

**SERVICE AGREEMENT
ANNUAL EXTENSION – YEAR 2 OF 5
(RFP No. 14-15-154)**

Pursuant to Section 7, EXTENSION, CHANGES AND AMENDMENTS of the Whole Effluent Toxicity Testing Service Agreement (Agreement) dated June 25, 2015 between the City of Las Cruces (City) and GEI Consultants, Inc (Contractor), the City and Contractor agree to renew the Agreement for a period of one (1) year, to begin June 25, 2016 and terminate June 24, 2017. All other terms of the Service Agreement remain the same.

AGREED:

GEI CONSULTANTS, INC

CITY OF LAS CRUCES

Sarah Skigen
Signature

3/11/16
Date

Deb Smith
Deb Smith

3/11/16
Date

Purchasing Manager

Sarah Skigen, Ecology Div. Manager
Printed Name/Title

PROFESSIONAL SERVICES AGREEMENT

THIS AGREEMENT made and entered into on this June 25, 2015 by and between the City of Las Cruces, New Mexico, hereinafter called "CITY" and GEI Consultants, Inc., 4601 DTC Blvd., Ste. 900, Denver, CO 80237 hereinafter called "CONTRACTOR".

1. PROJECT DESCRIPTION

Whole Effluent Toxicity Testing for NPDES Compliance

The present NPDES permits specify quarterly testing with the option of accelerated testing on a monthly basis as per permit authority request in the event of a test failure. Monthly testing shall continue until results demonstrate no toxic effects for a period of three (3) consecutive months. The attached Exhibit A: Parts One and Two and applicable NPDES permits (Jacob Hands Treatment Plant, NM0022311 and East Mesa Water Reclamation Facility, NM0030872) outline the scope of work, data quality objectives criteria, technical requirements and procedures to follow in Whole Effluent Toxicity testing.

2. SCOPE OF SERVICES

In a satisfactory and proper manner, the CONTRACTOR shall perform SERVICES as set forth in Exhibit A – Parts One through Three, attached hereto and made a part of this Agreement.

The CONTRACTOR is authorized to extend the same terms and conditions of this Agreement to other governmental entities conditioned upon the procurement laws and regulations of those entities. The CITY shall not be a party nor have any liability relating to such extensions.

3. APPROPRIATIONS

The terms of this Agreement are contingent on sufficient appropriations and authorization being made by the City Council for the performance of this Agreement. If sufficient appropriations and authorizations are not made by the City Council, this Agreement shall terminate upon written notice given by the CITY to CONTRACTOR. The CITY'S decision as to whether sufficient appropriations and authorizations exist shall be accepted by CONTRACTOR and shall be final.

4. COMPENSATION

The CITY shall compensate CONTRACTOR for the performance of SERVICES under this Agreement as proposed in response to the CITY'S RFP 14-15-154 attached hereto as Exhibit B and made a part of this Agreement, plus applicable taxes.

CONTRACTOR is responsible for payment of State of New Mexico Gross Receipts Tax levied on the amounts payable under this Agreement. CONTRACTOR agrees to comply with all federal and state tax payments and report all items of gross receipts as income from the operations of its business.

5. DEVOTION OF ADEQUATE TIME

CONTRACTOR will devote the necessary hours each week to the performance of projects that are required by the CITY and it will serve the CITY diligently and faithfully, and according to its best ability in all respects and will endeavor to promote the best interests of the CITY.

6. TERM AND SCHEDULE

This Agreement shall become effective on June 25, 2015 for a term of one year and, pending mutual written agreement, may be extended annually thereafter for up to four (4) more years.

CONTRACTOR shall perform the SERVICES in accordance with the time set forth as agreed upon by the CITY and CONTRACTOR.

7. EXTENSIONS, CHANGES, AND AMENDMENTS

This Agreement shall not be extended, changed, or amended except by instrument in writing executed by the parties. The CITY shall not be liable for payment of any extra services nor shall CONTRACTOR be obligated to perform any extra services except upon such written agreement. Such written approval shall indicate the date said extension, change, or amendment is effective and shall be signed by the parties to this Agreement. In the event that the parties cannot reach agreement as to a particular change, the issue shall be resolved pursuant to Article 21.

8. CHANGES AND EXTRA SERVICES BY THE CITY

The CITY may make changes within the general scope of the SERVICES plus may also request CONTRACTOR to perform other extra services not incorporated within the Services set forth in this Agreement. If the CONTRACTOR is of the opinion that such change causes an increase or decrease in the cost and/or the time required for performing the changes or other services required by the CITY, CONTRACTOR shall so notify the CITY, of that fact within five (5) business work days from the date of receipt of change by the CITY. The CITY shall provide written response to the CONTRACTOR within five (5) business work days from the date of receipt of CONTRACTOR'S written notification.

9. CHANGES AND EXTRA SERVICES BY THE CONTRACTOR

In the event a condition is identified by the CONTRACTOR which, in the opinion of the CONTRACTOR, changes the services, costs, and/or time required for performance under this Agreement, the CONTRACTOR shall provide written notification to the CITY within five (5) business work days of such identification. The CITY shall respond in writing to such notification within five (5) business work days from the date of receipt of CONTRACTOR'S notification.

10. DELAYS

In the event that performance of SERVICES is delayed by causes beyond reasonable control of CONTRACTOR, and without the fault or negligence of CONTRACTOR, the time and total compensation for the performance of the SERVICES may be equitably adjusted by written agreement to reflect the extent of such delay. CONTRACTOR shall provide the CITY, with written notice of delay pursuant to Article 9 including therein a description of the delay and the steps contemplated or actually taken by CONTRACTOR to mitigate the effect of such delay. The CITY will make the final determination as to reasonableness of delays.

11. TERMINATION

This Agreement may be terminated by either party hereto upon fifteen (15) calendar days written notice in the event of substantial failure by the other party to perform in accordance with the terms of this Agreement through no fault of the terminating party. This Agreement may also be terminated by the CITY, for its convenience or because the PROJECT has been

permanently abandoned, but only upon fifteen (15) calendar days written notice to CONTRACTOR.

In the event of termination, CONTRACTOR shall be compensated for all services performed and costs incurred up to the effective date of termination for which CONTRACTOR has not been previously compensated.

Upon receipt of notice of termination from the CITY, CONTRACTOR shall discontinue the SERVICES unless otherwise directed and upon final payment from the CITY, deliver to the CITY, the required number of copies of all data, drawings, reports, estimates, summaries, and such other information and materials as may have been accumulated by CONTRACTOR in the performance of this Agreement, whether completed or in process.

12. RECORDS AND AUDITS

CONTRACTOR will maintain records indicating dates, length of time, and services rendered. The CITY has the right to audit billings both before and after payment, and contest any billing or portion thereof. Payment under this Agreement does not foreclose the CITY'S, right to recover excessive or illegal payments.

13. DISCLOSURE AND OWNERSHIP OF DOCUMENTS, PRODUCTS, DESIGN, ELECTRONIC FILES

All technical data, electronic files, and other written and oral information not in the public domain or not previously known, and all information, electronic files, and data obtained, developed, or supplied by the CITY, will be kept confidential and CONTRACTOR will not disclose to any other party, directly or indirectly, without the CITY'S, prior written consent unless required by lawful order.

All technical data, electronic files, products developed, operational parameters, blueprints, and other information and work of the CONTRACTOR shall be the sole property of the CITY, and shall be delivered to the CITY, when requested and at the end of the Agreement.

