

## TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
<b>DEFINITIONS .....</b>	<b>D-1</b>
 <b>MODULE I - STANDARD CONDITIONS</b>	
I.A. EFFECT OF PERMIT .....	I-1
I.B. LOCATION .....	I-1
I.C. NO WAIVER OF AUTHORITY .....	I-1
I.D. PERMIT ACTION .....	I-1
I.E. SEVERABILITY .....	I-2
I.F. DUTIES AND REQUIREMENTS .....	I-2
I.F.1 Duty to Comply .....	I-2
I.F.2 Duty to Reapply .....	I-2
I.F.3 Review of Permit .....	I-2
I.F.4 Permit Expiration .....	I-2
I.F.5 Need to Halt or Reduce Activity Not a Defense .....	I-3
I.F.6 Duty to Mitigate .....	I-3
I.F.7 Proper Operation and Maintenance .....	I-3
I.F.8 Duty to Provide Information .....	I-3
I.F.9 Inspection and Entry .....	I-3
I.F.10 Reporting Planned Changes .....	I-4
I.F.11 Reporting Anticipated Non-Compliance .....	I-4
I.F.12 Transfer of Permit .....	I-4
I.F.13 Monitoring and Records .....	I-4
I.F.14 Twenty-four Hour Reporting .....	I-6
I.F.15 Monitoring Reports .....	I-7
I.F.16 Compliance Schedules .....	I-7
I.F.17 Submittal of Schedules .....	I-7
I.F.18 Transfer of Reports .....	I-7
I.F.19 Biennial Report .....	I-7
I.F.20 Other Non-Compliance .....	I-8
I.F.21 Other Information .....	I-8
I.F.22 Certification of Construction or Modification .....	I-8
I.G. SIGNATORY REQUIREMENT .....	I-8
I.H. CONFIDENTIAL INFORMATION .....	I-9

**Table of Contents (Continued)**

<u>Section</u>	<u>Page</u>
I.I DOCUMENTS TO BE MAINTAINED AT FACILITY SITE .....	I-9
I.J PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT .....	I-9
 <b>MODULE II - GENERAL FACILITY STANDARDS</b>	
II.A POST-CLOSURE MAINTENANCE AND MONITORING .....	II-1
II.B SECURITY .....	II-1
II.C PERSONNEL TRAINING .....	II-2
II.D GENERAL INSPECTION REQUIREMENTS .....	II-2
II.E CONTINGENCY AND SPILL MITIGATION PLAN .....	II-4
II.E.1 Content of Plan .....	II-3
II.E.2 Implementation of Plan .....	II-4
II.E.3 Copies of Plan .....	II-4
II.E.4 Amendments to Plan .....	II-4
II.F RECORD KEEPING AND REPORTING .....	II-4
II.G FINANCIAL ASSURANCE FOR CLOSURE/POST-CLOSURE .....	II-5
II.H LIABILITY REQUIREMENTS .....	II-5
II.I INCAPACITY OF PERMITTEE, GUARANTORS OF FINANCIAL INSTITUTIONS	II-5
 <b>MODULE III - POST-CLOSURE CARE AND USE OF PROPERTY</b>	
III.A POST-CLOSURE CARE .....	III-1
III.B COST ESTIMATES FOR THE FACILITY POST-CLOSURE CARE .....	III-2
III.C FINANCIAL ASSURANCE FOR FACILITY CLOSURE .....	III-2
III.D INSPECTIONS .....	III-2
III.E USE OF PROPERTY .....	III-3
III.F AMENDMENT OF PLAN .....	III-4
 <b>MODULE IV - GROUNDWATER MONITORING</b>	
IV.A APPLICABILITY AND GENERAL CONDITIONS .....	IV-1
IV.B POST-CLOSURE GROUNDWATER MONITORING AT THE RWMA HAZARDOUS WASTE LANDFILL .....	IV-2
IV.C POST-CLOSURE GROUNDWATER MONITORING AT THE GWMA AND THE LWMA.....	IV-2

**Table of Contents (Continued)**

<u>Section</u>	<u>Page</u>
IV.D REQUIRED PROGRAM .....	IV-3
IV.E INDICATOR PARAMETERS AND MONITORING CONSTITUENTS .....	IV-4
IV.F GROUNDWATER MONITORING REQUIREMENTS .....	IV-8
IV.G STATISTICAL PROCEDURES .....	IV-11
IV.H MONITORING PROGRAM AND DATA EVALUATION .....	IV-13
IV.I DATA VALIDATION .....	IV-13
IV.J SPECIAL REQUIREMENTS IF SIGNIFICANT INCREASES OCCUR IN VALUES FOR PARAMETERS OR CONSTITUENTS .....	IV-13
IV.K RECORD KEEPING AND REPORTING .....	IV-15
IV.L DEVELOPMENT AND CALIBRATION OF FACILITY GROUNDWATER MODEL.....	IV-16
IV.M ASSURANCE OF COMPLIANCE .....	IV-17
IV.N REQUEST FOR PERMIT MODIFICATION .....	IV-17
<b>MODULE V - GROUNDWATER CORRECTIVE ACTION</b>	
V.A CORRECTIVE ACTION PROGRAM SUBMITTAL .....	V-1
V.B CORRECTIVE ACTION IMPLEMENTATION .....	V-1
V.B DURATION OF CORRECTIVE ACTION PROGRAM .....	V-1
V.D COST ESTIMATES FOR CORRECTIVE ACTION .....	V-1
<b>MODULE VI - CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS SCHEDULE OF COMPLIANCE</b>	
VI.A SOLID WASTE MANAGEMENT UNITS .....	VI-1
VI.B STANDARD CONDITIONS .....	VI-1
VI.C RCRA FACILITY INVESTIGATION .....	VI-2
VI.D INTERIM MEASURES AND VOLUNTARY CLEAN UP ACTIONS .....	VI-3
VI.E REQUIREMENTS FOR A SPILL OF HAZARDOUS WASTE MATERIAL AND/OR HAZARDOUS WASTE CONSTITUENTS AT FACILITY .....	VI-4
VI.F NOTIFICATION REQUIREMENTS FOR AND ASSESSMENT OF NEWLY- IDENTIFIED SOLID WASTE MANAGEMENT UNITS .....	VI-5
VI.G DETERMINATION OF NO FURTHER ACTIONS .....	VI-7
VI.H CORRECTIVE ACTION PLAN.....	VI-8
VI.I REPORTING REQUIREMENTS .....	VI-9

## Table of Contents (Continued)

<b><u>Section</u></b>	<b><u>Page</u></b>
VI.J MODIFICATION OF THE CORRECTIVE ACTION SCHEDULE OF COMPLIANCE .....	VI-9
<b>TABLES</b>	
IV-1 SAMPLE DATES AND RESPECTIVE ANALYTE LIST .....	IV-5
IV-2 SCHEDULE OF COMPLIANCE .....	IV-15
VI-1 CORRECTIVE ACTION COMPLIANCE SCHEDULE .....	VI-10
<b>FIGURES</b>	
1 SITE LOCATION MAP	
2 LOCATION OF THE LWMA, RWMA AND RELATED SITE FEATURES	
<b>ATTACHMENTS</b>	
1 INSPECTION SCHEDULE AND FORMS	
2 SWMU STATUS SUMMARY	
3 STATISTICAL PROCEDURES - Mann-Kendall Trend analysis	

## **DEFINITIONS**

For purposes of this permit, terms used herein shall have the same meaning as those in R315 of the Utah Admin. Code, unless this permit specifically provides otherwise; where terms are not defined in the regulations or the permit, the meaning associated with such terms shall be defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

“Approved” means written approval from the Director of the Utah Division of Waste Management and Radiation Control.

“Control Board” means the Utah Waste Management and Radiation Control Board, which enacts policy and rules pertaining to solid waste, hazardous waste, used oil, and underground storage tanks to protect human health and the environment.

“Division” means the Utah Division of Waste Management and Radiation Control.

“Day(s)” means sequential calendar days.

“Director” means the Director of the Utah Division of Waste Management and Radiation Control.

“Facility” means all contiguous land and structures, other appurtenances and improvements on the land, used for treating, storing or disposing of hazardous waste. A facility may consist of several treatment, storage, and disposal operational units (eg. one or more landfills, surface impoundments, or combinations of them).

“Facility Plan Approval” means a written approval (referred to as a permit) to operate a hazardous waste treatment, storage, or disposal facility within the State of Utah.

“Groundwater Treatment System” means all the parts of the system that are used to extract, treat, or inject groundwater.

“Groundwater Treatment Unit” means all parts of the groundwater treatment system where the groundwater is treated to remove hazardous constituents.

“Hazardous waste constituent” means a constituent that caused the Control Board or the Director to list the hazardous waste in R315-261 of the Utah Admin. Code.

“Hazardous waste” means a solid waste, or combination of solid wastes, which, because of its quantity, concentration, or physical, chemical, or infectious characteristics may cause, or

significantly contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness; or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

“Precipitation” means rain, snow, sleet, or hail.

“Refinery” means the infrastructure associated with petroleum refining operations. The terms “refinery” and “facility” are both used in a similar fashion in this Permit, with the term “refinery” generally referring to infrastructure or operational units that are managed by refinery operations personnel in the course of routine refining of petroleum hydrocarbons, and the term “facility” generally referring to the closed LWMA and RWMA Corrective Action Management Unit landfills and the site-wide groundwater monitoring and corrective action infrastructure and activities that are performed under this Permit.

“Release” means any spilling, leaking, pouring, emitting, emptying, discharging, injecting, pumping, escaping, leaching, dumping, or disposing of hazardous wastes (including hazardous waste constituents) into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing hazardous wastes or hazardous waste constituents).

“Solid Waste Management Unit” (SWMU) means any discernible unit at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at a facility at which solid wastes have been routinely and systematically released.

“Submit” or “Submission” means to be received by hand-delivery, mail, certified mail, express mail, or facsimile and logged in at the offices of the Division of Solid and Hazardous Waste.

“Surface impoundment” or “Impoundment” means a facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which is designed to hold an accumulation of liquid waste or waste containing free liquids, and is not an injection well. Examples of surface impoundments are holding, storing, settling, and aeration pits, ponds and lagoons.

“Utah Registered or Registered Professional Engineer” means any individual who is registered as a Professional Engineer by any state’s Department of Business Regulation or its equivalent and is qualified by experience and education in the appropriate engineering field.

## **MODULE I - STANDARD CONDITIONS**

### **I.A. EFFECT OF PERMIT**

- I.A.1. The Permittee shall inspect and monitor the Reservoir Waste Management Area (RWMA), and the Landfill Waste Management Area (LWMA). Any treatment, storage, or disposal not in accordance with the conditions of this permit is prohibited. Issuance of this permit does not convey property rights of any sort or any exclusive privilege; nor does it authorize any injury to persons or property, any invasion of other private rights, or any infringement of State or local laws or regulations. Compliance with the terms of this permit does not constitute a defense to any order issued or any action brought under Section 3013 or Section 7003 of RCRA, Section 106 (a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. 9606 (a), commonly known as CERCLA or Superfund), or any other law providing for protection of human health or the environment. The terms and provisions of the Corrective Action Order (CAO) as they apply to the RWMA and the LWMA are superseded by this Permit, and the issuance of this Permit constitutes notification by the Director that the CAO is terminated as to the RWMA as provided in paragraph 74 of the CAO.

### **I.B. LOCATION**

- I.B.1. The RWMA is located east of Pond #3 and west of the Southwest Tank Farm within the property boundaries of the Chevron Salt Lake Refinery, Davis County, Utah (the Facility). The LWMA is located in the northwestern portion of the facility east of the Northwest Oil Drain Canal approximately 600 feet north of the RWMA. Figure 2 is a Facility map showing the RWMA and the LWMA.

### **I.C. NO WAIVER OF AUTHORITY**

- I.C.1. Other Authority. The Director or authorized representative expressly reserves any right of entry provided by law and any authority to order or perform emergency or other response activities as authorized by law.

### **I.D. PERMIT ACTIONS**

- I.D.1. This permit may be modified, revoked and reissued, or terminated for cause as specified in R315-270-40 through 43 of the Utah Admin. Code. The filing of a request for a permit modification, revocation and reissuance, or termination, or

the notification of planned changes or anticipated non-compliance on the part of the Permittee does not stay the applicability or enforceability of any permit condition.

I.D.2. The permit may be modified at the request of the Permittee according to the procedures of R315-270-42 of the Utah Admin. Code.

I.D.3. All permit conditions within this permit will supersede conflicting statements, requirements, or procedures found within the attachments of this permit.

**I.E. SEVERABILITY**

I.E.1. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby. Invalidation of any state or federal statutory or regulatory provision which forms the basis for any condition of this permit does not affect the validity of any other state or federal statutory or regulatory basis for said condition.

**I.F. DUTIES AND REQUIREMENTS**

I.F.1. Duty to Comply. The Permittee shall comply with all conditions of this permit, except to the extent and for the duration such non-compliance is authorized by an emergency permit. Any permit non-compliance, other than non-compliance authorized by an emergency permit, constitutes a violation of the Utah Administrative Rules and may be grounds for enforcement action, permit termination, revocation and reissuance, or modification of the permit.

I.F.2. Duty to Reapply. If the Permittee wishes, or is required by the Control Board or the Director, to continue an activity allowed by this permit after the expiration date of this permit, the Permittee shall submit a complete application for a new permit at least one hundred eighty (180) days before this permit expires.

I.F.3. Review of Permit. In accordance with the Utah Solid and Hazardous Waste Act, UCA 19-6-108(13), this permit shall be reviewed five years after the effective date and modified, as deemed necessary by the Director.

I.F.4. Permit Expiration. The permit will expire ten years years from the date of issuance. This permit and all conditions herein will remain in effect beyond the permit's expiration date if the Permittee has submitted a timely, complete

application and through no fault of the Permittee, the Director has not issued a new permit as set forth in R315-270-51 through 52 of the Utah Admin. Code.

