for each COC and monitoring point detected during the monitoring period as well as available historical data (last ten years of data). Time-series plots must include as

horizontal lines, the concentration limit as derived in accordance with the WQPS for the respective COC/monitoring point pair (if applicable), as well as the PQL and MDL for the analytical method used.

- k. A letter transmitting the essential points of each report, including an analysis of the data collected during the monitoring period with respect to the success of the remediation system.
- l. A discussion of any violations found since the last report was submitted and describing actions taken or planned for correcting those violations.
  - i. If the Discharger has previously submitted a detailed time schedule for correcting violations, a reference to the correspondence transmitting this schedule will suffice.
  - ii. If no violations have occurred since the last submittal, this must be stated in the letter of transmittal.
- m. A summary of significant spills and/or leaks that occurred at the Site during the reporting period and must include: 1) the response taken by the Discharger; 2) date of incident; 3) copies of laboratory analytical reports from all samples collected; and 4) photographs taken of the incident.

2. Annual Monitoring Reports

Each annual report must include, but not be limited to, the following.

- a. All data reported in accordance with the MRP, [sections].
- b. A narrative of the items described in the General Provisions for Monitoring and Reporting (Attachment C of this MRP).

- c. Isoconcentration maps for each COC depicting the aerial extent of the plume from the date the release was identified and compared to current recently detected water quality data.
- d. Tabulated water quality data collected during the calendar year. Each table must include the historical and most recently collected water quality data for the monitored medium [e.g., groundwater, influent, effluent, storm water].
- e. Time-series plots for each monitoring parameter and constituent of concern. Each graph must be plotted using raw data, including the last ten (10) years of data at minimum, and at a scale appropriate to show trends or variations in water quality. For graphs showing trends of similar constituents (e.g., volatile organic compounds) the scale must be the same.
- f. Calibration methods and any discrepancies of any meters used for field parameter evaluations after calibration is performed.
- g. An evaluation of the effectiveness of both the [e.g., groundwater, extraction system, compliance point] monitoring programs and any proposed modifications necessary to improve the detection monitoring.
- h. A summary of significant spills and/or leaks that occurred at the Site during the reporting period and must include: 1) the response taken by the Discharger; 2) date of incident; 3) copies of laboratory analytical reports from all samples collected; and 4) photographs taken of the incident.
- i. A brief chronological summary of dates of any operational problems and maintenance activities that may impact water quality at the site.

- j. The compliance record and the corrective actions taken or planned, which may be needed to bring the Facility into full compliance with the discharge requirements.
- k. Evidence that adequate financial assurance for (1) closure and post-closure monitoring and maintenance and (2) corrective action for all known or reasonably foreseeable releases is still in effect. Evidence may include a copy of the renewed financial instrument or a copy of the receipt for payment of the financial instrument.
- l. Evidence that the financial assurance amount is adequate or increase the amount of financial assurance by an appropriate amount, if necessary, due to inflation, a change in the preliminary closure plan, or other unforeseen events.
- m. The Discharger must review the preliminary closure plan and corrective action plan for all known or reasonably foreseeable releases annually to determine if significant changes in the operation of the Facility warrant an update to these plans. Any proposed changes to these plans must be outlined in the annual report.
- n. The Discharger has established background concentration limits in the WQPS. These limits may be revised annually. The revised limits must be included in the annual report and approved by the Executive Officer.

3. Annual Storm Water Reports

Annual storm water reports must be submitted to the Lahontan Water Board no later than [Date] of each year in accordance with the frequency listed in Attachment A and may be combined with the annual monitoring reports. Annual storm water reports must include, but not be limited to, the following information:

- a. All data collected during the reporting period in accordance with the storm water monitoring plan, as outlined in MRP, [sections].