14. INDEPENDENT CONTRACTOR

CONTRACTOR represents that it has, or will secure, at its own expense, all personnel required in performing the SERVICES under this Agreement. Such personnel shall not be employees of, nor have any contractual relationship with the CITY, CONTRACTOR, consistent with its status as an independent contractor, further agrees that its personnel will not hold themselves out as, nor claim to be officers or employees of the CITY, by reason of this Agreement.

To the extent that CONTRACTOR employs any employees, CONTRACTOR shall be solely responsible for providing its own form of insurance for its employees and in no event shall CONTRACTOR'S employees be covered under any policy of the CITY.

CONTRACTOR'S retention hereunder is not exclusive. Subject to the terms and provisions of this Agreement: (i) CONTRACTOR is able, during the Term hereof, to perform services for other parties; and (ii) CONTRACTOR may perform for its own account other professional services outside the scope of this Agreement.

CONTRACTOR is and shall be an Independent Contractor and shall be responsible for the management of its business affairs. In the performance of the work under this Agreement, CONTRACTOR will at all times be acting and performing as an Independent Contractor, as that term is understood for federal and state law purposes, and not as an employee of the CITY. Without limitation upon the foregoing, CONTRACTOR shall not accrue sick leave, jury duty pay, retirement, insurance, bonding, welfare benefits, or any other benefits, which may or may not be afforded employees of the CITY. CONTRACTOR will not be treated as an employee for purposes of: Workers' Compensation benefits; the Federal Unemployment Tax Act; Social Security; other payroll taxes, federal or any state income tax withholding; or the employee benefit provisions described in the Internal Revenue Code of 1986, as amended. Neither the CITY, nor its agents or representatives, shall have the right to control or direct the manner, details or means by which CONTRACTOR accomplishes and performs its services. Nevertheless, CONTRACTOR shall be bound to fulfill the duties and responsibilities contained in the Agreement.

15. NO JOINT VENTURE OR PARTNERSHIP

Nothing contained in this Agreement shall create any partnership, association, joint venture, fiduciary or agency relationship between CONTRACTOR and CITY. Except as otherwise specifically set forth herein, neither CONTRACTOR nor CITY, shall be authorized or empowered to make any representation or commitment or to perform any act which shall be binding on the other unless expressly authorized or empowered in writing.

16. ASSIGNMENT

CONTRACTOR shall perform all the services under this Agreement and shall not assign any interest in this Agreement or transfer any interest in same or assign any claims for money due or to become due under this Agreement without the prior written consent of the CITY.

17. INSURANCE

CONTRACTOR shall obtain and maintain insurance at its own cost and expense during the life of this Agreement, and shall require Subcontractors, if any, to maintain during the life of his subcontract:

Professional Liability: \$1,000,000 per claim

CONTRACTOR shall furnish the CITY, with a certificate(s) of insurance showing CONTRACTOR and Subcontractors, if any, have complied with this Article. The CONTRACTOR shall provide insurance certificates before work is to start on the project and shall provide the CITY thirty (30) days written notification of cancellation of such policies.

18. INDEMNITY AND LIMITATION

CONTRACTOR shall indemnify and hold harmless the CITY, from and against any and all claims, suits, actions, judgments, demands, losses, costs, expenses (including reasonable attorney's fees), damages, and liability caused solely by, resulting solely from, or arising solely out of the negligent acts, errors, or omissions of CONTRACTOR, its officers, employees, agents, or representatives in the performance of SERVICES under this agreement.

19. APPLICABLE LAW

This Agreement and the rights and obligations of the parties shall be governed by and construed by the laws of the State of New Mexico applicable to Agreements between New Mexico parties made and performed in that state, without regard to conflicts of law principles. Venue shall be in the Third Judicial District, State of New Mexico.

CONTRACTOR shall abide and be governed by all applicable state law, CITY ordinances, and laws regarding the CONTRACTOR'S services or any work done pursuant to this Agreement.

20. BREACH

In the event CONTRACTOR breaches any obligation contained in this Agreement, prior to instituting any action or dispute resolution procedure, the CITY, shall give CONTRACTOR written notice of such breach. In the event CONTRACTOR fails to remedy the breach within five (5) working days of receiving such written notice, the CITY, at its sole discretion, without any obligation to do so and in addition to other remedies available under applicable law, may remedy CONTRACTOR'S breach and recover any and all costs and expenses in so doing from CONTRACTOR.

21. DISPUTE RESOLUTION

In the event that a dispute arises between CITY and CONTRACTOR under this Agreement or as a result of breach of this Agreement, the parties agree to act in good faith to attempt to resolve the dispute.

In the event of termination, CONTRACTOR shall be compensated for all services performed and costs incurred up to the effective date of termination for which CONTRACTOR has not been previously compensated.

Upon receipt of notice of termination from the CITY, CONTRACTOR shall discontinue the SERVICES unless otherwise directed and upon final payment from the CITY, deliver to the CITY, the required number of copies of all data, drawings, reports, estimates, summaries, and such other information and materials as may have been accumulated by CONTRACTOR in the performance of this Agreement, whether completed or in process.

22. NOTIFICATION

All notices required or permitted under this Agreement shall be in writing and shall be deemed sufficiently served if served by Registered Mail addressed as follows:

TO CITY: City of Las Cruces,
 PO Box 20000
 Las Cruces, NM 88004
 ATTENTION: Luis Guerra

With Copies to: Purchasing Manager

TO CONTRACTOR: GEI Consultants, Inc.
 4601 DTC Blvd. Ste. 900
 Denver, CO 80237
 ATTENTION: Natalie Love

23. SCOPE OF AGREEMENT

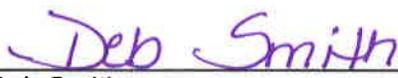
This Agreement incorporates all of the agreements, covenants, and understandings between the parties hereto concerning the subject matter hereof and that all such covenants, agreements, and understandings have been merged into this written agreement. No prior agreement or understanding verbal or otherwise of the parties or their agents shall be valid or enforceable unless embodied in this agreement.

GEI CONSULTANTS, INC.

BY: 
Name VICE PRESIDENT
Title

JUNE 30, 2015
Date

CITY OF LAS CRUCES

BY: 
Deb Smith
Purchasing Manager

July 9, 2015
Date

APPROVED AS TO FORM

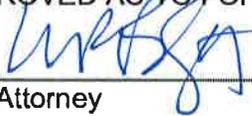

City Attorney

EXHIBIT A

SERVICES

Exhibit A Services: Part One

Technical Agreement for Analytical Services Related to NPDES Whole Effluent Toxicity Testing

The City of Las Cruces (hereinafter “the CLIENT”) is required to conduct periodic whole effluent toxicity testing (WET). The testing and monitoring requirements are set forth in the NPDES Permit No. NM0023311 and Permit No. NM0030872 issued by the U. S. Environmental Protection Agency, Region 6, Dallas, TX.

The CLIENT desires to contract with GEI Consultants, Inc. (hereinafter: “the Lab,” to conduct the required tests. As these tests will be used to establish compliance with conditions in the NPDES Permit, they must meet certain specifications.

This document is intended to provide detailed descriptions of the work to be performed, the manner in which it is to be performed, and the procedures for reporting results.

I. PRE-REQUISITE QUALIFICATIONS

A. ELAP Certification

The lab shall be certified and registered as an environmental testing laboratory pursuant to the provisions of the LABORATORY CERTIFICATION REGULATION to perform all analysis listed in Section II of this agreement. The Lab shall provide a copy of their current ELAP certificate to the CLIENT. The Lab shall also provide a copy of their renewal certificate when it is reissued.

Alternatively, the lab shall be approved by the PERMITTING AUTHORITY if no ELAP certification is available. Regulatory approvals can be coordinated through CLIENT.