- I.F.5. Need to Halt or Reduce Activity Not a Defense. It shall not be a defense for the Permittee, in an enforcement action, that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- I.F.6. Duty to Mitigate. In the event of non-compliance with the permit, the Permittee shall take all reasonable steps to minimize releases to the environment and shall carry out such measures as are reasonable to prevent significant adverse impacts on human health or the environment.
- I.F.7. Proper Operation and Maintenance. The Permittee shall at all times properly operate and maintain all facilities and systems of treatment, control and monitoring (and related apparatus) which are installed or used by the Permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures. This provision may require the operation of back-up or auxiliary facilities or similar systems to achieve compliance with the conditions of the permit.
- I.F.8. Duty to Provide Information. The Permittee shall furnish to the Control Board or the Director, within a reasonable time, any relevant information which the Control Board or the Director may request, to determine whether cause exists for modifying, revoking or reissuing this permit, or to determine compliance with this permit. The Permittee shall also furnish to the Control Board or the Director, upon request, copies of records required to be kept by this permit.
- I.F.9. Inspection and Entry. Pursuant to R315-260-5 of the Utah Admin. Code and UCA 19-06-109, the Permittee shall allow the Control Board, the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law to:
- I.F.9.a. Enter at reasonable times upon the Permittee's premises where a regulated activity is located or conducted, or where records must be kept under the conditions of this permit,
- I.F.9.b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit,

- I.F.9.c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit,
- I.F.9.d. Sample or monitor, at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Utah Solid and Hazardous Waste Act, any hazardous waste or hazardous waste constituents at any location; and
- I.F.9.e. Make a record of inspections by photographic, electronic, videotape, or any other reasonable medium in compliance with established safety and security requirements.
- I.F.10. Reporting Planned Changes. The Permittee shall give written notice to the Director prior to any planned physical alterations or additions to any hazardous waste management unit or system being permitted or previously permitted in accordance with R315-270-30(1)(1) of the Utah Admin. Code. Planned physical alterations or additions shall include all changes in any hazardous and solid waste activity and to any non-waste underground storage tanks regulated under R311-202 (40 CFR 280). Construction or operation of new or modified hazardous waste units shall not begin unless the provisions of R315-270-30(1)(1) of the Utah Admin. Code are met. Failure to comply with this permit condition may constitute a violation of the Rules.
- I.F.11. Reporting Anticipated Non-compliance. The Permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity, which may result in non-compliance with requirements of this permit in accordance with R315-270-30(1)(2) of the Utah Admin. Code. Advance notice shall not constitute a defense for any non-compliance.
- I.F.12. Transfer of Permit. This permit may be transferred to a new Permittee, only if it is modified or revoked and reissued pursuant to R315-270-40 of the Utah Admin. Code. Before transferring ownership or operation of the facility during its operating life, the Permittee shall notify the new Permittee in writing of the requirements of R315 of the Utah Admin. Code.
- I.F.13. Monitoring and Records
- I.F.13.a. The Permittee shall retain at the Facility a minimum of all records applicable to the Water Data Collection Quality Assurance Plan (QAPP) . Other analytical records and information, including calibration and maintenance records may be

retained by the laboratory performing analytical services, and where applicable, all original strip chart recordings (or equivalent recordings) for continuous monitoring instrumentation, copies of all reports and records required by this permit, and the waste minimization certification required by R315-264-73 of the Utah Admin. Code. (40 CFR  264.73(b)(9) incorporated by reference), and records of all data used to complete the application for this permit for a period of at least three (3) years from the date of the sample, measurement, report, certification, or recording unless a longer retention period for certain information is required by other conditions of this permit. These periods may be extended by request of the Director at any time by written notification to the Permittee and the retention times are automatically extended during the course of any unresolved enforcement action regarding the Facility to three (3) years beyond the conclusion of the enforcement action.

- I.F.13.b. A request for substitution of an analytical method, which is equivalent to the method specifically approved for use in the QAPP that is associated with this permit, shall be submitted to the Director in accordance with R315-260-21 of the Utah Admin. Code. The request shall provide information demonstrating that the proposed method, requested to be substituted, is equivalent or superior in terms of sensitivity, accuracy, and precision (i.e. reproducibility). This Permit shall also be modified in accordance with Condition I.D.2
- I.F.13.c. The Permittee shall retain at the Facility copies of all reports and records required by this permit, and records of all data used to complete the application for this permit for the duration of the post-closure period. This period may be extended by request of the Director at any time and is automatically extended during the course of any unresolved enforcement action regarding this facility.
- I.F.13.d. Pursuant to R315-270-31(j) of the Utah Admin. Code, records of monitoring information shall specify at a minimum:
- I.F.13.d.i. The date(s), exact place, and times of sampling or measurements;
  - I.F.13.d.ii. The name(s), title(s), and affiliation of individual(s) who performed the sampling or measurements;
  - I.F.13.d.iii. The dates analyses were performed;
  - I.F.13.d.iv. The individual(s) who performed the analyses;
  - I.F.13.d.v. The analytical techniques or methods used; and

- I.F.13.d.vi. The results of such analyses.
- I.F.13.d.vii. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. The method used to obtain a representative sample to be analyzed shall be the appropriate method from R315-261 Appendix I of the Utah Admin. Code or an equivalent method approved by the Director. Laboratory methods shall be those specified in Test Methods for Evaluating Solid Waste: the most current edition of Physical/Chemical Methods SW-846 (hereafter, referred to as SW-846), and Standard Methods of Examination of Water and Wastewater.
- I.F.14. Twenty-four (24) Hour Reporting. The Permittee shall report to the Director any non-compliance with the permit, which may endanger human health or the environment. Any such information shall be reported orally within twenty-four (24) hours from the time the Permittee becomes aware of the circumstances. This report shall include, but not be limited to, the following:
- I.F.14.a. Information concerning the release of any hazardous waste, which may endanger public drinking water supplies:
- I.F.14.b. Information concerning the release or discharge of any hazardous waste at the facility which could threaten the environment or human health inside and outside the facility. The description of the occurrence and its cause shall include:
- I.F.14.b.i. Name, address, and telephone number of the Permittee;
- I.F.14.b.ii. Name, address, and telephone number of the facility;
- I.F.14.b.iii. Date, time and type of incident;
- I.F.14.b.iv. Name and quantity of materials involved;
- I.F.14.b.v. The extent of injuries, if any;
- I.F.14.b.vi. An assessment of actual or potential hazard to the environment and human health outside the facility, where this is applicable; and
- I.F.14.b.vii. Estimated quantity and disposition of recovered material that resulted from the incident. A written submittal shall also be provided to the Director within five (5)

days of the time the Permittee becomes aware of the circumstances. The written submission shall contain, but not be limited to:

- a description of the non-compliance and its cause;
- the periods of non-compliance (including exact dates and times);
- whether the non-compliance has been corrected; and if not,
- the anticipated time it is expected to continue and
- steps taken or planned to reduce, eliminate, and prevent recurrence of the non-compliance.

The Permittee need not comply with the five (5) day written submission requirement if the Director waives the requirement and the Permittee submits a written report within fifteen (15) days of the time the Permittee becomes aware of the circumstances.

- I.F.14.c. The Permittee shall comply with the reporting requirements outlined in R315-263-30 through 33 of the Utah Admin. Code at the time of the incident. The Permittee shall additionally notify the Davis County Health Department of any spill requiring reporting as outlined in this condition.
- I.F.15. Monitoring Reports. Monitoring reports shall be reported at the intervals specified in the QAPP associated with this permit.
- I.F.16. Compliance Schedules. Reports of compliance or non-compliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than fourteen (14) days following each scheduled date.
- I.F.17. Submittal of Schedules. The reports indicated in Condition I.F.16 shall be submitted to the Director.
- I.F.18. Transfer of Reports. These reports shall be submitted using the United States Postal Service, any licensed delivery service, facsimile, computer diskette or hand-delivered by the Permittee, to be logged in at the office of the Division of Solid and Hazardous Waste.
- I.F.19. Biennial Report. A biennial report shall be submitted covering facility activities during odd numbered calendar years. This report shall be submitted by March 1 of the following even numbered year (see R315-264-75 of the Utah Admin. Code).

- I.F.20. Other Non-compliance. The Permittee shall report all other instances of non-compliance not otherwise required to be reported above, at the time monitoring reports, as required by this permit, are submitted.
- I.F.21. Other Information. Whenever the Permittee becomes aware that it failed to submit any relevant facts in the permit application, or submitted incorrect information in a permit application or in any report to the Director, the Permittee shall submit such facts or corrected information within seven (7) working days.
- I.F.22. Certification of Construction or Modification. The Permittee may not commence storage, treatment, or disposal of hazardous waste in a new hazardous waste management unit or an existing unit being modified at the permitted facility until:
- I.F.22.a. The Permittee has submitted to the Director:
- I.F.22.a.i. A letter signed by the Permittee and a qualified Utah registered professional engineer stating that the unit has been constructed in compliance with this permit; and
- I.F.22.a.ii. As-built engineering plans and specifications; and
- I.F.22.b. The Director has reviewed and inspected the newly constructed facility and has notified the Permittee in writing that the unit was found in compliance with the conditions of this permit; or
- I.F.22.c. The Director has either waived the inspection, or has not, within fifteen (15) days of the date of his receipt of the above submittal, notified the Permittee of an intent to inspect.

**I.G. SIGNATORY REQUIREMENT**

- I.G.1. All reports or other information requested by the Director shall be signed and certified as required by R315-270-30(k) of the Utah Admin. Code.

**I.H. CONFIDENTIAL INFORMATION**

I.H.1. In accordance with Utah Annotated Code 19-1-306 the Permittee may claim as business confidential any information required to be submitted by this permit that the Permittee believes qualifies for business confidential treatment.

**I.I. DOCUMENTS TO BE MAINTAINED AT FACILITY**

I.I.1. The Permittee shall maintain at the Facility for the duration of the post-closure care permit, the following documents and amendments, revisions, and modifications to these documents:

I.I.1.a. The post-closure permit application.

I.I.1.b. Post-closure monitoring records, to include groundwater monitoring records and analytical results, groundwater treatment system unit records and analytical results, and records of the effectiveness of the groundwater treatment system, as required by this permit;

I.I.1.c. Certification of closure as required by R315-265 of the Utah Admin. Code;

I.I.1.d. Personnel training documents and records as required by R315-264-16 of the Utah Admin. Code and this permit;

I.I.1.e. Inspection schedules as required by R315-264-15 of the Utah Admin. Code and this permit;

I.I.1.f. All applicable portions of the Operating Record requirements of R315-264-73 of the Utah Admin. Code and this permit and;

I.I.1.g. Manifest copies as required by R315-262-23 and R315-262-40 of the Utah Admin. Code and this permit.

**I.J. PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT**

I.J.1. Pursuant to Section 3005(c)(3) of RCRA (Section 212 of HSWA), codified as 40 CFR 270.32(b), and R315-270-32 of the Utah Admin. Code, this permit contains those terms and conditions determined necessary to protect human health and the environment.

## **MODULE II - GENERAL FACILITY STANDARDS**

### **II.A. POST-CLOSURE MAINTENANCE AND MONITORING**

- II.A.1. The Permittee shall inspect and monitor the RWMA and the LWMA, throughout the post-closure care period, which commences on the effective date of this permit, in a manner that will ensure detection of a release of either of the following: hazardous waste, hazardous waste constituents, leachate, contaminated runoff or hazardous waste decomposition products to the soil, groundwater, or surface water from the closed facility. The Permittee shall maintain all treatment, containment and monitoring equipment throughout the post-closure care period in a manner that will ensure detection of a release from the closed facility and minimize the possibility of a fire, explosion, or any sudden or non-sudden release of hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.

### **II.B. SECURITY**

- II.B.1. The Permittee shall comply with the following security conditions:
- II.B.1.a. At a minimum, a ¼-inch galvanized steel cable with a polyethylene sheath or chain extended between treated wood posts (at twelve (12) foot centers) shall be erected around the entire perimeter of the RWMA. This fence will serve as a deterrent to unauthorized entry and maintained throughout the post-closure period.
- II.B.1.b. Signs which read: WARNING CAMU CLOSURE CELL NO UNAUTHORIZED PERSONS ALLOWED will be positioned on one hundred (100) foot intervals on the steel cable, supported by posts surrounding the RWMA or affixed to the chain link fence around the LWMA. They shall be maintained throughout the post-closure care period. The signs shall be legible from a distance of at least twenty five (25) feet in compliance with R315-264-14(c) of the Utah Admin. Code. The signs shall be inspected throughout the post-closure care period during the annual RWMA and LWMA inspections. The Permittee shall utilize the annual inspection checklist for fence items (i.e. cable/chain postings, signs of vandalism, etc.) that are inspected as required and specified by

Condition II.D.1. The RWMA and LWMA annual checklists are provided in Attachment 2.

II.B.2. The Permittee shall comply with all other security procedures as specified in the appropriate annex of the Chevron Products Company, Salt Lake Refinery, Integrated Contingency Plan (See II.C below).

**II.C. PERSONNEL TRAINING**

II.C.1. The Permittee maintains a detailed Emergency Action Plans and Procedures Manual as part of the Integrated Contingency Plan (ICP). The ICP is a comprehensive emergency procedures document that covers responses to any emergency that may occur at the Facility. The training, for both current and new employees relating to the RWMA and the LWMA and the training records portion provided as Annex 5 of the ICP shall be acceptable in fulfilling the training requirements of this section. The training and training recording procedures in the ICP exceed the conditions required in R315-264-16 of the Utah Admin. Code. Reference is made here to the ICP as it is a large multi-volume document and is therefore, not provided as an appendix to this Permit. Training records are maintained at the facility.

