

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM R5-2022-0049
FOR
VITA-PAKT CITRUS PRODUCTS COMPANY, CITY OF LINDSAY, AND
EDWARD AND EDNA BROWER REVOCABLE TRUST
VITA-PAKT LINDSAY LAND APPLICATION AREA
TULARE COUNTY

This Monitoring and Reporting Program (MRP), which is separately issued pursuant to California Water Code section 13267 subdivision (b)(1), establishes monitoring and reporting requirements related to the waste discharges regulated under Waste Discharge Requirements Order R5-2022-0049 (WDRs). Each of the Findings set forth in the WDRs Order, including those pertaining to the need for submission of reports, are hereby incorporated as part of this MRP.

Vita-Pakt Citrus Products Company (Vita-Pakt) owns and operates the two fruit processing plants (Plant[s]) that discharge wastewater to the land application area (LAA) regulated by the WDRs. Vita-Pakt owns one of the four parcels that make up the LAA. The City of Lindsay (Lindsay) owns the six-mile-long pipeline that transports the Plant wastewater to the LAA. The Edward and Edna Brower Revocable Trust (Trust) owns three of the four LAA parcels and manages the farming operations and application of wastewater on the entire LAA. Vita-Pakt, Lindsay, and the Trust are collectively referred to as Discharger. The Discharger shall not implement any changes to this MRP unless and until the Central Valley Regional Water Quality Control Board (Central Valley Water Board) adopts, or the Executive Officer issues, a revised MRP.

A glossary of terms used in this MRP is included on the last page.

This MRP may be separately revised by the Executive Officer, in accordance with their delegated authority under Water Code section 13223.

I. GENERAL MONITORING REQUIREMENTS

A. FLOW MONITORING

Hydraulic flow rates shall be measured at the monitoring points specified in this MRP. All flow monitoring systems shall be appropriate for the conveyance system (i.e., open channel flow or pressure pipeline) and liquid type. Flow measurements shall be based on flow meter readings unless specifically stated otherwise. The method of measurement must be specified. Unless otherwise specified, each flow meter shall be equipped with a flow totalizer to allow reporting of cumulative volume as well as instantaneous flow rate. Flow meters shall be calibrated at the frequency recommended by the manufacturer; typically, at least once per year and records of calibration shall be maintained for review upon request.

B. MONITORING AND SAMPLING LOCATIONS

Samples and measurements shall be obtained at the monitoring points specified in this MRP. Central Valley Water Board staff shall approve any proposed changes to sampling locations prior to implementation of the change.

The Discharger shall monitor the following locations to demonstrate compliance with the requirements of this MRP: The pond and well numbers/locations are shown in Attachment C of the WDRs.

Table 1. Monitoring Locations

Monitoring Location	Monitoring Location Description
EFF-001	Location where a representative sample of the waste stream can be obtained prior to discharge to the LAA or blending with irrigation water (or any other water)
PND-001 through PND-004	Wastewater Storage Ponds #1 through #4
SW	Source water monitoring.
IRG	Irrigation system monitoring
LAA	Land Application Area (LAA) monitoring
MW-1, MW-1A, MW-11A, MW-11B, MW-12, MW-13, MW-13B, MW-16A, MW-16D	Existing groundwater monitoring wells and any future monitoring wells added to the groundwater monitoring well network.
Solids	Solids monitoring.

C. SAMPLING AND SAMPLE ANALYSIS

All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. Except as specified otherwise in this MRP, grab samples will be considered representative of water, wastewater, soil, solids/sludges, and groundwater. The time, date, and location of each sample shall be recorded on the sample chain of custody form.

Field test instruments (such as those used to measure pH, temperature, electrical conductivity, dissolved oxygen, wind speed, and precipitation) may be used provided that:

1. The operator is trained in the proper use and maintenance of the instruments;
2. The instruments are field calibrated at the frequency recommended by the manufacturer;
3. The instruments are serviced and/or calibrated by the manufacturer at the recommended frequency; and
4. Field calibration reports are submitted as described in the “Reporting” section of this MRP.