B. DMR and WP Studies

The Lab shall participate in QA/QC performance studies for WET testing when requested by the CLIENT (Client must participate in QA/QC testing DMR-QA Study 35 requirement pertaining to Permit No. NM0023311 & NM0030872 in 2015). The Lab shall notify the CLIENT whenever such studies are planned or proposed by the EPA OR STATE PERMITTING AUTHORITY. The Lab shall submit a copy of all study results to the CLIENT within 15 working days of receipt of those results.

C. Guidance Document

The Lab shall maintain complete copies of:

1. The CLIENT NPDES permit including the monitoring and reporting program (93-45). CLIENT will provide copies of these documents.
2. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms; 4th Ed, 2002.
3. Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms; 5th Ed., 2002.
4. Technical Support Document for Water Quality-based Toxics Control; EPA/505/2-90-001, March 1991.

5. 40 CFR 136 and the related appendices (methods 1000.0, 1002.0, & 1003.0 including updated revisions to the toxicity test protocols)
6. Understanding and Accounting for Method Variability in WET Applications under the NPDES Program; EPA-833-R-00-003; June 2000.
7. Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136). EPA-821-B-00-004; July 2000.

D. Qualified Technicians and Analysts

All of the laboratory work, including the statistical analysis, conducted at the request of the CLIENT shall be performed by qualified and experienced technicians and analysts. The educational qualifications and work experience of all technicians and analysts performing work for the CLIENT shall be available for review at the request of the CLIENT.

E. Supervision

All of the work performed by the Lab for the benefit of the CLIENT shall occur under the general supervision and control of Natalie Love. The Lab must notify the CLIENT in the event the person named above is no longer able to supervise the conduct of tests performed for the CLIENT.

F. Subcontractors

No analytical services, requested by the CLIENT, may be subcontracted to another laboratory, person or firm without prior written consent by the CLIENT. Where consent is given, the Lab shall attach complete copies of the subcontractor's report to their own final report. The subcontractor's report shall be submitted on the subcontractor's own letterhead. Subcontractor services will be billed through the standard contract agreement between the Lab and the CLIENT. All subcontractors shall agree to certify the test results in the same manner as the Lab.

G. Laboratory Conditions

All of the testing and analysis performed for the benefit of the CLIENT shall be conducted in clean laboratory conditions. Clean conditions means there is no potential for test contamination by toxics in toxic amounts from sources other than the effluent sample as received by the Lab from the CLIENT.

H. Reference Toxicant Tests

The Lab shall conduct reference toxicant tests for all species and protocols used to analyze the effluent at least **once each month**. The Lab shall maintain historical performance charts for the results of all reference toxicant tests run in the preceding twelve months or in the twenty most recent tests performed. The charts must record the results from each reference toxicity test, the mean for all reference toxicity tests, and the upper and lower 95% confidence limits for the preceding twelve months or twenty tests. The charts shall be updated and attached to each WET report the Lab submits to the CLIENT.

I. Control Charts

Lab shall maintain historical performance charts documenting results from all control groups evaluated during each month. The charts must record the average result for each control group, the date of that test, the mean result for all controls, and the 95% upper and lower control limits for preceding month. The charts shall be updated and attached to each WET report the Lab submits to the CLIENT.

J. Notifications

The Lab shall notify the CLIENT of any change in the laboratory operation that impacts ELAP certification, such as: revocation, suspension or non-renewal of certification, transfer of ownership, change of laboratory director, change in location, major changes in instrumentation, or structural alterations that have an effect on the quality of analysis performed. A copy of any required notices submitted to the ELAP program shall also be sent to the CLIENT.

The Lab shall also notify the CLIENT if data from control charts indicate that test organisms may not be able to meet EPA's minimum control performance criteria for test acceptability. With such notification, the Lab shall suggest an alternate sampling period when test organisms are more likely to meet performance specifications.

II. WORK TO BE PERFORMED

A. Regular Toxicity Testing

Once each quarter, the Lab shall be requested to conduct a whole effluent chronic toxicity tests, using *Ceriodaphnia dubia* and Fathead minnows under the protocols specified in EPA document #600-4-89-001.

B. Annual Species Sensitivity Testing

Once each year, the Lab shall conduct acute and chronic whole effluent toxicity tests using *Ceriodaphnia dubia* and Fathead minnows.

C. Re-testing

In the event that any toxicity test(s) fails to meet EPA's recommended test acceptance criteria, then the Lab shall notify the CLIENT within 24 hours. The lab shall be responsible to conduct a new test, at their expense, when new sample water is received from CLIENT. CLIENT shall provide additional effluent samples to the Lab at no expense to the Lab.

D. Accelerated Testing

In the event that any toxicity test shows a statistically-significant reduction in measured biological endpoints, the Lab shall notify CLIENT within 24 hours. CLIENT may be required to run additional toxicity tests when previous failures are recorded. The lab shall coordinate with CLIENT to run the extra tests at the earliest available opportunity. The accelerated tests shall be conducted at the expense of CLIENT.

E. Audit Testing

At the request of CLIENT, the Lab may be asked to perform other whole effluent toxicity tests for quality assurance purposes. Such audits shall be conducted at the expense of the CLIENT.

III. EXPERIMENTAL TEST DESIGN

A. Dilution Series

All whole effluent toxicity tests performed on behalf of the CLIENT for methods 1000.0 and 1002.0 shall be conducted using a dilution series containing the following or updated concentrations for Permit No NM0023311: 13%, 17%, 23%, 30%, and 40% effluent.

All whole effluent toxicity tests performed on behalf of the CLIENT for methods 1000.0 and 1002.0 shall be conducted using a dilution series containing the following or updated concentrations for Permit No NM0030872: 32%, 42%, 56%, 75%, and 100% effluent.

B. Replicates

All whole effluent toxicity tests performed on behalf of the CLIENT for methods 1000.0 and 1002.0 shall be initiated with the minimum number of replicates specified in the following table:

| Species | Chronic |
|---------------------------|-----------------|
| Fathead minnow | 5 ¹ |
| <i>Ceriodaphnia dubia</i> | 10 ² |

¹Each Fathead minnow - each chronic replicate contains **eight** organisms.

²Each *Ceriodaphnia dubia* - each chronic replicate contains **one** organism.

C. Selection of Test Organisms

All organisms used in whole effluent toxicity testing shall be selected in accordance with the procedures specified by EPA. Specifically, Fathead minnow larvae, used in the chronic test procedure, shall be less than 48 hours old (<24 hrs. if in-house cultures are used) and all hatched within 24 hours of one another. *Ceriodaphnia dubia*, used in the chronic test procedure, shall be less than 24 hours old and all within 8 hours of the same age to begin the test. To qualify for use in chronic testing, neonate *Ceriodaphnia* may only be taken from adults that have eight or more young in their third or subsequent broods and the adult brood stock shall be less than 14 days old (see section 12.2.3 of EPA protocol for *Ceriodaphnia*).

D. Randomization

All test organisms shall be placed in test cells using randomization procedures specified by EPA. The *Ceriodaphnia* test shall also use the “blocking” methods described in section 12.2.4 of EPA’s chronic protocol for *Ceriodaphnia*.

E. Dilution Water

Water used to dilute effluent or serve as a test control shall conform to the recipe for “moderately hard” or “Very Hard Water” water as described in Section 7 of EPA’s chronic and acute test manual. A second dilution-water control series (chronic: 13%, 17%, 23%, 30%, and 40% / 32%, 42%, 56%, 75%, and 100%) shall consist of laboratory reconstituted water prepared to equal historical hardness, alkalinity, and pH of the receiving water body (to be specified). No other formulation shall be substituted without prior written authorization from the CLIENT. And, the Lab shall certify that the dilution water is “free from toxics in toxic amounts” in the final report submitted to the CLIENT.