**II.D. GENERAL INSPECTION REQUIREMENTS**

II.D.1. The Permittee shall perform an annual inspection of the RWMA and the LWMA. The annual inspections will occur between April 1 and June 30 of each year. Reports shall be submitted as an appendix to the annual post-closure groundwater sampling report that is prepared pursuant to Module IV using the inspection forms provided in Attachment 1.

II.D.2. Upon discovering any deterioration or malfunction of the RWMA or the LWMA that may result in a threat to human health or the environment, the Permittee shall remedy said threat as required by R315-264-15(c) of the Utah Admin. Code within seventy-two (72) hours. If the remedy requires more time, the Permittee shall submit to the Director, before the expiration of the seventy-two (72) hour period, a proposed time schedule for correcting the problem.

II.D.3. Records of inspections shall be kept at the Facility as required by R315-264-15(d) of the Utah Admin. Code.

- II.D.4. The Permittee shall inspect the RWMA within twenty-four (24) hours after a major storm event, and document such in the separate inspection log identified as “Post Storm Event Inspection Log (Attachment 2). For the purposes of these inspections, a storm event shall be defined by NOAA standards for this location as precipitation in excess of 2 inches per twenty-four (24) hours or a sustained wind speed in excess of eighty (80) miles per hour. For the purpose of this section, a “sustained wind speed in excess of 80 miles per hour” is defined by NOAA as a wind speed exceeding 80 mph determined by averaging all observed values over a two-minute period.
- II.D.5. The Permittee shall use the National Weather Service, located at the Salt Lake International Airport, as the weather station of record nearest to the facility.
- II.D.6. During the annual groundwater sampling event, the Permittee shall inspect all permit-listed monitoring wells identified in the QAPP, that are part of the facility-wide groundwater monitor system as specified below:
- II.D.6.a. Inspect for damage to the above ground and flush mounted protective casing;
- II.D.6.b. Inspect for damage to concrete apron and assure that the annulus is properly sealed;
- II.D.6.c. If permanent, dedicated pumps are used, verify proper operation;
- II.D.6.d. Check for visible damage and tampering to locks and monitoring well caps and;
- II.D.6.e. Insure that the wells are labeled, accessible and visible to all appropriate personnel.
- II.D.7. Upon discovering any deterioration or malfunction of any permit-listed monitoring well that may result in a threat to human health or the environment or jeopardize its integrity, the Permittee shall notify the Director within seventy-two (72) hours. If the remedy requires more time, the Permittee shall submit to the Director, before the expiration of the seventy-two (72) hour period, a proposed time schedule for correcting the

problem.

## **II.E. CONTINGENCY AND SPILL MITIGATION PLAN**

II.E.1. Content of Plan. The Permittee shall follow the Integrated Contingency Plan (ICP). The ICP is a comprehensive emergency procedures document that covers planning and response to any emergency that may occur at the Facility. Included in the ICP are the Spill Prevention Control and Countermeasures Plan and the Facility Response Plan that are required by 40 CFR 112 for the release of oil. Reference is made to the ICP for details on the Facility contingency and spill mitigation plan.

II.E.2. Implementation of Plan. As specified in the ICP, the Permittee shall immediately carry out the provisions which follow the emergency procedures described by R315-264-56 of the Utah Admin. Code. The Permittee shall also comply with R315-263-33 of the Utah Admin. Code in reporting releases to the Director.

II.E.3. Copies of Plan. The Permittee shall comply with the requirements of R315-264-53 of the Utah Admin. Code. All necessary Federal, State and Local agencies, including the Utah Division of Environmental and Response and Remediation have copies of the portions of the ICP relevant to their involvement during an incident.

II.E.4. Amendments to Plan. The Permittee shall review and immediately amend, if necessary, the ICP, as required by R315-264-54 of the Utah Admin. Code.

## **II.F. RECORD KEEPING AND REPORTING**

II.F.1. The Permittee shall submit reports as required in Module IV to the Director documenting annual post-closure groundwater monitoring activities and results from analyses of samples collected during such monitoring. Copies of all appropriate records will be maintained at the Facility.

## **II.G. FINANCIAL ASSURANCE FOR CLOSURE/POST-CLOSURE**

II.G.1. The Permittee shall maintain continuous compliance with R315-264-140 through 151 of Utah Admin. Code.

**II.H. LIABILITY REQUIREMENTS**

II.H.1. The Permittee shall demonstrate continuous compliance with the requirements of R315-264-140 through 151 of the Utah Admin. Code, including the requirements to have and maintain hazardous waste liability coverage for sudden accidental occurrences in the amount of at least \$1 million U.S. dollars per occurrence with an annual aggregate of at least \$2 million U.S. dollars, exclusive of legal defense costs. Changes in liability coverage mechanisms shall be approved by the Director pursuant to R315-264-140 through 151 of the Utah Admin. Code, at least sixty (60) days prior to such a change.

II.H.2. The Permittee shall demonstrate continuous compliance with the requirements of R315-264.147(b) of Utah Admin. Code to have and maintain liability coverage for non-sudden accidental occurrences in the amount of at least \$3 million per occurrence, with an annual aggregate of at least \$6 million, exclusive of legal defense costs.

**II.I. INCAPACITY OF PERMITTEE, GUARANTORS OF FINANCIAL INSTITUTIONS**

II.I.1. The Permittee shall comply with all the provisions of R315-264-140 through 151 of the Utah Admin. Code (as incorporated in 40 CFR 264.148).

## **MODULE III - POST-CLOSURE CARE AND USE OF PROPERTY**

### **III.A. POST-CLOSURE CARE**

- III.A.1. The Permittee shall conduct all post-closure care activities in accordance with the approved post-closure plan as specified in this permit, and in compliance with R315-264-110 through 120 of the Utah Admin. Code.
- III.A.2 Post-closure care of the RWMA and the LWMA shall be in accordance with R315-264-110 through 120 of the Utah Admin. Code. The Permittee shall:
- III.A.2.a. Maintain the integrity and effectiveness of the RWMA and the LWMA final covers in compliance with R315-264 and the inspection schedule outlined in Condition II.D and Attachment 2 of this permit, including making repairs to the cap as necessary to correct the effects of settling, subsidence, erosion or other events.
- III.A.2.b. Maintain the groundwater monitoring system and monitor the groundwater in compliance with R315-264-228 (b)(2) of the Utah Admin. Code for the RWMA and the LWMA and Modules IV and V of this permit.
- III.A.2.c. Prevent run-on and run-off from eroding or otherwise damaging the RCRA covers in compliance with R315-264-310(b)(5) or R315-264-280(a) of the Utah Admin. Code.
- III.A.2.d. Prohibit post-closure use of the property that will disturb the integrity of the cover, containment systems, or monitoring well system in compliance with R315-264-110 through 120 of the Utah Admin. Code.
- III.A.2.e. Protect and maintain records and surveyed benchmarks and settlement monuments on or adjacent to the RWMA and the LWMA that are used in complying with R315-264-279 and R315-264-309 of the Utah Admin. Code.

**III.B. COST ESTIMATES FOR THE FACILITY POST-CLOSURE CARE**

III.B.1. The Permittee's post-closure cost estimate shall be prepared in accordance with R315-264-140 through 151 of the Utah Admin. Code.

III.B.2. Within ninety (90) days after the end of each Chevron Salt Lake Refinery fiscal year, the Permittee shall adjust the post-closure cost estimate for inflation and submit a copy of that adjusted post-closure cost estimate to the Director, and maintain the latest adjusted post-closure cost estimate in the Operating Record.

III.B.3. The Permittee shall revise the post-closure cost estimate whenever there is a change in the facility's post-closure plan as required by R315-264-140 through 151 of the Utah Admin. Code.

III.B.4. The Permittee shall maintain the latest post-closure cost estimate at the facility as required by R315-264-140 through 151 of the Utah Admin. Code as part of the facility Operating Record.

**III.C. FINANCIAL ASSURANCE FOR FACILITY CLOSURE**

III.C.1. The Permittee shall demonstrate continuous compliance with R315-264-140 through 151 of the Utah Admin. Code by providing documentation of financial assurance, as required by R315-264-140 through 151 of Utah Admin. Code. Changes in financial assurance mechanisms shall be approved by the Director pursuant to R315-264-140 through 151 at least sixty (60) days prior to such a change.

**III.D. INSPECTIONS**

III.D.1. Inspections shall be conducted during the post-closure care period in compliance with the procedures specified in Condition II.D and in Attachment 1. All records of inspections and remedial actions shall be retained in the Operating Record at the Facility throughout the post-closure care period. Completed annual and post-storm event inspections logs presented in Attachment 1 shall be incorporated as appendices in the annual groundwater sampling report. Any deterioration or malfunction discovered by an inspection shall be remedied in compliance with R315-264-15(c) of the Utah Admin. Code.

**III.E. USE OF PROPERTY**

- III.E.1. At the time the Permit was issued the Permittee had already submitted to the Director the following documentation:
- III.E.1.a. A record of the type, location, and quantity of hazardous waste that was disposed of within the RWMA and the type, location and quantity of non-hazardous waste that was disposed of within the LWMA.
- III.E.2. A notation on the deed to the facility property was recorded with Davis County in the form of a certified boundary survey that will in perpetuity notify any potential purchaser of the property that:
- III.E.2.a. The land use at the RWMA is for management of stabilized hazardous waste;
- III.E.2.b. Land use is restricted under R315-264.110 through 120 of the Utah Admin. Code;
- III.E.2.c. The survey plat and record of the type, location, and quantity of hazardous waste disposed of within the RWMA required by R315-264.116 of the Utah Admin. Code have been filed with the local zoning authority with jurisdiction over local land use and with the Director; and
- III.E.2.d. A submitted certification signed by the Permittee verifying that he has recorded the notation in the deed (as specified in R315-264.116 of the Utah Admin. Code) and a copy of the document in which the notation has been placed in the deed was submitted to the Director.
- III.E.3.a. The land use at the LWMA is for management of stabilized non-hazardous waste;
- III.E.3.b. Land use is restricted under R315-264.110 through 120 of the Utah Admin. Code;
- III.E.3.c. The survey plat and record of the type, location, and quantity of non-hazardous waste disposed of within the LWMA required by R315-264.116 of the Utah Admin. Code have been filed with the local zoning authority with jurisdiction over local land use and with the Director; and

III.E.3.d. A submitted certification signed by the Permittee verifying that he has recorded the notation in the deed (as specified in R315-264.116 of the Utah Admin. Code) and a copy of the document in which the notation has been placed in the deed was submitted to the Director.

**III.F. AMENDMENT OF PLAN**

III.F.1. The Permittee shall amend the post-closure plan in accordance with R315-264-118 of the Utah Admin. Code whenever necessary or when required to do so by the Director.

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## **MODULE IV - GROUNDWATER MONITORING**

### **IV.A. APPLICABILITY AND GENERAL CONDITIONS**

- IV.A.1. The Permittee shall monitor groundwater in the uppermost aquifer, as described in the Chevron Groundwater Monitoring Project Quality Assurance Protection Plan (QAPP), in a manner that will monitor the release of hazardous constituents from the RWMA and the LWMA in compliance with R315-264-95 through 101, Groundwater Protection, and R315-101, Cleanup Action and Risk-Based Closure Standards, of the Utah Admin. Code and as defined by the conditions of this permit.
- IV.A.2. Solid waste management units (SWMUs) including operating groundwater recovery systems (i.e. North Tank Farm and Southwest Plume) or other systems constructed to recover groundwater from the Groundwater Waste Management Area (GWMA) are subject to provisions of this Module. The Director shall determine which SWMUs are subject to some or all of the provisions of this Module. The Permittee shall comply with the provisions of R315-264-101 and R315-101 of the Utah Admin. Code.
- IV.A.3. The Permittee shall follow all of the provisions as defined by the conditions of this permit. For the purposes of this permit, groundwater protection shall apply to the RWMA, the GWMA, and the LWMA.
- IV.A.4. The Area of Compliance is defined as the monitoring wells located within the impacted aquifer.
- IV.A.5. The monitoring wells for each Area of Compliance are listed in the QAPP. The locations of the monitoring wells are depicted on Figure 2.
- IV.A.6. The Permittee shall annually evaluate the groundwater monitoring systems, including the number, location, depth, and integrity of monitoring wells, to ensure that all requirements of R315-264-97 and R315-101 of the Utah Admin. Code are met. The Permittee may need to add monitoring wells or modify the groundwater monitoring system in accordance with Condition IV.F.6.

**IV.B. POST-CLOSURE GROUNDWATER MONITORING AT THE RWMA HAZARDOUS WASTE LANDFILL**

- IV.B.1. The Point of Compliance for the RWMA is a vertical surface located at the hydraulically downgradient boundary of the RWMA landfill cell. The compliance point monitoring wells are listed in the QAPP. A map showing the location of the compliance monitoring wells for the RWMA as of the time of issuance of this Permit is provided in this Module as Figure 2.
- IV.B.2. Monitoring well RWMA-1 shall be considered hydraulically up-gradient of the RWMA and shall serve as the background water quality and monitoring point. Monitoring wells RWMA-2A and 3 shall serve as compliance point monitoring wells along the western boundary of the RWMA. RWMA-4 shall serve as the compliance point monitoring well along the southern boundary of the RWMA.
- IV.B.3. The Permittee shall evaluate the groundwater monitoring systems including the number, location, depth, and integrity of the monitoring wells annually to ensure that all requirements of R315-264-97 and R315-101 of the Utah Admin. Code are met. The Permittee may need to add monitoring wells or modify the groundwater monitoring system in accordance with Condition IV.F.6.