- b. Tabulated results of sampling and laboratory analyses for each storm water discharge monitoring location, including historical and current reporting period data, as well as the water quality threshold for each monitoring parameter and an identification of each sample that exceeds its respective water quality threshold at any given discharge monitoring location.
- c. A copy of the current site map from the SWPPP.
- d. Copies of all field monitoring, storm water sampling, and visual observation data sheets. An explanation shall be provided in the Annual Report for uncompleted sampling event visual observations.
- e. Calibration methods and any discrepancies of any meters used for field parameter evaluations after calibration is performed.
- f. A summary of the actions taken in response to a water quality threshold exceedance, including monitoring parameter and pollutant source(s) involved, additional BMP and/or SWPPP measures taken, and associated dates and timelines for implementing the response action; or a demonstration that the exceedance(s) is attributed to a non-industrial pollutant source and/or to a natural background source.
- g. A copy of any SWPPP amendments and/or revisions for the reporting period.
- h. A summary of significant spills and/or leaks that occurred at the Facility during the reporting period and the response taken by the Discharger, including dates.
- i. A summary of employee storm water related trainings performed during the reporting period, including dates and content.

B. Unscheduled Reports to be Filed with the Lahontan Water Board

The following reports must be submitted to the Lahontan Water Board as specified below.

1. Notice of Tentative Release from the Facility

Should the statistical or non-statistical data analyses indicate, for a given COC, that a new release is tentatively identified, the Discharger must follow these requirements.

a. Physical or Measurably Significant Evidence of a Release from the WMUs

The Discharger must immediately notify the Lahontan Water Board verbally whenever a determination is made that there is significant physical or “measurably significant” evidence of a release from the [site-specific area]. This verbal notification must be followed by written notification via certified mail within seven days of such determination. Upon such notification, the Discharger may initiate verification procedures or demonstrate that another source other than the [site-specific source] caused evidence of a release in accordance with this MRP, section [release verification section].

The notification must include the following information:

- i. The potential source of the release;
- ii. General information including the date, time, location, and cause of the release;
- iii. An estimate of the flow rate and volume of waste involved;
- iv. A procedure for collecting samples and description of laboratory tests to be conducted;
- v. Identification of any water body or water-bearing media affected or threatened;
- vi. A summary of proposed actions; and
- vii. For a physical evidence of a release – the physical factors that indicate evidence of a release; or
- viii. For a measurably significant evidence of a release –



the monitoring parameters and/or COCs that are involved in the measurably significant evidence of a release from the [site-specific source area].

b. Other Source That May Cause Evidence of a Release

The Discharger may make a demonstration that a source other than the [site-specific source area] caused evidence of a release. For this case, the Discharger must notify the Lahontan Water Board of the intention to make this demonstration. The notification must be sent to the Lahontan Water Board by certified mail within 7 days of determining physical or measurably significant evidence of a release.

2. Response to a Verified New Release

The Discharger must, within 90 days of verifying a release, submit a Notice of Intent (NOI) and revised Remedial Action Plan (RAP). If the Discharger decides not to conduct verification procedures or decides not to make a demonstration that a source other than the WMUs is responsible for the release, the release will be considered verified. The RAP must include the following information:

- a. COC Concentrations – the maximum concentration of each COC at each monitoring point as determined during the most recent COC sampling event. Any COC that exceeds its concentration limit is to be retested at that monitoring point. Should the results of the retest verify that the COC is above the concentration limit, then that COC will become a monitoring parameter at that monitoring point;
- b. Proposed Monitoring System Changes – any proposed changes to the groundwater and [include other applicable monitoring systems] monitoring systems necessary to meet the provisions of the WDRs;
- c. Proposed Monitoring Changes – any proposed additions or changes to the monitoring frequency, sampling and analytical procedures or methods, or statistical methods used at the Facility necessary to meet the provisions of the WDR; and

- d. Proposed Delineation Approach – a detailed description of the measures to be taken by the Discharger to assess the nature and extent of the release from the [potential source of the release].

5. Monitoring Well Logs

All monitoring wells (including groundwater and [other wells]) and all other borings installed to satisfy the requirements of this MRP must be drilled by a licensed drilling contractor and must be logged during drilling under the direct supervision of either a California-licensed professional geologist or civil engineer with expertise in stratigraphic well logging. Such logs must be submitted to the Lahontan Water Board electronically within 90 days following completion of fieldwork.