F. Deviations

Any deviation from the experimental design prescribed by EPA’s official guidance documents shall be identified and justified in the Lab’s final report to CLIENT. In addition, such deviations shall be highlighted in a transmittal letter which accompanies the final report.

IV. RECEIPT OF SAMPLES

A. Sampling Containers

The Lab shall supply clean, unused cube containers for effluent samples for WET testing. The containers shall be shipped in coolers with chain of custody forms and tape, as well as any included instructions, and shall be received at least one week before the scheduled testing date.

B. Receiving

The Lab shall assure that qualified personnel are available to receive effluent samples when they are scheduled to arrive.

C. Chain-of-Custody Forms

The Lab shall record the date and time of receipt, and temperature of each water sample upon arrival, on the chain-of-custody form which accompanies each effluent sample. Upon receipt sample integrity will be verified, and the contact for CLIENT notified by 3pm on the date expected. Copies of the chain-of-custody forms shall be included with each test report submitted to the CLIENT.

D. Non-Receipt of Scheduled Samples

The Lab shall immediately notify the CLIENT in the event that a scheduled sample is not received by 3pm on the date expected. Such notification shall be by both phone, e-mail, and fax to the following persons and locations (in the ascribed order):

- (a) Luis Guerra, WQL
Phone: 575-528-3609
e-mail: lguerra@las-cruces.org
Fax: 575-528-3630
- (b) Water Quality Laboratory
Phone: 575-528-3604
Fax: 575-528-3630
- (c) Carl Clark, Utilities/RES
Phone: 575-528-3548

V. WATER CHEMISTRY

A. Required Analysis

The Lab shall analyze each effluent sample for the following constituents/parameters:

- (a) Temperature
- (b) pH
- (c) Alkalinity
- (d) Hardness
- (e) Conductivity
- (f) Dissolved Oxygen
- (g) Total Residual Chlorine
- (h) Total Ammonia
- (i) Chronic Testing : Organophosphate Pesticides (Diazinon)

B. Special pH Recording

The Lab shall report the average pH of each test concentration before and after each renewal. The average pH may be measured by pooling the "used" water from all replicates, in each treatment group, after organisms are moved to replacement water. Alternatively, the lab may elect to measure the pH of each and every replicate before and after sample water is replaced.

C. Reporting Chemical Results

The Lab shall include the results of all chemical analysis in the written report summarizing each whole effluent toxicity test series. Where chemical analyses are performed by a subcontractor (e.g. organophosphate pesticides), results shall be submitted as an attachment to the lab's final report, or follow as soon as possible.

D. Reporting Exceptions

Where one or more chemical parameters is believed to be outside acceptable limits, as defined in EPA's protocols, the Lab shall note the exception in their written report. The Lab shall also provide describe the impact of any deviation on test acceptability in their written report (see section 4.9.2 of EPA chronic protocol & EPA acute protocol).

E. Special Conditions for Chlorine

If chemical analysis indicates that chlorine appears to be present, the Lab shall continue to run the WET test without de-chlorinating the sample unless specific written instructions to the contrary accompany the Chain-of-Custody forms. The Lab shall record the chlorine results, including the detection limit for the analytical method used, in their written report.

F. Physical Inspection of Samples

The Lab shall visually inspect each effluent sample when it is opened for testing. The samples shall be clear of debris and free of odors. Any unusual conditions shall be noted in the Lab's written report to the CLIENT.

VI. TEST ACCEPTABILITY

A. Minimum Control Performance Criteria

All whole effluent toxicity tests shall meet EPA's recommended minimum control performance criteria (shown in the table below). Failure to meet the minimum criteria constitutes a breach of quality assurance and makes the data "unacceptable" for use in assessing NPDES permit monitoring and compliance.

| Control Organisms | Acute Tests | Chronic Tests |
|---------------------------|--------------------|-------------------------------------------------------------------|
| Fathead minnow | ≥90% survival | ≥80% survival and ≥0.25 mg average weight per fish |
| <i>Ceriodaphnia dubia</i> | ≥90% survival | ≥80% survival and ≥15 offspring per surviving female invertebrate |

B. Notification for Failed QA/QC

If a test fails to meet EPA's minimum control performance criteria, the Lab shall notify the CLIENT within 24 hours of test termination. Such notification shall be by phone, by fax, and by pager to the following persons mentioned on IV. 4.

C. Re-testing for Failed QA/QC

If a test fails to meet EPA's recommended minimum control performance criteria, the Lab shall initiate a new test at their expense. The CLIENT shall provide additional effluent samples at no expense to the Lab.

D. Data Submission for Failed QA/QC

The Lab shall submit copies of all bench sheet data from any test which fails to meet EPA's recommended minimum control performance criteria to the CLIENT. No additional statistical analysis is required, or expected, when data otherwise fails to meet QA/QC criteria.

E. Control Group Specification for Assessing QA/QC

Control performance shall be assessed based on the results from the dilution control group only. Under no circumstances shall alternative test data, from other control groups, be substituted for the dilution control group without prior written authorization from the CLIENT.

VII. DATA ANALYSIS

A. Selection of Statistical Methods

The Lab shall use EPA's recommended flowcharts to conduct all statistical analysis of whole effluent toxicity test data (see Section 11.13.2.4; figure 5 & 6 and Section 11.13.3.3; figure 9 of EPA's chronic procedures for Fathead minnows, Section 13.13.2.2, figure 4 and Section 13.13.3.4, and figure 6 of EPA's chronic procedures for *Ceriodaphnia dubia*).

B. Test Metrics

The Lab shall calculate and report the highest No Observed Effect Concentration (NOEC) for all biological endpoints (lethal and sub-lethal) in each chronic and acute toxicity test. The Lab shall also record and note where the results for any effluent concentration are significantly less than control performance. The threshold for statistical significance shall be set so that the risk of Type-I inferential error is less than or equal to 5% ($p < .05$).

C. Calculating TUC for Sub-Lethal Endpoints

The lab shall assess all sub-lethal endpoints using the NOEC methodology. The lab shall also calculate the IC25 using the Inhibition Concentration methodology where recommended in EPA's flowchart. However, only the NOEC shall be used to calculate and report the estimated TUC value for reproduction, growth or cell density. The IC25 shall not be used to assess the "pass/fail" status of any toxicity test.

D. Computer Printouts

The Lab shall provide copies of all printouts (text and graphics) from any computer programs used to analyze whole effluent toxicity data in their final written report to CLIENT.

E. Minimum Significant Difference Calculations

The Lab shall calculate and report the Minimum Significant Difference (MSD) for each biological endpoint (lethal and sub-lethal) in the toxicity tests. The MSD shall be reported as the percent reduction from the mean of control performance which would be statistically-significant (95% confidence).

F. Reporting Brood-level Data

For all chronic toxicity tests performed using *Ceriodaphnia dubia*, the Lab shall report the percentage of control replicates which produced at least three broods prior to test termination. The Lab shall also record and report the percentage of replicates which produced at least three broods for each and every effluent concentration.

G. Independent Data Review

The Lab's Study Director shall conduct an independent review of all procedures, data and statistical analysis for whole effluent toxicity tests conducted using effluent. The Study Director shall signify such review has occurred by initialing every page of the final report submitted to CLIENT.