**IV.C. GROUNDWATER MONITORING AT THE LWMA AND THE GWMA,**

- IV.C.1 The Permittee shall monitor groundwater in the uppermost aquifer, and lower aquifer if the upper aquifer is perched, as described below and in the QAPP, in a manner that will monitor for a release of hazardous constituents from each of the waste management areas detailed in this section.
- IV.C.2 The LWMA Monitoring Well LWMA-1 shall be considered hydraulically up-gradient of the LWMA and shall serve as the background water quality monitoring point. Monitoring wells LWMA-2 and 3 shall serve as compliance point monitoring wells along the western boundary of the LWMA. LWMA-4 shall serve as the compliance point monitoring wells for the southern boundary of the LWMA. These wells shall be sampled in accordance with the conditions and guidelines in this Module. The LWMA monitoring well system identifying each well location is presented on Figure 2.
- IV.C.3. The GWMA monitoring wells shall be defined in and monitored according to the QAPP. The downgradient well locations shall be considered as the point of compliance to properly monitor for a release of hazardous constituents that are protective of potential off-site migration.

- IV.C.3.a. The North Tank Farm (NTF) Groundwater Recovery System and monitoring wells shall be defined in the QAPP and shall be considered part of the GWMA and will be subject to the same monitoring and reporting requirements as the GWMA.
- IV.C.3.b. The Southwest Plume (SW Plume) Groundwater Recovery System and all of its monitoring points shall be considered part of the GWMA and will be subject to the same monitoring and reporting requirements as the GWMA. The boundary of the SW Plume Groundwater Recovery System is defined in the QAPP.
- IV.C.5 The Permittee shall evaluate the groundwater monitoring systems including the number, location, depth, and integrity of monitoring wells annually to ensure that all requirements of R315-264-97 and R315-101 of the Utah Admin. Code are met. The Permittee may need to add monitoring wells in accordance with Condition IV.F.6.
- IV.D. REQUIRED PROGRAM**
- IV.D.1 In accordance with R315-264-97 of the Utah Admin. Code, the Permittee shall install and maintain a groundwater monitoring system as specified below:
- IV.D.1.a. Construction and maintenance of all monitoring wells shall be in accordance with the Technical Enforcement Guidance Document, 1986, or the most recent edition, and the QAPP; and
- IV.D.1.b. All monitoring wells abandoned and no longer in use with respect to the monitoring program shall be plugged and abandoned in accordance with the well plugging and abandonment section of the most recent Administrative Rules for Water Well Driller's, Division of Water Rights, R655-4-414. Well plugging and abandonment methods and verification shall be submitted to the Director within sixty (60) days from the date the monitoring wells are removed from the monitoring program.
- IV.D.2. As indicated by R315-264-110 through 120 of the Utah Admin. Code, the post-closure care period for the RWMA and the LWMA is 30 years from September 2017, the effective date of this permit. If the groundwater protection standard in Condition IV.E is exceeded after 30 years, the Permittee shall continue corrective action as specified in Condition V.B.

**IV.E. INDICATOR PARAMETERS AND CONSTITUENTS**

- IV.E.1. The Permittee shall sample RWMA monitoring wells RWMA-1 through RWMA-4, LWMA monitoring wells LWMA-1 through 4, and all GWMA monitoring wells as described in the QAPP. Samples will be analyzed for the parameters and constituents identified in the QAPP.
- IV.E.1.a. As shown in the QAPP, on a five-year cycle that coincides with the Permit review and renewal periods, samples from the RWMA, the LWMA and the GWMA monitoring wells shall be analyzed for the parameters and constituents listed in the QAPP.
- IV.E.1.b. The Permittee may be required to continue the groundwater monitoring beyond the year listed in the QAPP as required by the Director.
- IV.E.1.c. During the four-year period between the Permit review and renewal shown on Table IV-1, samples from the same monitoring wells referenced in Condition IV.E.1.a shall be analyzed for the parameters and constituents as specified in the QAPP. The additional parameters and constituents that are detected in accordance with Condition IV.E.1.a. shall be included for the future four-year sampling period.
- IV.E.2. The Permittee shall analyze groundwater samples for the required parameters or constituents using the analytical methods listed in the QAPP. Other than the use of an equivalent, updated method, if an alternate test method is to be proposed for use, the procedures in Condition I.F.13.b shall be followed.

**TABLE IV-1 SAMPLE DATES AND RESPECTIVE ANALYTE LIST**

<b>YEAR</b>	<b>QAPP FULL ANALYTE LIST</b>	<b>QAPP REDUCED ANALYTE LIST</b>
2017	X	
2018		X
2018		X
2020		X
2021		X
2022	X	
2023		X
2024		X
2025		X
2026		X
2027	X	
2028		X
2029		X
2030		X
2031		X
2032	X	

IV.E.3.

For those parameters and constituents in the QAPP for which no concentration limit is established, the Permittee shall establish background values in accordance with R315-264-97(g) of the Utah Admin. Code. Background water quality is defined as the groundwater quality immediately upgradient and within the RWMA boundary at the time the project was completed. The use of background water quality upgradient of the Chevron property is not relevant in this permit because the RWMA, itself, lies within the operating area of the Facility and is therefore not surrounded by soil and groundwater that are representative of naturally occurring, non-impacted conditions. The RWMA, along with the entire facility, falls within the GWMA, which is subject to separate groundwater monitoring.

**IV.F. GROUNDWATER MONITORING REQUIREMENTS**

- IV.F.1. All monitoring wells shall be constructed in accordance with the provisions in Condition IV.E.1.a.
- IV.F.2. The groundwater monitoring program shall include sampling and analysis procedures defined in R315-264-97264-97(d) and (e) of the Utah Admin. Code. Any modifications shall be submitted to the Director for review and approval in accordance with Condition I.D.2.
- IV.F.3. The Permittee shall follow the requirements of R315-264-97 of the Utah Admin. Code for measurement of the groundwater surface elevation.
- IV.F.4. If the Director receives information indicating that the surveyed well apron elevations of the wells in the groundwater system(s) as specified in Condition IV.A. and the QAPP are inadequate, the Director shall require the Permittee to resurvey any or all of these well apron elevations.
- IV.F.5. The Permittee shall notify the Director in writing at least fifteen (15) working days prior to any sampling event required under this permit.
- IV.F.6. The Permittee may add new monitoring wells as part of the monitoring well system only upon approval or request of the Director. Changes to the LWMA and RWMA monitoring well system shall constitute a permit modification (except when replacing damaged monitoring wells already identified in the permit). The Permittee shall follow the procedures specified in Condition I.D.2 for modification of the permit.
- IV.F.7. The Permittee must at all times maintain a monitoring well system as specified in the QAPP. These compliance point monitoring wells may not be removed from the monitoring well system without submitting a permit modification as outlined in Condition I.D.2.
- IV.F.8. The Permittee shall properly dispose of contaminated groundwater generated during groundwater monitoring well sampling and during the development of any new monitoring well. Purge and development water shall be containerized and appropriately disposed of, typically through the Refinery Waste Water Treating Plant.
- IV.F.9. The Permittee shall monitor and sample all groundwater monitoring wells for the presence of hazardous constituents identified in the QAPP. The monitoring

wells shall be sampled at a frequency and in a manner consistent with the QAPP.

- IV.F.10. The Permittee shall locate, install, construct, and maintain new groundwater monitoring wells as specified in the Technical Enforcement Guidance Document (TEGD), OSWER-9950.1, September 1986, or the most recent version, and the QAPP. All monitoring wells shall be cased in a manner that maintains the integrity of the monitoring well bore hole. The casing shall be screened, slotted or perforated and packed with gravel or sand where necessary, to enable collection of accurate groundwater samples. The annular space above the sand pack must be sealed to the surface to prevent the potential for a contamination pathway from surface sources. For each monitoring well, the Permittee shall prepare a geologic and monitoring well completion log. The Permittee shall survey and record on the log the top of casing elevation for each monitoring well as it is installed. This elevation shall become the reference for determining the groundwater surface elevation at each respective monitoring well. The Salt Lake Refinery plant grid, generated from the Public Land System shall be the basis for horizontal coordinates with elevations tied to 1927 North American Datum (NAD 27).
- IV.F.11. The Permittee shall request written approval from UDEQ via proposed changes to the QAPP when constructing new monitoring wells.
- IV.F.12. Additional groundwater monitoring wells shall be installed if subsurface conditions significantly change after permit issuance. Such changes may include, but are not limited to, water level elevation or apparent flow direction changes, or detection of one of the hazardous constituents in a monitoring well. If hazardous waste constituents exceeding the groundwater protection standard concentration limits, as defined in the QAPP, are detected in the furthestmost hydraulically downgradient monitoring well, the Permittee shall install additional groundwater monitoring wells further downgradient.
- IV.F.13. Upon written notification by the Director or as a result of a compliance action, the Permittee may be required to install and sample additional monitoring wells at any time during the post-closure or compliance period if new information or unforeseen circumstances reveal a need for additional monitoring to protect human health and the environment.
- IV.F.14. The Permittee shall submit monitoring well completion reports which include boring logs, all analytical tests performed on soils, water level elevations, groundwater contour maps, monitoring well development results, cross-sections

or fence diagrams as well as all other data, to be submitted with the next Annual Monitoring Report.

- IV.F.15. The existing monitoring wells shall be maintained in a fully operational condition for the duration of this permit. The Permittee shall notify the Director within seven (7) days when a monitoring well is no longer properly functioning or providing credible data. Causes for these problems could include, but are not limited to, the presence of sediment, cracked or damaged well casing, protective steel casing, damaged concrete apron, etc. monitoring well
- IV.F.16. During each five-year sampling event, the Permittee shall measure and record the depth to the bottom of each RWMA, LWMA and GWMA groundwater monitoring well to the nearest one-tenth (0.1) feet in accordance with Section 3.5.4 of the QAPP. If a problem with the monitoring well is discovered, the Permittee shall follow the procedures described in Condition IV.F.15 regarding notification and corrective procedures.
- IV.F.17. The Director shall approve the permanent removal of any monitoring well listed in the QAPP.
- IV.F.18. The Permittee shall use the following techniques and procedures when obtaining samples and analyzing samples to ensure reliable monitoring results from the groundwater monitoring wells as required in R315-264-97(d) of the Utah Admin. Code:
- IV.F.18.a. Collect samples from all monitoring wells in the order and by the techniques described in the QAPP.
- IV.F.18.b. Preserve all samples in accordance with the applicable EPA Method. Transport all samples under chain-of-custody to the analytical laboratory in accordance with the QAPP; and
- IV.F.18.c. Analyze all samples in accordance with test methods identified in the QAPP.
- IV.F.18.d. Establish and implement for each sampling event under the groundwater monitoring program, a Level 2 QA Quality Assurance and Quality Control (QA/QC) procedure in accordance with the QAPP.
- IV.F.19. The Director may request at any time all laboratory QA/QC documentation and supporting data on any sampling event. The Permittee shall retain raw organics data for required sampling and analysis, including organics gas chromatographic

printouts, mass spectral analyses, and QA/QC surrogate and spike results throughout the post-closure care period.

IV.F.20. In case of the loss of sample integrity (e.g., breakage, loss), re-sampling shall take place within seven days of notification of the loss and be conducted as outlined in the QAPP.

IV.F.21. The Permittee shall determine the elevation of the groundwater surface at each monitoring well within seven days prior to of the sampling of each monitoring well. Water levels shall be collected within twenty-four hours from measuring the first monitoring well to measuring the last monitoring well.

#### **IV.G. STATISTICAL ANALYSIS OF GROUNDWATER DATA**

IV.G.1. Within 60 days of completing the annual sampling of the wells at the LWMA and the RWMA, the Permittee shall evaluate groundwater data using the Mann-Kendall statistical method as described in Attachment 3. The Permittee may propose an alternative statistical method for approval by the Director.

IV.G.2. Trends will be determined using a two-sided 95% confidence level ( $\alpha = 0.05$ ).

IV.G.3. For closure procedures, statistical trend tests will use a one-sided 95% confidence level to evaluate the upper limit.

IV.G.4. If the number of groundwater monitoring events used to construct the Mann-Kendall trend statistic "S" is less than or equal to 22 for a given well, the exact critical values for the Mann-Kendall test shall be used. If the number of groundwater monitoring events is greater than 22 for a given well, the normal approximation to the Mann-Kendall "S" statistic shall be used.

#### **IV.H. MONITORING PROGRAM AND DATA EVALUATION**

IV.H.1. The Permittee shall collect, preserve, and analyze samples pursuant to Condition IV.F.18.

IV.H.2. The Permittee shall determine groundwater quality at each monitoring well at the compliance point annually during the post-closure care period of the RWMA, the LWMA, and the GWMA. The Permittee shall express the

groundwater quality at each monitoring well in a form necessary for the determination of statistically significant increases in trends using the methods outlined in Condition IV.J.

- IV.H.3. The Permittee shall determine and update annually the groundwater flow direction at the GWMA in the uppermost aquifer that incorporates the RWMA, the LWMA, and other SWMUs requiring groundwater monitoring as required by R315-264-98(e) of the Utah Admin. Code. This information shall be included in the annual report specified in Condition IV.K.3.
- IV.H.4. During data analysis from each sampling event, the Permittee shall determine whether there is a statistically significant increase in the trend in each individual monitoring well for the parameters or constituents identified in Condition IV.E. In determining whether such an increase has occurred, the Permittee must compare the groundwater quality at each monitoring well specified in Condition IV.A. to the background value at each respective monitoring well using the method specified in Condition IV.G.3. An upward trend indicated by a single detection of a Table IV-2 parameter or constituent shall first be re-validated to confirm if there were sampling or laboratory errors that may have resulted in an invalid result. Depending on those findings, the following conditions shall apply:
- IV.H.4.a. If errors are confirmed, or are suspected to have occurred in the lab or field, all related QA/QC information shall be reviewed to determine if an accurate value for the parameters or constituents in question can be obtained. If a new value can be obtained, it shall be incorporated into the same data set. If an upward trend is observed and if the data suggest that an exceedance of a Permit-listed parameter or constituent action level may develop before the next annual sampling event, the Permittee shall immediately resample the well. If the analysis demonstrates an upward trend, but the concentration is still well below this limit, the trend shall be monitored annually to develop a history compared to background.
- IV.H.4.b. If a monitoring well is re-sampled, the new sample(s) shall be analyzed for those Table IV-2 parameters or constituents that are in question. The new sample results shall supersede the original sample results. If an exceedance appears likely before the next sampling event, the Permittee shall take appropriate action in accordance with Condition IV.J.
- IV.H.5. The Permittee shall perform the evaluations described in Condition IV.H.4 within 60 days after completion of the original sampling event. If re-sampling is

required pursuant to Condition IV.H.4.b, the Permittee shall notify the Director at least seven days prior to the planned re-sampling event. Additionally, the reporting schedule in Table IV-3 will be delayed by 60 days due to the additional sampling, analytical and data evaluation time involved in the re-sampling.