6. Significant Earthquake Event

After a significant<sup>4</sup> or greater earthquake event at or near the Site, the Discharger shall notify the Lahontan Water Board within 48 hours, and within 45 days submit to the Lahontan Water Board a detailed written post-earthquake report describing any physical damages to the remediation system, containment features or groundwater and/or unsaturated zone monitoring systems or to report no damage to the Site was sustained. The Discharger must closely examine the utility piping, inspect the slope conditions, drainage control system, and surface grading for signs of cracking or depressed/settled areas following the earthquake event. If cracking or depressed areas are identified, the Discharger must make repairs to those areas within 30 days from the date of the

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<sup>4</sup> A significant earthquake is a seismic event classified according to the United States Geological Survey (USGS) Earthquake Hazard Program as a moderate earthquake measuring between 5 and 5.9 on the Richter scale, or higher. The Discharger may use the Modified Mercalli Intensity Scale VI or higher for equivalent ground shaking generated by a significant earthquake of Richter magnitude 5.0 or higher as contained with the USGS Earthquake Hazard Program Magnitude/Intensity Comparison chart found at <https://earthquakes.usgs.gov>.

earthquake event. Repairs and maintenance must be consistent with General Order No. R6-2022-0020.

C. Technical Reports

Pursuant to CWC, section 13267, subdivision (b):

1. Monitoring Systems Installation Report

**No later than 90 days** following completion of construction a monitoring system or monitoring system component, the Dischargers must submit a technical report discussing the installation of the monitoring system or component. The report must summarize all work activities associated with the installation of the monitoring system or component. The report must be certified by a California professional civil engineer or a California professional geologist. It must contain sufficient information to verify that the construction was in accordance with State and/or County standards.

2. Sampling and Analysis Plan

**At least 60 days prior** to the operation of a new remediation system, the Discharger must submit a revised SAP to be accepted by the Lahontan Water Board, including procedures for monitoring, sampling, and analysis for the [[monitoring locations](#)].

D. General Provisions

The Discharger must comply with Attachment C, "General Provisions for Monitoring and Reporting," dated September 1, 1994, which is attached to and made part of this MRP.

E. Failure to Furnish Reports

Any person failing or refusing to furnish technical or monitoring reports or falsifying any information provided therein is guilty of a misdemeanor and may be liable civilly in an amount of up to one thousand dollars (\$1,000) for each day of violation pursuant to CWC, section 13268.

F. Violations

If monitoring data indicate a violation of a specific requirement in these WDRs, the Discharger must report the violation in the scheduled report for the corresponding reporting period and provide information indicating the cause of violation(s) and the action taken or planned to bring the discharge into compliance.

G. Electronic Reporting Requirements

Pursuant to CCR, title 23, section 3890, the Discharger must submit reports, including soil, soil-gas, and water data, prepared for the purpose of subsurface investigation or remediation of a discharge of waste to land electronically over the internet to the State Water Resources Control Board's GeoTracker system. This requirement is in addition to, and not superseded by, any other applicable reporting requirement. The Discharger must provide the monitoring report to the Lahontan Water Board, as specified in this MRP, and upload the full monitoring report into GeoTracker, as stipulated by CCR, title 23.

For all other types of documents and correspondence, please send to the Lahontan Water Board's email address at [Lahontan@waterboards.ca.gov](mailto:Lahontan@waterboards.ca.gov) and include the WDID No. and Facility name in the subject line.

Ordered by: \_\_\_\_\_ Dated: \_\_\_\_\_

MICHAEL R. PLAZIAK, PG  
EXECUTIVE OFFICER

- Attachments:
- A. Water Quality Monitoring Program
  - B. Monitoring Network, [[Name of Facility](#)]
  - C. General Provisions for Monitoring and Reporting, September 1, 1994