Laboratory analytical procedures shall comply with the methods and holding times specified in the following (as applicable to the medium to be analyzed):

- *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA);

- *Test Methods for Evaluating Solid Waste* (EPA);
- *Methods for Chemical Analysis of Water and Wastes* (EPA);
- *Methods for Determination of Inorganic Substances in Environmental Samples* (EPA);
- *Standard Methods for the Examination of Water and Wastewater* (APHA/AWWA/WEF); and
- *Soil, Plant and Water Reference Methods for the Western Region* (WREP 125).

Approved editions shall be those that are approved for use by the United States Environmental Protection Agency (EPA) or the State Water Resources Control Board (State Water Board), Division of Drinking Water's Laboratory Accreditation Program (ELAP). The Discharger may propose alternative methods for approval by the Executive Officer. Where technically feasible, laboratory reporting limits shall be lower than the applicable water quality objectives for the constituents to be analyzed.

II. SPECIFIC MONITORING REQUIREMENTS

A. EFFLUENT MONITORING (EFF-001)

The Discharger shall monitor the effluent at EFF-001. Samples shall be representative of the volume and nature of the discharge. Time of collection of a grab sample shall be recorded. At a minimum, the effluent shall be monitored as specified in Table 2 below:

Table 2. Effluent Monitoring (EFF-001)

Constituent/Parameter	Units	Sample Type	Frequency
Flow	mgd	Meter	Continuous
pH	pH Units	Grab	1/Week
EC	µmhos/cm	Grab	1/Week
BOD ₅	mg/L	Grab	2/Month
Nitrate as N	mg/L	Grab	1/Month
TKN	mg/L	Grab	1/Month
Total Nitrogen	mg/L	Calculated	1/Month
FDS	mg/L	Grab	1/Month
TDS	mg/L	Grab	1/Month
General Minerals	mg/L	Grab	1/Quarter

B. POND MONITORING (PND-001, PND-002, PND-003, AND PND-004)

The Discharger shall monitor the ponds (PND-001, PND-002, PND-003, and PND-004) when wastewater is present. When conducting the weekly pond observations, the Discharger shall note if water is present in the ponds. Freeboard shall be measured to the nearest 0.1 foot vertically from the surface of the water to the lowest elevation of the berm. Water quality samples shall be collected at a depth of one foot below the surface of the water opposite the inlet. At a minimum, the ponds shall be monitored as specified in Table 3 below:

Table 3. Pond Monitoring (PND-001, PND-002, PND-003 and PND-004)

Constituent/ Parameter	Units	Sample Type	Frequency
DO	mg/L	Grab	1/Week (see 1 and 2 below)
pH	std. units	Grab	1/Week (see 1 and 2 below)
EC	µmhos/cm	Grab	1/Week
Freeboard	Nearest 0.1 Foot	Observation	1/Week
Odors	--	Observation	1/Week
Solids Depth	inches	Grab	1/Year

1. Samples for DO and pH shall be collected between 8:00 am and 10:00 a.m. when there is more than one foot of water in the pond. If there is insufficient water in the pond no sample shall be collected, and the Discharger shall report that in the appropriate monitoring report.
2. If offensive odors are detected by or brought to the attention of the Discharger, the Discharger shall monitor the potential source pond at least daily (excluding weekends and holidays) for DO and pH until the odor issue has been resolved.

C. SOURCE WATER MONITORING (SW-001)

The source water for Facility operations shall be monitored. Samples shall be representative of the source water supplied to the Facility after treatment. If the source water is from more than one source, the results shall be presented as a flow-weighted average of all sources. At a minimum, the source water shall be monitored as specified in Table 4 below.