#### **IV.I. DATA VALIDATION**

IV.I.1. All groundwater samples and the quality control data collected from compliance monitoring wells during the Annual Groundwater Sampling event defined in this Module shall be subjected to a Level 2 Data Validation to assess the quality of the groundwater samples for use in technical reports and for decision making purposes. Data validation shall follow *the USEPA Contract Laboratory Program National Functional Guidelines for Organic Superfund Methods Data Review, January 2017* and *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Methods Data Review, , January 2017, or the most recent editions.*

#### **IV.J. SPECIAL REQUIREMENTS IF SIGNIFICANT INCREASES OCCUR IN VALUES FOR PARAMETERS OR CONSTITUENTS**

IV.J.1. If the Permittee determines, pursuant to Condition IV.G., that there is a statistically significant increase above background values at the RWMA and LWMA for any of the parameters or constituents specified in the QAPP, the Permittee shall:

IV.J.1.a. Notify the Director in writing within seven days;

IV.J.1.b. Within seven days after the written notification, sample the groundwater in all RWMA and LWMA wells and determine the concentration of all potential constituents identified in R315-264 of the Utah Admin. Code (40 CFR 264, Appendix IX), ; and

IV.J.1.c. Within 90 days, submit to the Director an application for a permit modification to establish a compliance monitoring program . The application shall include the following information:

IV.J.1.c.i. An identification of the concentration of all applicable Appendix IX constituents found in the groundwater at each monitoring well at the compliance point ;

- IV.J.1.c.ii. Any proposed changes to the groundwater monitoring system at the facility necessary to meet the requirements of compliance monitoring as described in R315-264-99, of the Utah Admin. Code ;
- IV.J.1.c.iii. Any proposed changes to the monitoring frequency, sampling and analysis procedures, or methods or statistical procedures used at the facility necessary to meet the requirements of R315-264-99 of the Utah Admin. Code;
- IV.J.1.c.iv. For each hazardous constituent detected at the compliance point, a proposed concentration limit from existing background data under R315-264-99 (a)(1) or (2) a notice of intent to seek an alternate concentration limit under R315-264-94(b) of the Utah Admin. Code.
- IV.J.2. Within 180 days of the submission of alternate concentration limits for the hazardous constituents, the Permittee shall submit all data to support the alternate concentration limit proposed under R315-264-94(b) and a corrective action feasibility plan that meets the requirements of R315-264-100 of the Utah Admin. Code.
- IV.J.3. If the Permittee determines, pursuant to Condition IV.H., using the Mann-Kendall Trend Analysis, or equivalent, that there is a statistically significant increase above RWMA and LWMA monitoring well background values for the parameters or constituents specified in Condition IV.E., the Permittee may demonstrate that a source other than a regulated unit caused the increase or that the increase resulted from an error in sampling, analysis, or evaluation. In such cases, the Permittee shall:
- IV.J.3.a. Notify the Director in writing within seven days that he intends to make a demonstration;
- IV.J.3.b. Within 90 days, submit a report to the Director which demonstrates that a source other than a regulated unit caused the increase, or that the increase resulted from an error in sampling, analysis, or evaluation ;
- IV.J.3.c. Within 90 days, submit to the Director an application for a permit modification to make any appropriate changes to the detection monitoring program at the facility ;and
- IV.J.3.d. Continue to monitor in accordance with the detection monitoring program at the facility.

**IV.K. RECORD KEEPING AND REPORTING**

- IV.K.1. The Permittee shall enter all monitoring, testing, and analytical data obtained in accordance with Condition IV.F in the operating record. The data shall include all computations, calculated means and results of all statistical tests required by Condition IV.G.
  
- IV.K.2. The established background values and the computations necessary to determine background values shall be submitted to the Director. A record of data and trends in each well for the relative constituents in Table IV-2 shall also be maintained.
  
- IV.K.3. The Permittee shall submit the analytical results developed under Conditions IV.F.18 through 20 and evaluated in accordance with Conditions IV.G and IV.H. The Permittee shall submit the information in accordance with the following schedule:

**TABLE IV-3  
SCHEDULE OF COMPLIANCE**

<b>Annual Duration</b>	<b>Annual Sampling Event</b>	<b>Report Due Date to Director</b>
January – December	April or May	August 31
January – December	Re-Sample Under Condition IV.H.4.	August 31

**IV.L. DEVELOPMENT AND CALIBRATION OF FACILITY  
GROUNDWATER MODEL**

- IV.L.1. The Permittee shall develop and maintain a numerical groundwater flow model for the Facility.
- IV.L.2. The Permittee shall develop and maintain a numerical, advective-dispersive-reactive, solute transport model for areas where releases of hazardous constituents to the groundwater have been detected. The transport model shall be based on the calibrated groundwater flow model and be contaminant(s) - specific.
- IV.L.3. The Permittee submitted a summary report with all electronic input and output files for the groundwater flow and contaminant transport modeling runs including the 2012 recalibration runs and new runs simulating the re-routed canal in 2014.
- IV.L.4. The Permittee shall refine and recalibrate the groundwater flow and groundwater solute transport model every five years starting in 2017.
- IV.L.5. The Permittee shall submit a report of the refining and recalibration effort required by Condition IV.M.4. to the Director for approval by December 1<sup>st</sup> of each five-year cycle. The report shall describe refinements and recalibrations made to both groundwater flow and contaminant transport models. The Permittee shall include all electronic input and output files as appendices to the report.
- IV.L.6. The Permittee shall perform a one-time Monte Carlo-type uncertainty analysis of predictive simulations for contaminants based on the transient calibration of the groundwater flow model to be submitted with the 2017 annual report. A work plan outlining the scope and methods to be employed was submitted to and approved by the Director in 2016.

**IV.M. ASSURANCE OF COMPLIANCE**

IV.M.1. The Permittee shall assure the Director that groundwater monitoring and corrective action measures necessary to achieve compliance with the groundwater protection standard under R315-264-92 of the Utah Admin. Code are taken during the term of the Permit.

**IV.N. REQUEST FOR PERMIT MODIFICATION**

IV.N.1. If the Permittee or the Director determines that the detection monitoring program no longer satisfies the requirements or intent of the regulations, the Permittee shall, within ninety (90) days of the determination, submit an application for a permit modification to make any appropriate changes to the program that will satisfy the regulations required to R315-264-98(h) of the Utah Admin. Code.

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## **MODULE V - GROUNDWATER CORRECTIVE ACTION**

### **V.A. CORRECTIVE ACTION PROGRAM SUBMITTAL**

- V.A.1. The Permittee shall submit a Corrective Action Plan (CAP) for any groundwater contamination associated with the RWMA and the LWMA within one hundred eighty (180) days of the notification to the Director as per Condition IV.J.1. Upon submittal of the CAP, the Director shall review the plan and either approve or disapprove the CAP. If the CAP is not approved, the Permittee shall provide corrective solutions to the CAP deficiencies specified in writing by the Director within ninety (90) days of the written notification. If the revised CAP is not approved, the Director shall modify the CAP and this shall become the approved CAP.

### **V.B. CORRECTIVE ACTION IMPLEMENTATION**

- V.B.1. Upon approval of the CAP by the Director, the Permittee shall implement the CAP, in a manner which will prevent hazardous waste constituents from exceeding their respective detection and/or concentration limits, as defined by Condition IV.C, at each Compliance Point, by removing the hazardous waste constituents, or by treating them in place.

### **V.C. DURATION OF CORRECTIVE ACTION PROGRAM**

- V.C.1. The Permittee shall continue corrective action during the compliance period to the extent necessary to ensure that the groundwater protection standard is no longer exceeded. If the Permittee is conducting corrective action at the end of the 30 year compliance period, as per Condition IV.D.2., he shall continue corrective action for as long as necessary to achieve compliance with the groundwater protection standard. The Permittee may terminate the CAP if he can demonstrate, based on data from the groundwater monitoring program under Module IV, that the groundwater protection standard has not been exceeded for a period of three consecutive years as referenced in R315-264-100(f) of Utah Admin. Code.

### **V.D. COST ESTIMATES FOR CORRECTIVE ACTION**

- V.D.1. The corrective action plan required by Condition V.A shall provide a cost estimate of the actions required by Condition III.C.

## **MODULE VI**

### **CORRECTIVE ACTION FOR SOLID WASTE MANAGEMENT UNITS** **SCHEDULE OF COMPLIANCE**

#### **VI.A. SOLID WASTE MANAGEMENT UNITS**

- VI.A.1. This permit supersedes the Stipulation and Consent Order issued by the Utah Solid and Hazardous Waste Committee to Chevron Products Company, also known as the Corrective Action Order (CAO). The effective date of the CAO is April 5, 1991. The CAO required a Corrective Action Process for production of six Closure Plans, a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI), a Solid Waste Management Unit Assessment Plan, a Corrective Action Plan (CAP), Interim Corrective Measures and groundwater monitoring at the refinery. The status of the above CAO requirements is found in Attachment 2. The provisions of the CAO, including its duration, are hereby terminated on the date of issuance of this Post Closure Permit.
- VI.A.2. As part of the RFI, the Permittee prepared a Corrective Action Plan, which was submitted April 5, 1996 and approved by the Director on April 7, 1997.
- VI.A.3. The Director may append additional Solid Waste Management Units to those in Chevron's RFI at the request of the Permittee in accordance with R315-270-42 of the Utah Admin. Code or upon receipt of any other information in accordance with R315-270-41 of Utah Admin. Code.

#### **VI.B. STANDARD CONDITIONS**

- VI.B.1. Failure to submit the information required by Module VI or falsification of any submitted information, is grounds for termination of this permit in accordance with R315-270-43 of Utah Admin. Code.
- VI.B.2. The Permittee shall sign and certify all plans, reports, notifications, and other submissions to the Director in accordance with Condition I.G.
- VI.B.3. The Permittee shall submit copies of each plan, report, notification, or other submissions required by the Director.

VI.B.4. Upon written approval from the Director, all plans and schedules required by the conditions in Module VI shall be incorporated into Module VI of this permit in accordance with Condition VI.I. Any noncompliance with such approved plans and schedules shall be deemed noncompliance with this permit.

VI.B.5. Upon written approval from the Director in accordance with Condition VI.I, the Permittee shall receive extension(s) of the specified compliance schedule due date(s) for the submittal(s) required by Module VI.

VI.B.6. If the Director determines that further action beyond that provided by Module VI, or changes to that, which are stated herein, are warranted, the Director shall modify Module VI in accordance with Condition VI.I.

VI.B.7. All raw data, such as laboratory reports, drilling logs, bench-scale or pilot-scale data, and other supporting information gathered or generated during activities undertaken pursuant to conditions in Module VI shall be maintained at the Facility during the effective term of this permit.

**VI.C. RCRA FACILITY INVESTIGATION**

VI.C.1. The Permittee conducted an RFI as required by Paragraphs 34-41 of the signed April 5, 1991 CAO. Tasks I, II, III, and IV of the RFI have been submitted, approved, and conducted in accordance with the CAO. The RFI is used to support the CAP.

VI.C.2. The Permittee prepared and submitted a final RFI Report on February 2, 1995, which was later reviewed and approved by the Director on October 6, 1995. The Permittee performed the RFI as specified in Paragraph 34 of the approved April 5, 1991 CAO. The RFI was conducted pursuant to the RFI Work Plan prepared and submitted by the Permittee on October 2, 1991. The RFI Work Plan was approved by the Director on January 29, 1993 prior to initiating work for the RFI.

VI.C.3. The Permittee conducted the RFI for the 27 Solid Waste Management Units identified in 1991 CAO plus "Groundwater," which was designated in the February 2, 1995 final RFI Report as the 28th SWMU.