ATTACHMENT A – MONITORING PROGRAM

<b>GROUNDWATER MONITORING</b>			
<b>Parameter</b>	<b>Units</b>	<b>Sampling Frequency</b>	<b>Reporting Frequency</b>
<b>Field Parameters</b>			
Groundwater Elevation	Feet, Mean Sea Level		
Dissolved Oxygen	milligrams/Liter		
Electrical Conductivity	µmhos/cm		
pH	pH units		
Temperature	Degrees Fahrenheit or Celsius		
Turbidity	NTU		
<b>Monitoring Parameters</b>			
Iron	milligrams/Liter		
Manganese	milligrams/Liter		
Nitrate	milligrams/Liter		
Bicarbonate	milligrams/Liter		
Chloride	milligrams/Liter		
Methane	milligrams/Liter		
Total Dissolved Solids	milligrams/Liter		
Sulfate	milligrams/Liter		
Hydrogen Sulfide	milligrams/Liter		
Carbon Dioxide	milligrams/Liter		
Oxygen	milligrams/Liter		
Other Breakdown Products	milligrams/Liter		
Microbiological communities	milligrams/Liter		
Hydrogen	milligrams/Liter		
Low-Molecular Weight Fatty Acids	milligrams/Liter		
<b>Constituents of Concern</b>			
Amendment Type	milligrams/Liter		
Byproduct	milligrams/Liter		
Pollutant	milligrams/Liter		
Heavy Metals	milligrams/Liter		

GENERAL WASTE DISCHARGE REQUIREMENTS  
 FOR IN-SITU AND EX-SITU  
 GROUNDWATER REMEDIATION PROJECTS

R6-2022-0020

<b>INFLUENT MONITORING</b>			
<b>Parameter</b>	<b>Units</b>	<b>Sampling Frequency</b>	<b>Reporting Frequency</b>
<b>Field Parameters</b>			
Dissolved Oxygen	milligrams/Liter		
Electrical Conductivity	µmhos/cm		
pH	pH units		
Temperature	Degrees Fahrenheit or Celsius		
Turbidity	NTU		
<b>Monitoring Parameters</b>			
Iron	milligrams/Liter		
Manganese	milligrams/Liter		
Nitrate	milligrams/Liter		
Bicarbonate	milligrams/Liter		
Chloride	milligrams/Liter		
Methane	milligrams/Liter		
Total Dissolved Solids	milligrams/Liter		
Sulfate	milligrams/Liter		
<b>Constituents of Concern</b>			
Amendment Type	milligrams/Liter		
Byproduct	milligrams/Liter		
Pollutant	milligrams/Liter		
Heavy Metals	milligrams/Liter		

GENERAL WASTE DISCHARGE REQUIREMENTS  
 FOR IN-SITU AND EX-SITU  
 GROUNDWATER REMEDIATION PROJECTS

R6-2022-0020

<b>EFFLUENT MONITORING</b>			
<b>Parameter</b>	<b>Units</b>	<b>Sampling Frequency</b>	<b>Reporting Frequency</b>
<b>Field Parameters</b>			
Dissolved Oxygen	milligrams/Liter		
Electrical Conductivity	µmhos/cm		
pH	pH units		
Temperature	Degrees Fahrenheit or Celsius		
Turbidity	NTU		
<b>Monitoring Parameters</b>			
Iron	milligrams/Liter		
Manganese	milligrams/Liter		
Nitrate	milligrams/Liter		
Bicarbonate	milligrams/Liter		
Chloride	milligrams/Liter		
Methane	milligrams/Liter		
Total Dissolved Solids	milligrams/Liter		
Sulfate	milligrams/Liter		
<b>Constituents of Concern</b>			
Amendment Type	milligrams/Liter		
Byproduct	milligrams/Liter		
Pollutant	milligrams/Liter		
Heavy Metals	milligrams/Liter		

GENERAL WASTE DISCHARGE REQUIREMENTS  
 FOR IN-SITU AND EX-SITU  
 GROUNDWATER REMEDIATION PROJECTS

R6-2022-0020

<b>SURFACE WATER MONITORING</b>			
<b>Parameter</b>	<b>Units</b>	<b>Sampling Frequency</b>	<b>Reporting Frequency</b>
<b>Field Parameters</b>			
Biological Oxygen Demand	milligrams/Liter		
Electrical Conductivity	µmhos/cm		
pH	pH units		
Temperature	Degrees Fahrenheit or Celsius		
Total Organic Carbon	Milligrams/Liter C		
Turbidity	NTU		
<b>Monitoring Parameters</b>			
Bicarbonate	milligrams/Liter		
Biological Oxygen Demand	milligrams/Liter		
Carbonate	milligrams/Liter		
Total Suspended Solids	milligrams/Liter		
<b>Constituents of Concern</b>			
Amendment Type	milligrams/Liter		
Byproduct	milligrams/Liter		
Pollutants	milligrams/Liter		
Heavy Metals	milligrams/Liter		