VIII. REPORTING

A. Urgent Results

The Lab shall notify the CLIENT of any test result which appears to indicate the presence of toxicity ($TUC > 1$ or $TUA > 1$) within 24 hours of test completion. Such notification shall be by phone, by fax, and by pager as stated in IV. 4.

B. Normal Reporting

The Lab shall provide a complete written report summarizing test methods, procedures, results, and analysis to the CLIENT within fourteen (14) calendar days of test completion. The report will also include the EPA Region 6 summary sheets.

C. Transmittal Letter

The Lab shall provide a cover letter to their final written report for each whole effluent toxicity test conducted on behalf of the CLIENT. The transmittal letter shall include all of the following specific information:

1. Whether controls met EPA's minimum performance requirement for each test.
2. Whether a statistically-significant reduction in survival, growth or reproduction was observed when comparing controls organisms to organisms exposed to undiluted effluent.
3. Any exceptions to EPA methods and procedures shall be specifically identified.

D. Certification Statement

The Lab shall certify the results of their testing procedures in accordance with 40 CFR 122.22. Therefore, a formal certification statement shall be attached to the final written report submitted. The NPDES Permit, issued to CLIENT, requires the study director shall sign and date the following specific certification statement:

"I certify that all laboratory reports were prepared under my direction or supervision, and that all analyses were performed in accordance with a system designed to assure that qualified personnel perform the analysis, use the specified EPA-approved methods, and review the data before it is reported. Based on my inquiry of the person or persons who manage the system, or those directly responsible for gathering the information, the information reported is, to the best of my knowledge, true, complete and accurate."

E. Bench Sheets

The Lab shall include copies of all laboratory bench sheets with their final written reports.

Bench sheets shall:

- Clearly indicate daily measurements of all relevant chemical and biological data.
- Distinguish between dead and missing (lost) organisms.

Errors shall be corrected on the bench sheets by crossing out the wrong information and adding the correct information. Erasure or "white-out" are unacceptable methods for correcting errors, and therefore not permitted. The previous incorrect data shall remain legible even after correction. All error corrections shall be initialed by the person making the correction.

F. Other Attachments

The Lab shall attach copies of all other data and information relevant to reviewing and interpreting the results of each whole effluent toxicity test as an appendix to their final report.

IX. SUPPORT SERVICES

A. Customer Service Representative

A customer service representative will be assigned to work directly with CLIENT staff. An alternate customer service representative shall also be designated in the event that the primary contact staff person is not available.

B. Direct Access

The CLIENT staff and their designated technical consultants shall have direct access to the QA/QC manager, laboratory director and section supervisors for issues which cannot be resolved by the customer service representatives.

C. Supplementary Written Documentation

The Lab shall provide written clarifications and responses to technical questions when specifically requested by the CLIENT. Such services may result in additional cost to the CLIENT.

X. NOTIFICATIONS

A. Official Communications

The written, verbal, e-mail, and facsimile (fax) notifications required in this technical agreement shall be made to the persons, addresses, e-mails, and telephone numbers mentioned above on IV. 4. Any changes to points-of-contact for the Lab shall be submitted to the CLIENT within seven (7) days of the effective date of change.

B. Contact Logs

The Lab shall maintain a log of all written and verbal communications between themselves and representatives of the CLIENT. The log shall show the date, time, persons, and purpose of each communication. Copies of the log shall be provided to the CLIENT upon request.

Exhibit A Services: Part Two

Data Quality Objectives for Whole Effluent Toxicity Tests

Null Hypothesis: *“The mean biological response (survival, growth or reproduction) of test organisms exposed to effluent shall not be less than the mean biological response of unexposed control organisms.”*

Alternative Hypothesis: *“The mean biological response (survival, growth or reproduction) of test organisms exposed to undiluted effluent shall be less than the mean biological response of control organisms.”*

Data Quality Objectives: The WET test shall be performed, analyzed and interpreted in a manner that distinguishes variations in effluent quality from natural biological variability in the test species, variations in test conditions or analytical variability in the biomonitoring laboratory.

Test Assumptions:

- 1) Variation in the rate of survival, growth or reproduction rates, between test organisms, is expected and quantifiable. Random assignment of test organisms to treatment groups, and blocking by family is necessary to minimize analytical test variability.
- 2) The parameter “toxicity” is no longer assumed to be absent when the measured difference in mean biological response between control organisms and effluent-exposed organisms is sufficiently large so as to occur less than 1% of the time by random chance or under known non-toxic conditions.
- 3) Where whole effluent chronic toxicity actually exists, the rate of survival, growth or reproduction declines as test organisms are exposed to increasing concentrations of toxin. This is called a “dose-response relationship.”
- 4) Where whole effluent toxicity actually exists, observed reduction in the rate of survival, growth or reproduction is a reproducible phenomenon. Split samples shall agree on the presence or absence of “toxicity.” The magnitude of reduction shall not be precisely reproducible; and, split samples shall not agree on the level of toxicity present.
- 5) There is no difference in test conditions between control organisms and other treatment groups other than the percentage of effluent they are exposed to. Effluent percentage is a surrogate measure for potential toxic pollutants.

The Null Hypothesis shall be rejected when all of the following conditions are met:

- 1) All of EPA’s recommended test acceptance criteria are met.
- 2) The mean biological response of test organisms exposed to undiluted effluent, or in all concentrations greater than the instream waste concentration (IWC), is less than the mean biological response of control organisms.
- 3) The observed reduction in mean biological response among organisms exposed to undiluted effluent (or in all concentrations greater than the permitted IWC) is statistically significant ($p < .01$; 99% confidence) using a t-test of independent sample means. This is equivalent Dunnett's Procedure using an

alpha threshold of .05 for the full multi-group comparison with a Bonferroni adjustment for the number of comparisons made.

- 4) A confirmed dose-response occurs when the mean biological response among test organisms declines as effluent concentration increases when measured as a negative coefficient of slope in a linear regression equation ($p < .01$; 99% confidence).
- 5) At least two adjacent treatment groups in the dilution series, higher than or equal to the instream waste concentration, show a statistically-significant ($p < .05$) reduction in survival, growth or reproduction compared to controls. This accounts for the “plus or minus one dilution” error EPA warns of in 40 CFR 136.
- 6) Identical aliquots, analyzed by different bioassay laboratories, agree on the presence of a statistically-significant reduction in mean biological response among test organisms exposed to undiluted effluent compared to control organisms (when such sample splits are evaluated). The sample splits shall first meet the five data validation criteria listed above before being compared to one another.
- 7) Both the IC-25 and NOEC procedures agree that toxicity is present (within appropriate confidence intervals). The IC-25 shall be calculated using EPA’s Linear Interpolation Procedure or a 3-parameter logistic regression-sigmoid equation to estimate “percent effect.”

Failure to meet all seven data validation conditions means that the null hypothesis cannot be rejected with high confidence. The starting assumption that there is no toxicity in the effluent remains presumptively true. However, it may be appropriate to re-test under such conditions.