**VI.D. INTERIM MEASURES AND CLEAN UP ACTIONS**

- VI.D.1. If, during the course of any activity initiated in compliance with the permit conditions of Module VI of this permit, the Director or the Permittee determines that a release or potential release of hazardous waste and/or hazardous waste constituents from a Solid Waste Management Unit poses a threat to human health and the environment, the Permittee may be required to perform specific interim measures.
- VI.D.2. The Director shall notify the Permittee in writing of the requirement to perform the interim measures in accordance with Condition VI.D.3.
- VI.D.3. Within thirty (30) calendar days of receiving the written notification requiring Interim Measures as specified in VI.D.2, the Permittee shall provide an Interim Measures Plan to the Director for review and approval.
- VI.D.4. The Permittee shall implement the Interim Measures Plan in accordance with Condition VI.D.3.
- VI.D.5. The Permittee may initiate voluntary interim measures in accordance with Conditions VI.D.6 and VI.D.7.
- VI.D.6. In determining whether an interim measure is required, the Director shall consider the following:
- VI.D.6.a. Time required developing and implementing a final remedy,
  - VI.D.6.b. Actual and potential exposure of human and environmental receptors,
  - VI.D.6.c. Actual and potential contamination to the environment,
  - VI.D.6.d. The potential for further degradation of the medium absent interim measures,
  - VI.D.6.e. Presence of hazardous waste in containers that may pose a threat of release,
  - VI.D.6.f. Presence and concentration of hazardous waste including hazardous waste constituents in soils which have the potential to migrate to groundwater or surface water,
  - VI.D.6.g. Weather conditions that may affect the current levels of contamination,

- VI.D.6.h. Risks of fire, explosion, or accident, and
- VI.D.6.i. Other situations that may pose a threat to human health and the environment.
- VI.D.7. The Interim Measures Plan shall identify specific actions to be taken to implement the interim measures and a schedule for implementing the required measures. The Interim Measures Plan shall be incorporated into this permit and shall include, but not be limited to, the following:
- VI.D.7.a. Objectives of the interim measure which indicate how it will mitigate a potential threat to human health (health and safety requirements) and the environment and/or is consistent with and integrated into any long-term solution at the Facility;
- VI.D.7.b. Data collection quality assurance and data management information;
- VI.D.7.c. Design plans and specifications, construction requirements, operation and maintenance requirements, project schedules, and final design documents;
- VI.D.7.d. Construction quality assurance objectives, inspection activities, sampling requirements, and documentation; and
- VI.D.7.e. Schedule for submittal of the following reports: progress reports, interim measures workplan, final design documents, draft interim measures report, and final interim measures report.
- VI.E. **REQUIREMENTS FOR A SPILL OF HAZARDOUS WASTE, MATERIAL AND/OR HAZARDOUS WASTE CONSTITUENTS AT FACILITY**
- VI.E.1. In the event of a spill of hazardous waste or material which, when spilled, become hazardous waste, the Permittee shall conduct immediate actions accordance with R315-263-30 of Utah Admin. Code, and a spill reporting in accordance with R315-263-33 of Utah Admin. Code and Condition VI.E.11.
- VI.E.2. The Permittee shall clean up all the spilled material and any residue or contaminated media, or take actions as may be required by the Director so that the spilled material, residue or contaminated media no longer presents

a threat to human health and the environment in accordance with R315-101 and R315-263-31 of Utah Admin. Code.

- VI.E.3. If the spill cleanup and initial soil sampling results indicate that groundwater has been impacted by the spill, the Permittee shall conduct the groundwater monitoring and/or remediation for the area where a spill has impacted the shallow groundwater. The Permittee shall conduct the groundwater sampling and analysis in accordance with the QAPP.
- VI.E.4. The Permittee may add or remove groundwater monitoring wells for the spilled impacted area upon approval of the Director.
- VI.E.5. Based on assessment of the Spill Cleanup Report, groundwater impact, extent and location, a spilled area may be included as a newly identified Solid Waste and Management Unit in accordance with Condition VI.E.

**VI.F. NOTIFICATION REQUIREMENTS FOR AND ASSESSMENT OF NEWLY-IDENTIFIED SOLID WASTE MANAGEMENT UNITS**

- VI.F.1. The Permittee shall notify the Director in writing, of any newly identified Solid Waste Management Unit(s) not identified in Condition VI.A, within thirty (30) calendar days of discovering the Solid Waste Management Unit(s). The notification shall include the location of the new Solid Waste Management Unit(s) and information on the suspected or known wastes at the site(s).
- VI.F.2. Within one hundred fifty (150) calendar days following discovery of the Solid Waste Management Unit(s), the Permittee shall submit a Solid Waste Management Unit Assessment Plan to the Director.
- VI.F.3. The Solid Waste Management Unit Assessment Plan shall include:
- VI.F.3.a. A description of past and present operations at the unit(s); and
- VI.F.3.b. Any groundwater, surface water, soil (surface or subsurface strata), or air sampling and analysis data needed to determine whether a release of hazardous waste or hazardous waste constituents from such units is likely to occur. The Solid Waste Management Assessment Plan shall demonstrate that the sampling and analysis plan, if applicable, is capable of yielding representative samples and must include parameters sufficient

to identify migration of hazardous waste and/or hazardous waste constituents from the newly discovered Solid Waste Management Units to the environment.

- VI.F.4. The Solid Waste Management Unit Assessment Plan shall be evaluated by the Director and;
- VI.F.4.a. The Permittee shall receive written approval from the Director for the Solid Waste Management Unit Assessment Plan; or
- VI.F.4.b. The Permittee shall receive written notice from the Director of the Solid Waste Management Unit Assessment Plan's deficiencies and the written notice will specify a due date for submittal of a revised assessment plan; or
- VI.F.4.c. The Permittee shall receive written notice from the Director of the revisions incorporated by the Director in the Solid Waste Management Unit Assessment Plan. The revised assessment plan shall become the approved Solid Waste Management Assessment Plan.
- VI.F.5. The Solid Waste Management Unit Assessment Plan (SWMU Assessment Plan), as approved by the Director, shall be incorporated within Module VI in accordance with Condition I.D.1. The Permittee shall be notified in writing of the approval of the permit modification.
- VI.F.6. The Permittee shall implement the approved SWMU Assessment Plan within thirty (30) calendar days of receiving written notice of the permit modification approval specified in Condition VI.F.5.
- VI.F.7. The SWMU Assessment Plan shall contain a schedule for a Solid Waste Management Unit Assessment Report (SWMU Assessment Report) including the date it will be submitted to the Director.
- VI.F.8. The SWMU Assessment Report shall describe all results obtained from the implementation of the approved SWMU Assessment Plan. For each newly listed Solid Waste Management Unit, the SWMU Assessment Report shall provide:
- VI.F.8.a. The Solid Waste Management Unit location identified on a map;

- VI.F.8.b. The type and function of the unit, including general dimensions and a structural description;
- VI.F.8.c. The period during which the unit was operated; and
- VI.F.8.d. A list of all wastes managed at the Solid Waste Management Unit and results of all sampling and analysis used to determine whether releases of hazardous wastes and/or hazardous waste constituents have occurred, are occurring, or are likely to occur from the unit.
- VI.F.9. Based on results of the SWMU Assessment Report, the Director shall determine the need for further assessments at specific units in the SWMU Assessment Plan. If the Director determines that such assessments are needed, the Director shall require the Permittee to prepare a plan for such assessments in accordance with VI.F.3.
- VI.F.10. Based on the results of the assessments required by Condition VI.F.9, the Director may require the Permittee to submit a remediation schedule and plan.
- VI.F.11. Within fifteen (15) days of discovery, the Permittee shall notify the Director in writing, of any release(s) of hazardous waste or hazardous waste constituent(s) discovered during the course of groundwater monitoring, field investigation, environmental auditing, or other activities undertaken. Such releases may be from already documented or newly identified units. The Director shall require further assessments of the new releases in accordance with Condition VI.F.3.

**VI.G DETERMINATION OF NO FURTHER ACTIONS**

- VI.G.1. The Permittee may petition the Director to terminate the schedule of compliance for Corrective Action of Solid Waste Management Units, in Module VI, not previously specified in the CAP, in accordance with R315-101-6(c) of Utah Admin. Code.
- VI.G.2. The CAP, submitted to the Director on April 5, 1996, contained information from the RFI demonstrating that there have been no releases of hazardous waste or hazardous waste constituents that pose a threat to human health or the environment from SWMUs at the Facility.

VI.G.3. A determination of no further action, in accordance with Condition VI.G.1, shall not preclude the Director from requiring further investigations, studies, or remediation at a later date if new information or subsequent analysis indicates a release or potential of a release from a Solid Waste Management Unit at the Facility. In such a case, the Director shall initiate either a modification to the Corrective Action Schedule of Compliance (Module VI) in accordance with Condition I.D.1.

**VI.H. CORRECTIVE ACTION PLAN**

VI.H.1 Based on the results of the RCRA Facility Investigation, submitted February 2, 1995 to the Director, a CAP for all identified SWMUs in the RFI was submitted April 5, 1996 and approved by the Director on April 7, 1997. The “Groundwater” SWMU, in the RFI, is now recognized as the “Groundwater Management Area” (GWMA) SWMU. The purpose of the CAP was to develop and evaluate corrective action alternatives and to outline one or more alternate corrective measures, which will satisfy the target cleanup objectives. The CAP included:

- VI.H.1.a. Target cleanup objectives,
- VI.H.1.b. Corrective action(s) which shall satisfy target cleanup objectives,
- VI.H.1.c. Summary of all corrective measure alternatives examined for the CAP, and
- VI.H.1.d. Schedule for implementation of the corrective action(s) according the time frame and schedule of this Permit.
- VI.H.2. Since CAP approval on April 7, 1997, the Permittee has implemented corrective action(s) as outlined in the CAP schedule.
- VI.H.3. The Permittee shall furnish or retain all personnel, materials, and services necessary for the implementation of the CAP.

**VI.I. REPORTING REQUIREMENTS**

VI.I.1. Unless otherwise required by the Director, the Permittee shall submit to the Director written annual progress reports of all activities conducted

pursuant to the Conditions of Module VI. The Permittee shall initially submit the annual progress reports no later than ninety (90) calendar days after the effective date of this permit. A corrective action activity report shall be included as an appendage of the Permittee's annual groundwater report to the Director.

- VI.I.2. The annual progress reports shall contain:
  - VI.I.2.a. A description of the work completed;
  - VI.I.2.b. Summaries of all findings and all raw data;
  - VI.I.2.c. Summaries of all problems encountered during the reporting period and actions taken or to be taken to rectify problems; and
  - VI.I.2.d. Projected work for the next reporting period.
- VI.I.3. The Permittee shall maintain copies of other reports, drilling logs, and data at the Facility during the effective period of this permit. The Permittee shall provide copies of the said reports, logs, and data to the Director upon request.
- VI.I.4. As specified under condition VI.B.6, the Director may require the Permittee to conduct new or more extensive assessments, investigations, or studies, as needed, based on information provided in these progress reports or other supporting information.

**VI.J. MODIFICATION OF THE CORRECTIVE ACTION SCHEDULE OF COMPLIANCE**

- VI.J.1. A request for modifications of the final compliance dates pursuant to the permit conditions in Module VI shall be submitted to the Director for approval, in accordance with Condition I.D.2.
- VI.J.2. Pursuant to Condition I.D.1, the compliance schedules shall be modified if the Director determines that good cause exists.
- VI.J.3. The Permittee shall submit a request for modifications of the interim compliance dates that do not affect the final compliance dates to the Director for approval. If the Director approves the interim compliance

date modifications, the following table shall incorporate the modified compliance dates in accordance with Condition I.D.1.

VI.J.4.

The schedule of compliance for corrective action, interim measures and all other submittals stipulated in the 1997 Permit are summarized on Table VI-1.

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**TABLE VI-1  
CORRECTIVE ACTION COMPLIANCE SCHEDULE**

<b>FACILITY SUBMITTAL</b>	<b>ACTION AND DATE</b>
LWMA Final Construction Quality Assurance Plan	Submitted June 29, 1995 approved by the Director October 30, 1995.
LWMA Final Corrective Action Plan, with design and plans for construction	Accepted by the Director, September 1995
Facility Corrective Action Plan	Submitted to the Director on April 5, 1996.
Facility Corrective Action Plan	Approved by the Director April 7, 1997.
Facility Corrective Action Plan - Construction and Implementation plans by designated unit	As specified in the CAP and as approved by the Director, April 7, 1997
Post Closure Permit	Issued by Director, September 2, 1997
Survey of the RWMA for attachment to deed	Official boundary survey prepared and submitted to Davis County Recorder's Office for deed attachment 1998
Fence and warning signs constructed around RWMA	Construction completed in 1998
Construction of corrective measures at regulated units	As approved in final CAP. Dates vary.
Corrective measures construction progress reports	Submitted throughout construction in accordance with Post Closure Permit on each respective unit, i.e. LWMA, NTF GWI, Landfarm
Completion of the LWMA Remediation Project	December 1998
LWMA Final Remedy Corrective Action Report	Submitted to Director November 1999
Wastewater Treatment System - Ponds 2 and 3 Final Remedy Corrective Action Report	Submitted to Director December 1999
LWMA Final Remedy Corrective Action Report	Accepted by Director, June 2000
Wastewater Treatment System Ponds 2 and 3 Final Remedy Report	Director Final Remedy Corrective Action, 2001
Landfarm – Landfarm Storage Area Closure Report	Submitted to Director February 15, 2001
Landfarm – Landfarm Storage Area Closure Report	Director rejects Closure Report September 2001. Use of averages not allowed.
Request for Class 1 Modification to Post Closure Permit	Submitted to Director March 29, 2002
Request for Class 2 Modification to Post Closure Permit	Submitted to Director July 11, 2002

**TABLE VI-1 (Continued)  
CORRECTIVE ACTION COMPLIANCE SCHEDULE**

FACILITY SUBMITTAL	ACTION AND DATE
Permission to proceed with Permit modifications	Received from Director July 12, 2002.
Modified Post Closure Permit	Submitted to Director October 28, 2002.
Landfarm – Landfarm Storage Area Closure Report	Re-submittal to Director March 25, 2003. Approved September 2003.
Northwest Tank Farm Groundwater Intercept System – Submitted Under Module VI.D Interim Measures and Voluntary Clean Up Actions	Notification by Division under Module VI.D to operate and monitor – September 29, 2005
Requested re-issue of the Permit in 2007 with no proposed changes or modifications	Division issued new Permit on August 31, 2007 without comment or modification
Southwest Plume Groundwater Intercept System Submitted Under Module VI.D Interim Measures and Voluntary Clean Up Actions - October 8, 2010	No Correspondence returned by Division on this notification
Submitted Supplemental RFI for the Alky Site and Fire Training Area SWMU's - September 11, 2011	Division acknowledged receipt. No action proposed as long as units are operational. – October 2011
Submitted request for Class 1 and 2 Modification – October 2012	Division converted request to a Class 3 Modification and modified the Permit in June 2014
Identified the Northwest Tank Farm as a Solid Waste Management Unit	Included in above referenced modified Permit - 2014
Submitted request for Class 1 Modification – July 29, 2015	Division modified the Permit in September 2015
Requested re-issue of the Permit in 2017 with Class 2 modifications	Division issued new Permit on ????, 2017