GENERAL WASTE DISCHARGE REQUIREMENTS  
 FOR IN-SITU AND EX-SITU  
 GROUNDWATER REMEDIATION PROJECTS

R6-2022-0020

<b>STORM WATER MONITORING</b>			
<b>Parameter</b>	<b>Units</b>	<b>Sampling Frequency</b>	<b>Reporting Frequency</b>
<b>Field Parameters</b>			
Dissolved Oxygen	milligrams/Liter		
Electrical Conductivity	µmhos/cm		
pH	pH units		
Temperature	Degrees Fahrenheit or Celsius		
Turbidity	NTU		
<b>Monitoring Parameters</b>			
Iron	milligrams/Liter		
Manganese	milligrams/Liter		
Nitrate	milligrams/Liter		
Bicarbonate	milligrams/Liter		
Chloride	milligrams/Liter		
Methane	milligrams/Liter		
Total Dissolved Solids	milligrams/Liter		
Sulfate	milligrams/Liter		
<b>Constituents of Concern</b>			
Amendment Type	milligrams/Liter		
Byproduct	milligrams/Liter		
Pollutant	milligrams/Liter		
Heavy Metals	milligrams/Liter		

ATTACHMENT B

Reserved for location map of the monitoring network

ATTACHMENT C

Reserved for General Provisions of Monitoring and Reporting

**ATTACHMENT D**

**REQUEST FOR TERMINATION OF WASTE DISCHARGE REQUIREMENTS**

**Waste Discharge Identification #:**

**Date of Project Completion:**

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**Landowner Contact Information:**

Name
Mailing Address
Phone Number
Contact Person

**Facility Owner Contact Information:**

Name
Mailing Address
Phone Number
Contact Person

Project Category:

- Full Scale and Pilot Test In-situ Remediation: Groundwater cleanup projects that inject chemical and biological products to the vadose zone or groundwater basin to achieve regulatory compliance with water quality objectives.
- Full Scale Ex-Situ Remediation: Projects involving extraction and treatment of groundwater and discharge of waste to land or reinjection.
- Pilot and Small Scale Ex-situ Remediation: These projects have a discharge of less than 10,000 gallons per day, and do not discharge treated groundwater to groundwaters within one mile of water supply wells (e.g. domestic or public water supply wells, or agricultural water supply wells, etc.). Coverage under the General Order for projects expected to have no or low threat to water quality, human health, and the environment is at the discretion of the Executive Officer.

**Certification:**

I, the landowner and/or facility operator, hereby certify under penalty of perjury that the requirements outlined under General Order No. R6-2022-0020 for the above referenced project were conducted in conformance with the approved plan and have achieved water quality objectives.

**Signature:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Required elements to be submitted with the Request for Termination, at minimum:**

- a. Conceptual Site Model including a summary of the remedial actions that have taken place at the site, a demonstration that cleanup goals have been achieved and an evaluation of the Preliminary Closure Post-Closure Maintenance Plan and financial assurances are adequate to achieve site restoration.
- b. Timeline for site restoration including destruction of all groundwater monitoring, extraction, and injection wells, removal of all remediation equipment, and site restoration to pre-project conditions (such as revegetation and recontouring).

**Steps in Process of Receiving Lahontan Water Board Termination:**

- a. Discharger submits Request for Termination with all required documents.
- b. Lahontan Water Board staff reviews Request for Termination and either concurs that termination is appropriate or requests additional information to support request.
- c. Discharger completes well destruction and site restoration, then submits a well destruction report and site restoration final report.
- d. Lahontan Water Board technical staff reviews final reports and conducts a site inspection.
- e. Lahontan Water Board Executive Officer issues a formal termination notice, if appropriate.