Rejecting the null hypothesis shall be considered “provisional” if any of the following conditions occur:

- 1) Treatment groups and control groups are not exposed to identical test conditions, including: unmatched hardness, unmatched alkalinity or unmatched TDS concentrations.
- 2) There is a negative correlation between the degree of differential pH-shock and the observed reduction in mean biological response as effluent concentration increases. The correlation shall be statistically-significant ($p < .05$; 95% confidence) and account for more variance than effluent concentration alone (measured as r^2).
- 3) 80% of the test organisms exposed to undiluted effluent produced two broods within 24 hours of the time in which 80% of controls produced two broods, but the third brood has not been released by the effluent-exposed organisms prior to test termination based on control performance. This is done to correct for the 8-hour potential difference in age between organisms and in recognition of EPA's admission that *Ceriodaphnia* may normally require up to eight days to produce 3-broods. Delays, within the normal 7-8 day window, are not necessarily evidence of impairment due to toxicity.
- 4) There is a statistically-significant reduction in organism survival but not a statistically-significant reduction in the sub-lethal endpoint (growth or reproduction) for the same test organism.
- 5) Monte Carlo re-sampling techniques demonstrate that the difference in mean survival between control organisms and effluent-exposed organisms has less

than a 5% probability (1% with chronic-survival) of occurring by chance alone using the acute test procedure. This criterion is only applied when permit limits for WET are based on raw percent survival, rather than LC-50 or some other comparison relative to control performance.

- 6) The rate of survival, growth or reproduction for control organisms is outside the range considered “normal” for the test species (mean \pm one standard deviation). This accounts for super-performing controls and neutralizes some of the bias introduced by EPA's test acceptance criteria (minimum control performance & MSD).
- 7) There are unauthorized deviations from the required test method as specified in 40 CFR Part 136 and related guidance documents.

Exhibit A Services: Part Three

**GEI Consultants, Inc.
Proposal**

Whole Effluent Toxicity Testing

RFP No. 14-15-154

CITY OF LAS CRUCES



Submitted by

GEI Consultants, Inc.
4601 DTC Boulevard, Suite 900
Denver, CO 80237
T: 303-662-0100
F: 303-662-8757

May 19, 2015

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Cover Letter

May 19, 2015

Luis Guerra
City of Las Cruces,
PO Box 20000
Las Cruces, NM 88004

Re: Proposal for Whole Effluent Toxicity Testing

Dear Mr. Guerra,

We appreciate the opportunity to submit this proposal for continued whole effluent toxicity (WET) testing for the City of Las Cruces (City), NM. GEI Consultants, Inc. (GEI) has been successfully performing WET testing for the City for the past five years and we believe that our technical expertise as well as the historical knowledge of the permitting requirements for both the Jacob Hands Treatment Facility and the East Mesa Water Reclamation Facility make us uniquely qualified to continue to assist the City in its compliance needs.

We propose to continue chronic WET testing on *Ceriodaphnia dubia* and *Pimephales promelas* under New Mexico National Pollutant Discharge Elimination System (NPDES) permit #NM0023311 and continue chronic WET testing on *Ceriodaphnia dubia* and *Pimephales promelas* under New Mexico NPDES permit #NM0030872 on a quarterly basis. Please note that these are the tests currently required, the information contained within Exhibit A, Section II.A and B specify *D. pulex* as a test organism, which is from a previous permit issued for the East Mesa Facility and no longer applies. Although, we understand that the City is working with the State to demonstrate that *D. pulex* acute testing is more appropriate for the East Mesa Facility. Should this determination be made, the testing with *D. pulex* would resume; therefore, the costs for *D. pulex* testing are included in our quote as optional services.

GEI brings exclusive services to the City through our use of innovative approaches to help address both new and pending regulatory requirements. Our expertise moves beyond "pass/fail" test results to provide consulting and laboratory services based on years of scientific expertise.

We hope that the City has valued the services that GEI has been able to provide over the past five years, and we look forward to working with the City in the future.

Sincerely,

GEI Consultants, Inc.



Sarah Skigen
Senior Environmental Scientist/
Laboratory Director

Technical Approach

Jacob Hands Wastewater Treatment Facility (NM0023311)

Chronic whole effluent toxicity (WET) testing will be conducted quarterly for the Jacob Hands Wastewater Treatment Facility, City of Las Cruces, NM permit #NM0023311. The species tested will be *Ceriodaphnia dubia* and *Pimephales promelas* (fathead minnows). Test procedures will follow methods 1002.0 and 1000.0, respectively, as detailed in EPA 821-R-02-013. At test initiation *P. promelas* will be less than 48 hours old and *C. dubia* will be less than 24 hours old, and all within eight hours of the same age. *C. dubia* tests will consist of ten replicates containing one organism, and *P. promelas* tests will consist of five replicates each containing eight organisms.

The dilution water used for these tests will be receiving water, unless the receiving water is shown to be toxic or is not flowing. If toxicity is measured in the receiving water the dilution water will be synthetic laboratory water prepared to match the characteristics of the receiving water (hardness, alkalinity, and conductivity) from the last measured sample. If this dilution water differs from the organism culture water, additional controls using culture water will be run concurrently. The dilution series for the chronic tests will contain the following concentrations: 13%, 17%, 23%, 30%, and 40% effluent.

Effluent samples will be analyzed for temperature, pH, alkalinity, hardness, conductivity, dissolved oxygen, total residual chlorine, total ammonia, and organophosphate pesticides, although the organophosphate pesticides method would follow EPA method 625 which does not include diazinon. In addition, pH of each test concentration shall be measured before and after each test renewal. If chlorine is detected in the sample, the sample shall not be de-chlorinated unless the lab receives specific written instructions to the contrary.

All tests must meet acceptability criteria. For chronic *C. dubia* this is $\geq 80\%$ survival and ≥ 15 offspring per surviving female. For chronic *P. promelas* this is $\geq 80\%$ survival and ≥ 0.28 mg average weight per fish. If test acceptability criteria are not met, the client will be notified within 24 hours of test termination. For each concentration on the chronic *C. dubia* test the percentage of replicates which produced three broods prior to test termination will also be reported.

For each test both the No Observed Effect Concentration (NOEC) and the IC_{25} will be calculated for lethal and sublethal endpoints. The Percent Minimum Significant Difference (PMSD) will also be calculated and reported for each biological endpoint. The NOEC will be used to calculate the TU_c for sublethal effects. If the test shows toxicity ($TU_c > 1$), the client shall be notified within 24 hours of test completion.

The final written report will be submitted to the client within fourteen calendar days after test completion. Copies of all laboratory bench sheets will be included with the report.

East Mesa Water Reclamation Facility (NM0030872)

Chronic whole effluent toxicity (WET) testing will be conducted quarterly for the East Mesa Water Reclamation Facility, City of Las Cruces, NM permit #NM0030872. The species tested will be *Ceriodaphnia dubia* and *Pimephales promelas* (fathead minnows). Test procedures will follow methods 1002.0 and 1000.0, respectively, as detailed in EPA 821-R-02-013. At test initiation *P. promelas* will be less than 48 hours old and *C. dubia* will be less than 24 hours old, and all within eight hours of the same age. *C. dubia* tests will consist of ten replicates containing one organism, and *P. promelas* tests will consist of five replicates each containing eight organisms. Should acute *D. pulex* testing be included under future permitting actions, test procedures would follow method 2021.0 as detailed in EPA 821-R-02-012. At test initiation, *D. pulex* will be less than 24 hours old, and will consist of five replicates and eight organisms per replicate.

The dilution water used for this test will be very hard reconstituted lab water as described in Section 7 of EPA's chronic test manual and the dilution series will contain the following concentrations: 32%, 42%, 56%, 75%, and 100% effluent.

Effluent samples will be analyzed for temperature, pH, alkalinity, hardness, conductivity, dissolved oxygen, total residual chlorine, total ammonia, and organophosphate pesticides, although the organophosphate pesticides method would follow EPA method 625 which does not include diazinon.. In addition, pH of each test concentration shall be measured before and after each test renewal. If chlorine is detected in the sample, the sample shall not be de-chlorinated unless the lab receives specific written instructions to the contrary.