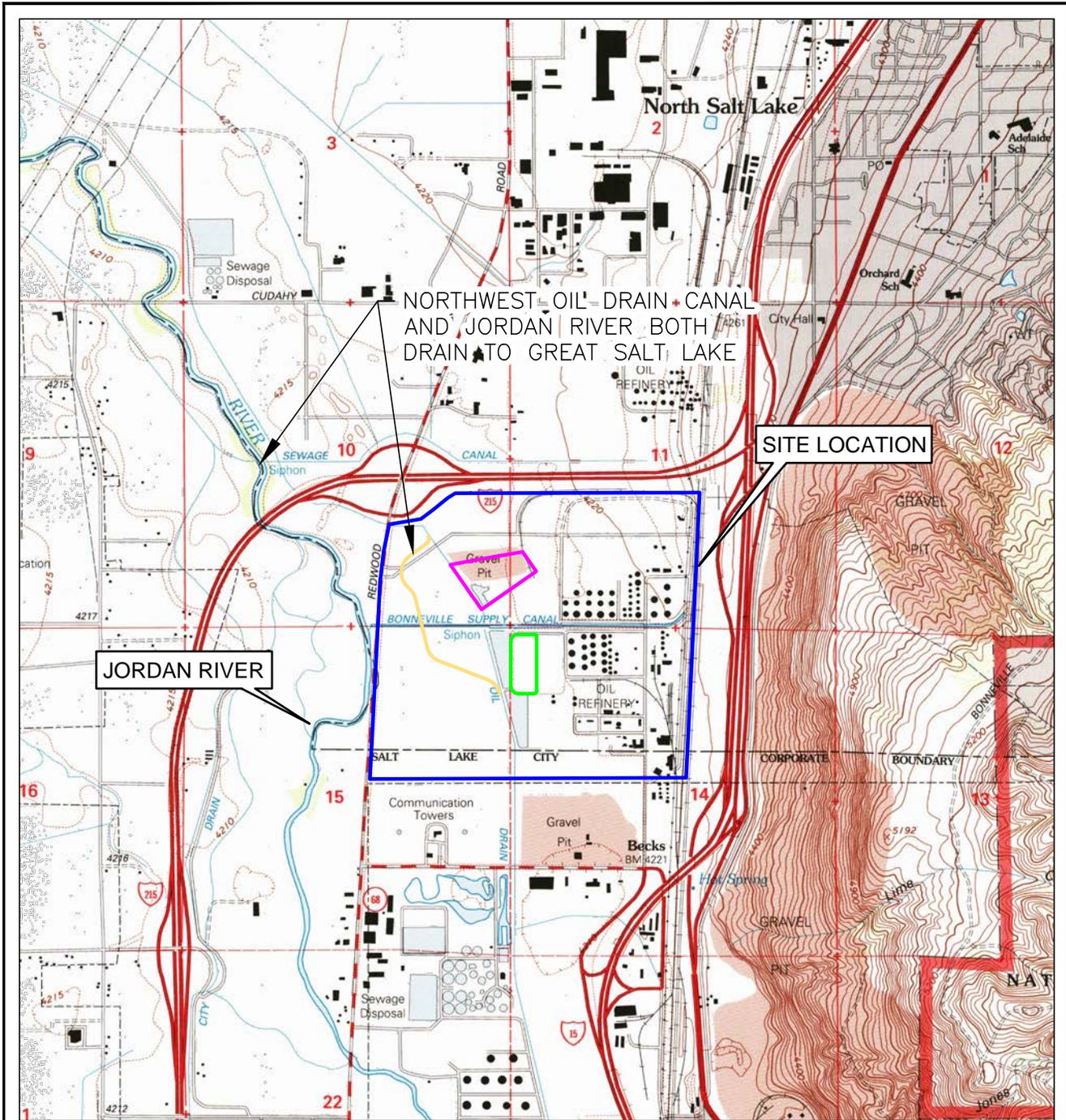
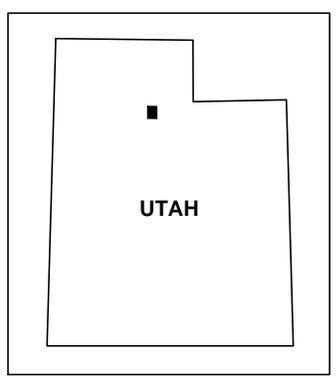
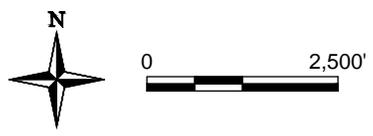


Image citation: U.S. Geological Survey, 1:24,000-Scale 7.5 Minute Digital Raster Graphic Quadrangle, Salt Lake, Publication: 2011, NAIP Imagery 2009.

**EXPLANATION**

- REFINERY BOUNDARY
- RWMA BOUNDARY
- LWMA BOUNDARY
- REROUTED SEGMENT OF NORTHWEST OIL DRAIN CANAL



**QUADRANGLE LOCATION**

**Trihydro**  
CORPORATION  
1252 Commerce Drive  
Laramie, Wyoming 82070  
www.trihydro.com  
(P) 307/745.7474 (F) 307/745.7729

**FIGURE 1**

**SITE LOCATION MAP**

**CHEVRON SALT LAKE REFINERY**  
**NORTH SALT LAKE, UTAH**

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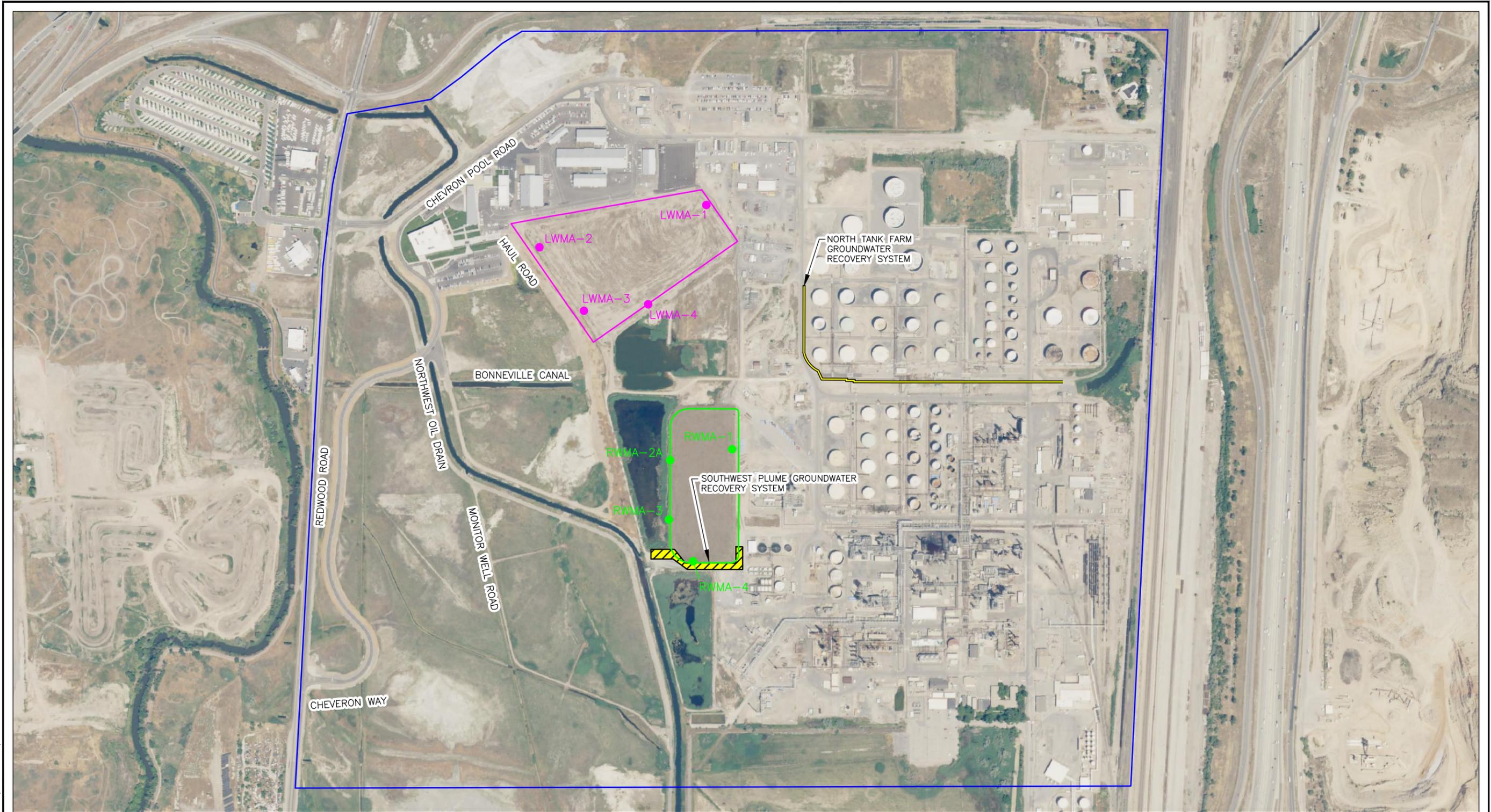
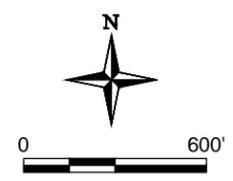


Image Citation: NAIP (National Agricultural Imagery Program), Publication: 2016, Salt Lake, Utah.

- EXPLANATION**
- RWMA-4 ● RWMA COMPLIANCE WELL LOCATION AND DESIGNATION
  - LWMA-3 ● LWMA COMPLIANCE WELL LOCATION AND DESIGNATION
  - RWMA BOUNDARY
  - LWMA BOUNDARY
  - GWMA BOUNDARY

- SOUTHWEST PLUME GROUNDWATER RECOVERY SYSTEM
- NORTH TANK FARM GROUNDWATER RECOVERY SYSTEM



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**FIGURE 2**

**LOCATION OF THE LWMA, RWMA, AND RELATED SITE FEATURES**

**CHEVRON SALT LAKE REFINERY  
NORTH SALT LAKE, UTAH**

M:\CHEVRON\SALT LAKE\REFINERY\EMC\GWD\GROUNDWATER\ANNUAL REPORT\154-GWR-WELLLOC-201702

*INSPECTOR:*  
*INSPECTION DATE:*  
*PROJECT NO.:*  
WEATHER

### **SCHEDULE**

In accordance with Module II, Section D, of Post Closure Permit No. UTD092029768, any deterioration or malfunctioning of the RWMA that may result in a threat to human health or the environment shall be remedied within seventy-two (72) hours. If the remedy requires more time, the Permittee shall submit to the Director of the Utah Division of Waste Management and Radiation Control, Department of Environmental Quality, before the expiration of the Seventy-two (72) hour period, a proposed time schedule for correcting the problem.

Prior to conducting the inspection, the previously completed inspection and corrective action forms will be reviewed to alert the inspector to items of special interest, and to identify trends in any corrective actions.

The original of this inspection form shall be stored at the offices of the individual that performs the inspection. A copy of this form as completed shall be maintained at the Chevron Products Co., Salt Lake Refinery. A copy of the completed form shall be included in the Annual Report that is submitted each year to the Executive Secretary of the Utah Department of Environmental Quality.

See the attached site plan of the RWMA for locations of specific inspection items. Attach additional sheets as necessary to describe damage or problems.

#### **Purpose and Scheduling of Inspection:**

- \_\_\_\_\_ Storm Event - Inspection required within 24 hours of precipitation in excess of 2 inches per 24 hours. Use official reports of the National Weather Service, located at the Salt Lake International Airport, as the weather station of record (II.D.4).
  
- \_\_\_\_\_ Annual RWMA cell inspection and inspection of all monitor wells (to be conducted as part of the annual groundwater sampling in September or October (II.D.6).

Attachment 1 – Post Closure Permit Inspection Forms  
 Chevron Products Co., Salt Lake Refinery  
 RWMA Inspection Checklist  
 Page 2 of 7

Item	Yes	No	Comments
<b>ACCESS</b> - Has the access road been removed, blocked, or damaged?			
<b>SECURITY</b> - Is the security fencing in-place, intact, and operational?			
- Have the fencing or gates been damaged or breached?			
<b>SIGNAGE</b> - Are necessary signs or placards in-place, legible, visible, and undamaged?			
<b>DRAINAGE STRUCTURES</b> - Are surface drainage structures intact, undamaged, and operational?			
- Has runoff overflowed the structures?			

Item	Yes	No	Comments
<b>CAP MATERIALS</b>			
- Are there signs of surface erosion?			
- Are there signs of surface settlement or differential subsidence (survey as necessary)?			
- Are there any surface cracks?			
- Is the vegetation cover intact and uniform?			
- Are there any deep-rooted plants that may damage the low-permeability barriers?			
- Is there evidence of surface water ponding?			
- Are there new signs of physical damage to the cap materials?			
- Have burrowing animals damaged the cap?			

Item	Yes	No	Comments
<b>EMBANKMENTS</b>			
- Are there signs of surface erosion?			
- Are there signs of settlement?			
- Are there any surface cracks?			
- Is the vegetation cover intact and uniform?			
- Is there evidence of surface water ponding?			
- Is there evidence of slope failure?			
- Are there signs of bulging at the toe of slopes and embankments?			
- Are there new signs of physical damage to the embankments (including burrowing animals)?			