Table 4. Source Water Monitoring (SW)

Constituent/Parameter	Units	Sample Type	Frequency
pH	Standard pH Units	Grab	1/Year
EC	µmhos/cm	Grab	1/Year
FDS	mg/L	Grab	1/Year

Constituent/Parameter	Units	Sample Type	Frequency
Nitrate (as N)	mg/L	Grab	1/Year

D. IRRIGATION SYSTEM MONITORING (IRG)

The Discharger shall monitor the irrigation water in use at the Facility. Samples of the irrigation water shall be representative of the irrigation water applied to the LAA. If the irrigation water is from more than one source, samples will be provided from each source. At a minimum, the irrigation monitoring system shall be monitored as specified in Table 5 below:

Table 5. Irrigation System Monitoring (IRG)

Constituent/Parameter	Units	Sample Type	Frequency
EC	µmhos/cm	Grab	1/Year
FDS	mg/L	Grab	1/Year
Nitrate as N	mg/L	Grab	1/Year

Once per year the Discharger shall conduct an annual inspection of the LAA irrigation system. The inspection shall note all irrigation lines and connections to fields that will be used for the application of wastewater. In addition, the Discharger shall note any locations where the irrigation system will cross open irrigation canals and/or surface waters and check that there are no connections between any conveyance used to carry wastewater and any surface waters (i.e., canals, channels, etc.) or drainage courses that leave the property. The results of the inspection as well as a map documenting the various irrigation lines and fields used for transportation or storage of wastewater shall be included in the Annual Report.

E. LAND APPLICATION AREA MONITORING (LAA)

The Discharger shall inspect the LAA at least once daily prior to and during irrigation events. Evidence of erosion, field saturation, runoff, or the presence of nuisance conditions (i.e., flies, ponding, etc.) shall be noted in the Facility's logbook and included as part of the annual monitoring report. In addition, the Discharger shall perform the following routine monitoring and loading calculations for each discrete irrigation area within the LAA each day when wastewater is applied. The data shall be collected and presented in graphical (map) and/or tabular format and shall include the following:

Table 6. Land Application Area Monitoring (LAA)

Constituent/Parameter	Units	Sample Type	Frequency
Fields Irrigated	acres	n/a	Daily

Constituent/Parameter	Units	Sample Type	Frequency
Irrigation flow (see 1 below)	mgd	Metered	Daily
Irrigation loading (see 1 below)	inches/day	Calculated	Daily
Precipitation	inches	Rain gage (see 2 below)	Daily
BOD₅ Loading (see 3 below)			
cycle average loading rate (see 4 below)	lbs/acre-day	Calculated	Cycle
Nitrogen Loading (see 3 below)			
from wastewater	lbs/acre	Calculated	1/Year
from fertilizer	lbs/acre	Calculated	1/Year
Salt Loading (see 3 below)			
from wastewater	lbs/acre	Calculated	1/Year
from fertilizer	lbs/acre	Calculated	1/Year

1. Irrigation flow and irrigation loading shall show the individual irrigation flows, individual wastewater flow, and the total irrigation flow (wastewater flow plus irrigation flow) discharged to the LAA.
2. National Weather Service or California Irrigation Management Information System (CIMIS) data from the nearest weather station is acceptable.
3. BOD₅, nitrogen, and salt loading shall be calculated as specified in section III of this MRP.
4. A cycle average is calculated by taking the pounds of BOD added to the LAA in a given period divided by the sum of the total days wastewater was applied plus the number of days of rest (no application of wastewater), see section III of the MRP for the calculation.

F. GROUNDWATER MONITORING (MW-1 TO MW-16D)

After measuring water levels and prior to collecting samples, each monitoring well shall be adequately purged to remove water that has been standing within the well screen and casing that may not be chemically representative of formation water. Purging shall continue until pH, EC, and turbidity have stabilized. Depending on the hydraulic conductivity of the geologic setting, the volume removed during purging is typically from 3 to 5 casing volumes.

The Discharger shall monitor all wells within its Groundwater Monitoring Network, specifically; MW-1, MW-1A, MW-11A, MW-11B, MW-12, MW-13, MW-13B,

MW-16A, and MW-16D and any subsequent or additional wells in or around the Land Application Area (Table 7).