All tests must meet acceptability criteria. For chronic *C. dubia* this is $\geq 80\%$ survival and ≥ 15 offspring per surviving female. For chronic *P. promelas* this is $\geq 80\%$ survival and ≥ 0.28 mg average weight per fish. For acute *D. pulex* this is $\geq 90\%$ survival (in the case that this organism is used in future testing). If test acceptability criteria are not met, the client will be notified within 24 hours of test termination. For each concentration on the chronic *C. dubia* test the percentage of replicates which produced three broods prior to test termination will also be reported.



For each test both the No Observed Effect Concentration (NOEC) and the IC_{25} will be calculated for lethal and sublethal endpoints. The Percent Minimum Significant Difference (PMSD) will also be calculated and reported for each biological endpoint. The NOEC will be used to calculate the TU_c for sublethal effects. If the test shows toxicity ($TU_c > 1$), the client shall be notified within 24 hours of test completion.

The final written report will be submitted to the client within fourteen calendar days after test completion. Copies of all laboratory bench sheets will be included with the report.

Subconsultant

Organophosphate pesticide analysis for chronic toxicity testing will be conducted by Accutest Mountain States Laboratories, 4036 Youngfield, Wheat Ridge, CO 80033 using EPA method 625, please note that this method does not include Diazinon. Accutest Mountain States is NELAC certified (National Environmental Laboratory Accreditation Conference). Accutest Laboratories is a privately held, independent testing laboratory successfully delivering legally defensible data for over 50 years.

Qualifications and Experience

Laboratory Capabilities

GEI has been performing acute and chronic compliance toxicity testing and toxicity identification/reduction evaluations (TI/RE) since 1990 using *Ceriodaphnia dubia*, *Daphnia magna*, *Daphnia pulex*, *Oncorhynchus mykiss*, *Pimephales promelas*, and *Selenastrum capricornutum*. During 2014, we performed approximately 300 bioassay tests for various municipal and industrial dischargers in several states. GEI has been certified for toxicity testing by the states of California and Washington since 1992, and by the state of Arizona since 2007. On-site inspections are conducted every two years by both California and Washington laboratory accrediting agencies, and annually by Arizona. These inspections ensure that we have the necessary equipment and facilities to accommodate all aspects of WET testing. All WET testing is conducted at GEI's Ecological Laboratory, 4601 DTC Blvd., Suite L100, Denver, CO 80237.



GEI maintains acute and chronic control charts for all commonly used bioassay test organisms. Reference test endpoint values (IC_{25} or LC_{50}) must fall within two standard deviations of the last 20 reference tests conducted. If a reference test value falls outside of this range the results of all tests using that particular method during the testing period are reviewed and the tests are repeated if it is deemed necessary.

GEI has participated in annual Discharge Monitoring Report Quality Assurance (DMRQA) studies since 1993 and has had passing results in all tests conducted.

All tests are run in large incubators with controlled temperature and light cycles. All instrumentation used for water chemistry measurements is calibrated on a daily basis. The laboratory dilution water is prepared using ultra-pure deionized water. The deionized water system delivers CAP/ASTM Type I water at 18.2 megaohm/cm. A final 0.2 m capsule final filter removes any microorganisms and residual particulates.

QA/QC Procedures

All personnel performing toxicity testing are required to read and understand the GEI Freshwater Bioassay Laboratory Standard Operating Procedure (SOP), and EPA, State, and regional toxicity testing manuals. All test procedures are performed following current

SOP manuals, which are marked with the date the manual went into effect. All outdated SOP's are kept on file for reference. Laboratory Technicians are required to read the Bioassay SOP whenever it is updated.

All training for new employees is provided by the Laboratory Director/Manager or a designated bioassay technician. The designated bioassay technician must have been employed by GEI for a minimum of one year, and must have satisfactorily completed the initial employee QA/QC review prior to training new employees. The Bioassay Laboratory Employee Training Record is completed as the new employee is trained on each task in the laboratory. The date completed, trainer initials, and employee initials are recorded for each task. The training record is filed in the employee's folder.

The Laboratory Director is the designated QA/QC officer and he/she performs all final QA/QC evaluations. All personnel involved in the bioassay laboratory receive annual QA/QC performance evaluations. These evaluations document each technician's performance in all aspects of the bioassay process, and any corrective actions which may be necessary.

The GEI laboratory participates in the yearly EPA DMRQA laboratory performance evaluation and is inspected by personnel from the State of Arizona, Washington Department of Ecology, and the California State Water Resources Control Board as part of their Environmental Laboratory Accreditation Program. Please see Appendix 1 for DMRQA results for 2013 and 2014.

Key Personnel

The bioassay laboratory at GEI is staffed and supported by qualified and experienced personnel. Our Ecology Division Vice President, Steven P. Canton, has over 30 years' experience with WET testing, and our combined laboratory management staff, Ms. Sarah Skigen (Laboratory Director) and Natalie Love (Laboratory Manager), have combined over 15 years' experience performing, overseeing, and reviewing all aspects of toxicity testing.

Management Structure and Scheduling

The contract will be administered by Steve Canton, Vice President of the Denver office, 4601 DTC Blvd., Suite 900, Denver, CO 80237, phone: 303-662-0100.

The WET testing will be coordinated and scheduled with Natalie Love (303) 264-1070, Laboratory Manager. Tests will be scheduled as needed by the City of Las Cruces, assuming the laboratory has sufficient space and resources. Clean, unused sample containers will be shipped to the client approximately one week prior to test initiation. The client will be notified if samples do not arrive at the lab by 3:00 pm on the expected date. The lab will notify the client within 24 hours of test termination if a test does not meet the EPA's control performance criteria. The lab will also notify the client

immediately if any test result indicates the presence of toxicity. The final laboratory report will be submitted to the client within fourteen calendar days of test completion. Approximately 30% of time on the project will be dispersed amongst the professionals listed, while the daily tasks and remaining 70% of project time will be divided among the five laboratory technicians listed below.

Steven Canton – Vice President, Senior Ecologist

Mr. Canton has more than 30 years of professional experience in the design of aquatic evaluation programs, field sampling of aquatic habitats, water quality/biological data analysis, and statistical analysis of stressor effects. He is a recognized expert in water quality effects on aquatic life, and frequently provides expert testimony and support for regulatory water quality hearings, environmental assessments, and ambient water quality standards development. Mr. Canton manages GEI's national Ecology Practice and also oversees GEI's Aquatic Laboratory where analyses are regularly conducted on aquatic macroinvertebrates and zooplankton, WET testing, nutrient analysis, and various EPA approved water quality analyses. He has completed project work in more than 30 states. He has also participated as an invited expert for selenium risk evaluation in aquatic environments for the Society of Environmental Toxicology and Chemistry, has provided peer review for selenium effects issues near coal mining sites in British Columbia (on behalf of the BC Ministry of the Environment), peer reviewed new molybdenum water quality standards on behalf of the International Molybdenum Association, and provided technical review of water quality issues for the National Mining Association.

Dr. Gensemer, PhD – Vice President, Senior Ecotoxicologist

Dr. Gensemer has 30 years of academic and industrial experience in aquatic ecology and limnology, ecotoxicology, phytoplankton ecology, plant toxicology, and the environmental toxicology of metals and polycyclic aromatic hydrocarbons (PAHs). His consulting project experience includes general aquatic toxicology, the conduct and oversight of ecological risk assessments for both aquatic and terrestrial habitats, sediment remedial investigations under EPA's Superfund program, and the development and modification of ambient water quality criteria for protection of aquatic life. Of particular recent interest has been to support the regulatory implementation of new bioavailability-based models for development of aquatic life criteria, such as the Biotic Ligand Model for copper and other metals. Many of these projects have entailed the review of government and industry generated risk assessments and supporting technical reports, participation in and planning for multi-stakeholder technical meetings, generation of technical reports and peer-reviewed scientific publications, presentations at project meetings and scientific conferences, and presenting expert testimony. Dr. Gensemer's technical work focuses on providing high quality, scientific support based on a thorough understanding of appropriate regulatory guidance and the current scientific literature.