Item	Yes	No	Comments
<p><b>GROUNDWATER MONITORING WELLS (II.D.6a-e)</b></p> <ul style="list-style-type: none"> <li>- Have any of the wells, locks, casings, aprons, or caps been damaged?</li> <li>- Are the cap lock systems in-place and operational?</li> <li>- Have the measuring points been damaged?</li> <li>- Is there evidence of sediment accumulation?</li> <li>- Are the annulus seals intact?</li> <li>- Are permanent dedicated pumps operational?</li> <li>- Are the wells accessible and visible?</li> <li>- Are the holding drums on-site and intact?</li> <li>- Measured depth to the bottom of each well (required annually, IV.D.2G).</li> <li>- Other</li> </ul>			

Item	Yes	No	Comments
<b>SETTLEMENT MONUMENTS</b>  - Have any of the settlement monuments been damaged?			
- Are the settlement monuments visible (painted)?			
- Other			

Comments:

INSPECTOR:  
INSPECTION DATE:  
PROJECT NO.:  
WEATHER

### SCHEDULE

Prior to conducting the inspection, the previously completed inspection and corrective action forms will be reviewed to alert the inspector to items of special interest, and to identify trends in any corrective actions.

A copy of this form as completed shall be maintained at Chevron Products Co., Salt Lake Refinery. A completed copy of this form shall be included in the Annual Reports that are submitted each year to the Executive Secretary of the Utah Department of Environmental Quality.

See the attached site plan of the LWMA for locations of specific inspection items.

Attach additional sheets as necessary to describe damage or problems.

### Purpose and Scheduling of Inspection:

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Annual LWMA cell inspection and inspection of all four monitor wells (to be conducted as part of the annual groundwater sampling in September or October (II.D.6)).

Item	Yes	No	Comments
<p><b>ACCESS</b></p> <ul style="list-style-type: none"> <li>- Has the access road been removed, blocked, or damaged?</li> </ul>			
<p><b>SECURITY</b></p> <ul style="list-style-type: none"> <li>- Is the security fencing in-place, intact, and operational?</li> </ul>			
<ul style="list-style-type: none"> <li>- Have the fencing or gates been damaged or breached?</li> </ul>			
<p><b>SIGNAGE</b></p> <ul style="list-style-type: none"> <li>- Are necessary signs or placards in-place, legible, visible, and undamaged?</li> </ul>			
<p><b>DRAINAGE STRUCTURES</b></p> <ul style="list-style-type: none"> <li>- Are surface drainage structures intact, undamaged, and operational?</li> </ul>			
<ul style="list-style-type: none"> <li>- Has runoff overflowed the structures?</li> </ul>			

Item	Yes	No	Comments
<b>CAP MATERIALS</b>			
- Are there signs of surface erosion?			
- Are there signs of surface settlement or differential subsidence (survey as necessary)?			
- Are there any surface cracks?			
- Is the gravel armor intact and uniform?			
- Are there any deep-rooted plants that may damage the low-permeability barriers?			
- Is there evidence of surface water ponding?			
- Are there signs of physical damage to the cap materials?			
- Have burrowing animals damaged the cap?			

Item	Yes	No	Comments
<b>EMBANKMENTS</b>			
- Are there signs of surface erosion?			
- Are there signs of settlement?			
- Are there any surface cracks?			
- Is the gravel armor intact and uniform?			
- Is there evidence of surface water ponding?			
- Is there evidence of slope failure?			
- Are there signs of bulging at the toe of slopes and embankments?			
- Are there signs of physical damage to the embankments (including burrowing animals)?			

Item	Yes	No	Comments
<p><b>GROUNDWATER MONITORING WELLS (ii.D.6a-e)</b></p> <ul style="list-style-type: none"> <li>- Have any of the wells, locks, casings, aprons, or caps been damaged?</li> <li>- Are the cap lock systems in-place and operational?</li> <li>- Have the measuring points been damaged?</li> <li>- Is there evidence of sediment accumulation?</li> <li>- Are the annulus seals intact?</li> <li>- Are permanent dedicated pumps operational?</li> <li>- Are the wells accessible and visible?</li> <li>- Are the holding drums on site and intact?</li> </ul>			

Item	Yes	No	Comments
<b>SETTLEMENT MONUMENTS</b> - Have any of the settlement monuments been damaged?			
- Are the settlement monuments visible (painted)?			
- Other			

Comments:

INSPECTOR:  
 INSPECTION DATE:  
 WEATHER:

Salt Lake Airport Weather Station Storm Details That Required Inspection:

\_\_\_\_\_ Reported Date of Storm Event  
 \_\_\_\_\_ (Y/N) Sustained Wind Speed in Excess of 80 mph  
 \_\_\_\_\_ (Y/N) Precipitation in excess of 2 inches per twenty-four (24) time period

**INSPECTION OBSERVATIONS**

ITEM	OK	DAMAGED	DETAILS OR PROPOSED ACTION
Landfill Perimeter Toe			
Top of Embankment			
Rutting on Side-Slopes			
Vegetated Cover			
Cover Drainage Network			
Monitor Wells			
Security Fence and Signs			
Other Observations			

**COMMENTS:**

**ATTACHMENT 2  
TABLE 2-1**

**IDENTIFICATION AND STATUS OF CLOSED HAZARDOUS WASTE UNITS AND SOLID WASTE MANAGEMENT UNITS**

<b>Solid Waste Management Unit</b>	<b>Corrective Action</b>	<b>Status</b>
Reservoir	Closed as a Corrective Action Management Unit ("CAMU") identified as the Reservoir Waste Management Area ("RWMA")	Closed
Landfill Area (Solid Waste Landfill)	Closed as CAMU identified as the Landfill Waste Management Area ("LWMA")	Closed
Landfill Area (Hazardous Waste Landfill)	Closure by removal 1995	Clean Closed
Landfill Area (Old Barrel Storage Area)	Included in LWMA CAMU	Clean Closed
Landfill Area (Standing Water Surface)	Included in LWMA CAMU	Clean Closed
Oily Dump	Included in LWMA CAMU	Clean Closed
TEL Weathering Area	Closure by removal 1995	Clean Closed
Landfarm Storage Area	Excavated and placed onto the Landfarm in 1996	Clean Closed
Alky Channel	Included in LWMA CAMU	Clean Closed
Alky Site	Included in LWMA CAMU	Clean Closed
Leaded Tank Sludge Disposal Sites	Waste removed off-site in 1983	Clean Closed
Conveyance Ditches	Wastes removed off-site in 1983	Clean Closed
API Separator Sludge Pit	Included in RWMA CAMU 1995	Clean Closed
Storm Surge Pond	Included in RWMA CAMU 1995	Clean Closed
Baffle Board Pond	Included in RWMA CAMU 1991	Clean Closed
Wastewater Treatment System (API Separator)	Dismantled and disposed off-site	Clean Closed
Wastewater Treatment System (IAF)	Removed as part of WWTS upgrade 1997; permitted recycle of sludge to Coker	Clean Closed
Wastewater Treatment System (Storm Water Segregation Sump)	Removed as part of WWTS upgrade 1997; permitted recycle of sludge to Coker	Clean Closed
Wastewater Treatment System (No. 1 Pond)	Include in LWMA CAMU	Clean Closed

**ATTACHMENT 2 (Continued)**

<b>Solid Waste Management Unit</b>	<b>Recommended Action</b>	<b>Status of Corrective Action</b>
Wastewater Treatment System (Bio-Discs)	Removed as part of WWTS upgrade 1997;	Clean Closed
Wastewater Treatment System (No. 4 Pond)	Included in LWMA CAMU	Clean Closed
Sand Filter Backwash Pond	Included in LWMA CAMU	Clean Closed
Wastewater Treatment System (No. 5 Pond)	Included in LWMA CAMU	Clean Closed
Coke Fines Dewatering Impoundment	Waste removed off-site in 1987	Clean Closed
No. 2 Outfall Channel	Included in LWMA CAMU	Clean Closed
Bonneville Canal	Closed in 1993 as interim corrective measures with wastes removed off-site. Final Corrective Measures approved in 1997 Permit	Clean Closed
Baffle Board Pond Conveyance Ditch	Included in LWMA CAMU	Clean Closed
Abandoned Lime Settling Basin	Included in LWMA CAMU	Clean Closed
Bio-Disc Sump	Affected area excavated and removed; HFM sump constructed at this unit	Clean Closed
Shale Oil Semi-Works Retention Pond Wastes	Closure Cell Landfill (1985) with separate landfill inside slurry wall (RFI Appendix K)	Closed
Shale Oil Semi-Works Spent Shale Pile	Closure Cell Landfill (1985) with separate landfill inside slurry wall (RFI Appendix K)	Closed

**ATTACHMENT 2  
TABLE 2-2**

**STATUS OF SOLID WASTE MANAGEMENT UNITS  
UNDER INTERIM MEASURES OR SITE MANAGEMENT**

<b>Solid Waste Management Unit</b>	<b>Recommended Action</b>	<b>Status of Corrective Action</b>
Landfarm	Closed in 1991	Site Management due to residual waste with elevated TPH
Spent Caustic Evaporation Site	Status as SWMU exempt	To Be Determined
Northeast Landfill	Status as SWMU exempt No regulated waste present	Drainage plans complete (RFI Appendix K)
Standing Water Site	Status as SWMU exempt No regulated waste present	Drainage plans complete (RFI Appendix K)
Wastewater Treatment System (No. 2 Pond)	On-site intrinsic bioremediation Used as waterfowl nesting area	Site Management due to residual waste with elevated TPH
Wastewater Treatment System (No. 3 Pond)	On-site intrinsic bioremediation Used as waterfowl loafing pond	Site Management due to residual waste with elevated TPH
HF Acid Neutralization Tank	None as long as unit is operational	Site Management due to operational status
Spent Caustic Tanks	None as long as unit is operational	Site Management due to operational status
Lime Settling Basin	None as long as unit is operational	Site Management due to operational status
Lime Settling Basin Dewatering Impoundment	None as long as unit is operational	Site Management due to operational status
Hazardous Waste Interim Storage Pad	None as long as unit is operational	Site Management due to operational status
Experimental Farm	Status as SWMU Exempt	Site Management as part of West Field Habitat
Fire Training Area	Currently no action due to operational status	Site Management due to operational status
Railcar Loading Area	Status as SMWU exempt	Current design adequate for rail area operational spills and leaks
North Tank Farm	Unit is operational; petition for final corrective action in 1995	Site Management as final remedy for groundwater intercept
Groundwater	Groundwater Waste Management Area ("GWMA")	Groundwater monitoring and containment
North Tank Farm Groundwater Intercept System	Status to be changed to SWMU	To be identified as a SWMU once the Permit is renewed. Sample as part of GWMA

## ATTACHMENT 3

### Mann-Kendall Test

The Mann-Kendall test is a non-parametric test for determining trends. It indicates whether a particular constituent has a statistically significant increasing or decreasing trend in an individual monitor well. The test will also indicate the absence of a statistically significant trend. Since the Mann-Kendall test is non-parametric, the sample data need not conform to a particular statistical distribution. Furthermore, missing values are allowed. Mann-Kendall can also use data reported as either a trace value or one less than the method detection limit by assigning a common value that is less than the lowest measured value. This is allowed because Mann-Kendall uses the relative magnitude of the values to determine a trend and not the measured values. The robustness and simplicity of the Mann-Kendall test reduces the chances for error during the statistical analysis. More detailed discussions of the Mann-Kendall test are presented by Gilbert (1987) and Singh and Singh (2013).

As stated by Singh and Singh (2013), "The M-K statistic,  $S$ , is computed by examining all possible distinct pairs of measurements in the time series data set and scoring each pair as follows. It should be noted that for a measurement data set of size,  $n$ , there are  $n(n-1)/2$  distinct pairs,  $(y_j, y_i)$  with  $j>i$ , which are being compared.

- If an earlier measurement,  $y_i$ , is less in magnitude than a later measurement,  $y_j$ , then that pair is assigned a score of 1;
- If an earlier measurement value is greater in magnitude than a later value, the pair is assigned a score of  $-1$ ; and
- Pairs with identical ( $y_i = y_j$ ) measurements values are assigned a score of 0.

"The M-K test statistic,  $S$ , equals the sum of scores assigned to all pairs. The following conclusions are derived based upon the values of the M-K statistic,  $S$ .

- A positive value of  $S$  implies that a majority of the differences between earlier and later measurements are positive suggesting the presence of a potential upward and increasing trend over time.
- A negative value for  $S$  implies that a majority of the differences between earlier and later measurements are negative suggesting the presence of a potential downward/ decreasing trend.
- A value of  $S$  close to zero indicates a roughly equal number of positive and negative scores assigned to all possible distinct pairs,  $(y_j, y_i)$  with  $j>i$ , suggesting that the data do not exhibit any evidence of an increasing or decreasing trend."

The statistical significance of the trend is determined by comparing the Mann-Kendall test statistic with tabulated p-values. Methods used for this statistical comparison are detailed by Singh and Singh (2013).

At the Chevron Salt Lake Refinery, trends in groundwater quality will be determined using a two-tailed Mann-Kendall test with a significance level alpha of 0.05 (i.e., a 95% confidence level). For determinations made in support of closure, a one-tailed test will be used, also with a significance level alpha of 0.05, to evaluate the lower limit. As long as the sample size being evaluated is at or below 22, the Mann-Kendall methodology for small sample size will be used.

However, when the sample size exceeds 22, the Mann-Kendall test for larger sample sizes will be used. All tests will be performed using ProUCL, version 5.0 (as updated) or other standard statistical software.

## **References**

Gilbert, R.O. 1987. Statistical Methods for Environmental Pollution Monitoring. Van Nostrand Reinhold. New York, New York.

Singh, A. and A.K. Singh. 2013. ProUCL Version 5.0.00 Technical Guide: Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations. EPA/600/R-07/041. U.S. Environmental Protection Agency, Office of Research and Development. Washington, D.C.

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