Table 7. Groundwater Monitoring (MW-1 through 16D and any future wells)

Constituent/Parameter	Units	Sample Type	Frequency
Depth to Groundwater	0.10 Feet	Measured	1/Quarter
Groundwater Elevation (see 1 below)	Feet	Calculated	1/Quarter
Groundwater Gradient	Feet/Feet	Calculated	1/Quarter
pH	pH Units	Grab	1/Quarter
EC	µmhos/cm	Grab	1/Quarter
TDS	mg/L	Grab	1/Quarter
FDS	mg/L	Grab	1/Quarter
Nitrate (as N)	mg/L	Grab	1/Quarter
Iron	mg/L	Grab	1/Quarter (see 2 below)
Manganese	mg/L	Grab	1/Quarter (see 2 below)
General Minerals	mg/L	Grab	1/Year (see 2 below)

1. Groundwater elevation shall be calculated based on depth-to-water measurements from a surveyed measuring point.
2. For constituents with Secondary MCLs listed in Title, 22 Table 64449-A (e.g., aluminum, copper, iron, manganese, silver, zinc, color, and turbidity), samples shall be filtered with a 1.5-micron filter prior to preservation, digestion, and analysis. For all other constituents, samples shall be filtered with a 0.45-micron filter prior to preservation, digestion, and analysis.

In addition, the Discharger shall maintain its groundwater monitoring well network. If a groundwater monitoring well(s) is dry for more than four consecutive sampling events or is damaged, the Discharger shall submit a work plan and proposed time schedule to replace the well(s). The well(s) shall be replaced following written Executive Officer approval of the work plan and time schedule. Once installed, all new monitoring wells shall be added to the existing groundwater monitoring well network.

G. SOLIDS MONITORING (SOLIDS)

The Discharger shall maintain detailed records for disposal and/or recycling of residual solids removed from all screens, filters, basins, pits, or ponds both at the Plants and at the ponds. The record should include information on quantity, storage, method of disposal (i.e., livestock feed, soil amendment, composting, etc.) and receipts (if applicable). For solids applied to the land application areas, a map shall be provided identifying specific locations as well as any sample results used

to evaluate agronomic loading. A summary of the information shall be included in the Annual Report.

III. REPORTING REQUIREMENTS

All monitoring reports should be converted to a searchable Portable Document Format (PDF) and submitted electronically. Documents that are less than 50MB should be emailed to: centralvalleyfresno@waterboards.ca.gov. Documents that are 50 MB or larger should be transferred to a CD, DVD, or flash drive and mailed to the following address:

Central Valley Regional Water Quality Control Board
Region 5 – Fresno Office
1685 “E” St.
Fresno, California 93706

To ensure that your submittal is routed to the appropriate staff person, the following information should be included in the body of the email or transmittal sheet:

Program: Non-15,
Facility: Vita-Pakt Lindsay Land Application Area
Order: MRP R5-2022-0049
County: Tulare
Place ID: 214599

A transmittal letter shall accompany each monitoring report. The letter shall include a discussion of all violations of this MRP during the reporting period and actions taken or planned for correcting each violation. If the Discharger has previously submitted a report describing corrective actions taken and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. The transmittal letter shall contain a statement by the Discharger or the Discharger’s authorized agent certifying under penalty of perjury that the report is true, accurate, and complete to the best of the signer’s knowledge.

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., effluent, groundwater, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported in the next scheduled monitoring report.

Laboratory analysis reports shall be included in the monitoring reports. All laboratory reports must also be retained for a minimum of three years. For a discharger conducting any of its own analyses, reports must also be signed and certified by the chief of the laboratory.

Monitoring information shall include the method detection limit (MDL) and the reporting limit (RL) or practical quantitation limit (PQL). If the regulatory limit for a given constituent is less than the RL (or PQL), then any analytical results for that constituent that are below the RL (or PQL) but above the MDL shall be reported and flagged as estimated.

All monitoring reports that involve planning, investigation, evaluation or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1.

A. QUARTERLY MONITORING REPORTS

Quarterly monitoring reports shall be prepared and submitted to the Central Valley Water Board by the **1st day of the second month after the quarter** (i.e., the January-March quarterly report is due by May 1st). Each Quarterly Monitoring Report shall include the following:

1. Results of the **Effluent Monitoring** specified in Section II.A including:
 - a. Calculation of the maximum daily and monthly average flow for each month of the quarter.
 - b. Calculation of the 12-month rolling average FDS of the discharge for each month of the quarter using the FDS value for that month averaged with the FDS values for the previous 11 months.
2. Results of the **Pond Monitoring**, specified in Section II.B:
3. Results of **Source Water Monitoring** as specified in Section II.C. If the source water supply is from more than one source, the Discharger shall calculate the flow-weighted average concentration for each constituent monitored (include supporting calculations).
4. Results of **Irrigation System Monitoring** as specified in Section II.D. If the irrigation supply is from more than one source. The Discharger shall calculate the flow-weighted average concentration for each constituent monitored (include supporting calculations).
5. Results of **Land Application Area Monitoring** as specified in Section II.E., including:
 - a. A summary of the LAA inspection activities conducted by the Discharger
 - b. Calculate the cycle average BOD₅ loading rate for the LAA.

The mass of BOD₅ applied to each discrete irrigation area within the LAA on a cycle average basis shall be calculated using the following formula:

$$M = \frac{8.345(CV)}{AT}$$

Where:

<i>M</i>	=	Mass of BOD ₅ applied to each discrete LAA field in lbs/ac/day
<i>C</i>	=	Concentration of BOD ₅ in mg/L based on the average concentration for the month
<i>V</i>	=	Total volume of wastewater applied to the LAA field(s) during the irrigation cycle, in millions of gallons
<i>A</i>	=	Area of the LAA field in acres
<i>T</i>	=	Irrigation cycle length in days (from the first day wastewater was applied to the last day of the drying time)
8.345	=	Unit conversion factor.

6. Results of the **Groundwater Monitoring** as specified in Section II.F. including:
 - a. A narrative description of all preparatory, monitoring, sampling, and sample handling for groundwater monitoring.
 - b. A field log for each well documenting depth to groundwater; sample preparation (e.g., filtering); and sample preservation. For each sampling event, the Discharger may provide a table summarizing this information for all groundwater monitoring wells sampled in lieu of providing a field log for each well. The field logs should be made available upon request of the Central Valley Water Board.
 - c. Calculation of groundwater elevation at each monitoring well, and determination of groundwater flow direction and gradient on the date of the measurement.
 - d. For each monitoring well, a table showing groundwater depth, elevation, and constituent concentrations for at least the five previous years, up through the current quarter.
 - e. Summary data tables of analytical results collected during the quarter and the current water table elevations.
 - f. A scaled map showing relevant structures and features of the Facility, the locations of monitoring wells, surface waters, and groundwater elevation contours referenced to an appropriate datum (e.g., National Geodetic Vertical Datum).

- g. A table summarizing well construction information including well identification number, year constructed, seal interval, casing diameter and surface construction, casing material, screen slot size, screen interval, total well depth below the top of the casing, top of the casing elevation, and coordinates to locate the well.
7. A comparison of monitoring data to the flow limitations and discharge specifications and an explanation of any violation of those requirements.

B. FOURTH QUARTER MONITORING REPORTS

In addition to the above information, the fourth quarter monitoring report, due **1st February of each year** shall include the following:

1. Total annual effluent flow, and the average monthly flows for each month of the year, compared to the total annual flow limitation of the WDRs Order.
2. Analysis of the groundwater data and groundwater flow directions shall be performed at least annually and shall be performed under the supervision of a California-licensed professional. The groundwater analysis shall be provided in the annual report.
3. A groundwater monitoring report prepared by a California licensed professional. This report may be prepared separately from the rest of the Quarterly Report. The report shall contain an analysis of groundwater data collected during the year. The analysis shall include a description of the sample events, copies of the field logs, purge method and volume, groundwater elevation and trend, a groundwater elevation map for each sample event, summary tables showing results for parameters measured, comparison of groundwater quality parameters to applicable water quality objectives, calibration logs for field equipment used, and a general evaluation of any impacts the wastewater discharge is having on groundwater quality.
4. A discussion of compliance and corrective actions taken, as well as any planned or proposed actions needed to bring the discharge into full compliance with the MRP.
5. Names, title, general responsibilities, and contact information for persons regarding the Facility for emergency and routine situations.
6. Statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, include identification of who performed the calibrations (SPRRs C.4).

7. Calibration records for all flow meters used to demonstrate compliance with the flow limits in the WDRs.
8. A calibration log verifying calibration of all hand-held monitoring instruments and devices used to comply with the prescribed monitoring program.
9. Discussion on annual chemical usage at the Plants (e.g., chemical name, purpose, and quantity used).
10. A summary of any changes in processing that might affect waste characterization and/or discharge flow rates.
11. For the LAA, calculate the total mass loading for total nitrogen and salts (FDS).

$$M = \sum_{i=1}^{12} \frac{(8.345(C_i V_i) + M_x)}{A}$$

- Where:
- M = Mass of total nitrogen or FDS, applied to the LAA in lbs/ac/yr
 - C_i = Flow-weighted average concentration of total nitrogen or FDS for the month i in mg/L of the blended wastewater and irrigation water.
 - V_i = Volume of wastewater and irrigation water applied to the LAA during calendar month i in million gallons
 - A = Area of the LAA (i.e., field) irrigated in acres
 - I = The number of the month (e.g., January = 1, February = 2, etc.)
 - M_x = Nitrogen and FDS from other sources (e.g., fertilizer and compost) in pounds

If, in the opinion of the Executive Officer, the Discharger fails to comply with the provisions of this Order, the Executive Officer may refer this matter to the Attorney General for judicial enforcement, may issue a complaint for administrative civil liability, or may take other enforcement actions. Failure to comply with this Order may result in the assessment of Administrative Civil Liability of up to \$10,000 per violation, per day, depending on the violation, pursuant to the Water Code, including sections 13268, 13350 and 13385. The Central Valley Water Board reserves its right to take any enforcement actions authorized by law.

Any person aggrieved by this action of the Central Valley Water Board may petition the State Water Resources Control Board to review the action in accordance with California Water Code section 13320 and California Code of Regulations, title 23, sections 2050 and following. The State Water Resources Control Board must receive the petition by 5:00 p.m., 30 days after the date of this MRP, except that if the thirtieth day following the date of this Order falls on a Saturday, Sunday, or state holiday, the petition must be received by the State Water Resources Control Board by 5:00 p.m. on the next business day. [Copies of the law and regulations applicable to filing petitions](#) may be found on the internet (http://www.waterboards.ca.gov/public_notices/petitions/water_quality) or will be provided on request.

The Discharger shall begin implementation of the above monitoring program starting **1 July 2022.**

I, PATRICK PULUPA, Executive Officer, do hereby certify the forgoing is a full, true and correct copy of the Monitoring and Reporting Program R5-2022-0049 issued by the California Regional Water Quality Control Board, Central Valley Region, on 10 June 2022.

Ordered by:

PATRICK PULUPA, Executive Officer

GLOSSARY

BOD ₅	Five-day biochemical oxygen demand
CaCO ₃	Calcium carbonate
DO	Dissolved oxygen
EC	Electrical conductivity at 25° C
FDS	Fixed dissolved solids
TDS	Total dissolved solids
TKN	Total Kjeldahl nitrogen
TSS	Total suspended solids
Continuous	The specified parameter shall be measured by a meter continuously.
24-hr Composite	Samples shall be a flow-proportioned composite consisting of at least eight aliquots over a 24-hour period.
Daily	Once per day.
1/Week	Once per week.
2/Week	Twice per week on non-consecutive days.
1/Month	Once per month.
2/Month	Twice per month in non-consecutive weeks.
1/Quarter	Once per quarter.
2/Year	Once every six calendar months (i.e., two times per year) in non-consecutive quarters unless otherwise specified.
1/Year	Once per year.
mg/L	Milligrams per liter
mg/kg	Milligrams per kilogram
mL/L	Milliliters [of solids] per liter
µg/L	Micrograms per liter
µmhos/cm	Micromhos per centimeter
gpd	Gallons per day
mgd	Million gallons per day
MPN/100 mL	Most probable number [of organisms] per 100 milliliters
General Minerals	Analysis shall include; alkalinity (as CaCO ₃), bicarbonate (as CaCO ₃), boron, calcium, carbonate (as CaCO ₃), chloride, iron, magnesium, manganese, nitrate as N, phosphate, potassium, sodium, sulfate, and verification that the analysis is complete (i.e., cation/anion balance).