Sarah Skigen – Laboratory Director

Ms. Skigen is an environmental scientist with over ten years of professional experience within both the public and private sector. As project manager she has developed,

designed, and implemented large-scale land use and water quality programs. Ms. Skigen has worked extensively with aquatic and terrestrial ecosystems, wetland delineations and 404 permitting. Her experience includes field training with USFW and the National Audubon Society for conducting avian surveys and monitoring. As lab director she oversees and provides quality assurance/quality control checks for all lab activities, including WET testing for NPDES compliance, sediment toxicity testing, soil toxicity testing, water effects ratio testing, benthic invertebrate sample processing, and analysis of low level nutrients, chlorophyll, suspended solids, and coliform bacteria.

Natalie Love – Laboratory Manager

Mrs. Love is the Laboratory Manager with a variety of experience including six years of lab experience previous to GEI, WET lab experience, macroinvertebrate sorting, WET data analysis, focused TIE work, bioassessments, habitat surveys, analysis of data, and field work. Mrs. Love has extensive experience in the formulation of QA/QC procedures and staff operations for lab facilities. Mrs. Love will be responsible for project oversight, scheduling, and initial QA/QC of laboratory reports. Percent of time assigned to this project will be approximately 25%.

Suzanne Pargee – Senior Water Quality Specialist

Ms. Pargee is a water quality specialist with over 13 years of experience including ecotoxicological studies, development and revision of ambient water quality criteria for protection of aquatic life, assisting with NPDES permit review and permit applications, habitat assessments, aquatic life surveys, analysis of data, and report preparation. Her field project work has included conducting aquatic habitat surveys, survey and collection of aquatic life including fish and invertebrates, water quality sampling, use of multi-probes and flow meters, and use of standard limnological sampling equipment such as Secchi disks, light meters, Van Dorn bottles and Ponar samplers. She previously served as the GEI Aquatic Laboratory Director for over 10 years and has extensive experience with nutrient analysis methods, whole effluent toxicity testing, writing Standard Operating Procedures and is familiar with EPA, ASTM and Standard Method protocols.

Danny McCausland – Water Quality Supervisor with 2+ years' experience with WET testing.

Alexi Hepburn – Senior Laboratory Technician with 5+ years' experience with WET testing.

Cassandra Caley – Laboratory Technician with 4+ years' experience with WET testing.

Ariel Wooldridge – Laboratory Technician with 2 years' experience with WET testing.

Jared Birdsong – Laboratory Technician with 2 years' experience with WET testing.

The five laboratory technicians named above all have degrees and work experience in the natural sciences. Technicians have received thorough training in all WET test procedures.

Project References – Similar Scope

The following projects all include requirements similar to the scope of this RFP.

Chevron Mining Inc., Questa, NM – 2002 to present

Conducted chronic *C. dubia* and *P. promelas* WET tests on a quarterly basis, conducted accelerated testing and toxicity identification evaluations as needed; conduct special toxicity testing studies as needed.

NationView, Holloman AFB, NM – 2004 to present

Conducted acute *D. magna* and chronic *P. promelas* WET tests on a biannual basis, conducted accelerated testing and toxicity identification evaluations as needed.

Upper Blue Sanitation District (formerly Breckenridge Sanitation) – 1997 to present

Provided NPDES permit review, and conducted acute and chronic *C. dubia* and *P. promelas* WET tests on a quarterly basis, conducted accelerated testing and toxicity identification evaluations as needed.

Contractual References

Client: Chevron Mining Inc., Questa, NM

Contract amount: Approximately \$10,000 annually (current rates)

Dates: 2002 to present

Reference Name: Armando Martinez

Phone: (575) 586-7639; **Email:** amarti@chevron.com

Involvement: Conducted chronic *C. dubia* and *P. promelas* WET tests on a quarterly basis, conducted accelerated testing and toxicity identification evaluations as needed; conduct special toxicity testing studies as needed.

Client: NationView, Holloman AFB, NM

Contract amount: Approximately \$4,000 annually (current rates)

Dates: 2004 to present

Reference Name: Dave Rizzuto, R&R Environmental

Phone: (575) 430-3965; **Email:** rrenvironmental@zianet.com

Involvement: Conducted acute *D. magna* and chronic *P. promelas* WET tests on a biannual basis, conducted accelerated testing and toxicity identification evaluations as needed.

Client: Upper Blue Sanitation District (formerly Breckenridge Sanitation), CO

Contract amount: approximately \$15,000 annually (current rates)

Dates: 1997 to present

Reference Name: Earl Picard, Chief Plant Operator

Phone: (970) 453-2723; **Email:** earlp@ubsd.org

Involvement: Provided NPDES permit review, and conducted acute and chronic *C. dubia* and *P. promelas* WET tests on a quarterly basis, conducted accelerated testing and toxicity identification evaluations as needed.

WHOLE EFFLUENT TOXICITY TESTING

Client: Homestake Mining, CO

Contract amount: Approximately \$10,000 annually (current rates)

Dates: 1999 to present

Reference Name: Bill Ferdinand

Phone: (801) 244-3547; **Email:** bferdinand@barrick.com

Involvement: Provided NPDES permit review, and conducted chronic *C. dubia* and *P. promelas* WET tests on a quarterly basis, conducted accelerated testing and toxicity identification evaluations as needed.

Client: Hecla Mining Co., ID

Contract amount: Approximately \$8,000 annually (current rates)

Dates: 1997 to present

Reference Name: Donna Harriman

Phone: 208-879-2304 ex. 113; **Email:** dharriman@hecla-mining.com

Involvement: Conducted chronic *P. promelas* and acute Rainbow Trout WET tests on a quarterly basis or annual basis, conducted accelerated testing and toxicity identification evaluations as needed.



Appendix 1 – DMRQA Results

PERFORMANCE EVALUATION



Scheduled Study

WETT 34

WETT / DMRQA 34

21-Mar-2014 through 11-Jul-2014

RT1971

RTC Labcode

CO01003

US EPA Labcode

Participating Laboratory:

GEI Consultants, Inc.
Natalie Love
4601 DTC Blvd. Suite 900
Denver CO 80237

Thank you for participating in study WETT 34. Additional information about this study may be found online at www.rt-corp.com/reporting. If it is your first time to our website give me a call and I will simplify the initial registration process. If you have any questions or comments about this study please contact me:

Sigma-Aldrich, RTC Inc.
2931 Soldier Springs Rd.
Laramie, WY 82070 USA
1-307-742-5452
www.rt-corp.com

This report shall not be reproduced except in full, without written approval of the laboratory. The data and results reported in this document are the property of the participating laboratory and are confidential. If you wish to appeal an evaluation listed in this report please contact our QA Supervisor at 1(307) 742-5452 or RTCreports@sial.com

Sincerely,

A handwritten signature in black ink, appearing to read 'Jennifer Duhon'.

Jennifer Duhon
Proficiency Testing Coordinator

Dataset

WETT 34

Include in DMRQA Study

Evaluations from this dataset will be included in DMRQA 34.

RTC is accredited to perform PT programs for the scope of accreditation to ISO/IEC 17043 under ACLASS certificate AP-1469.



Test Code 13 / EPA Method 2000

Test Code 13 / EPA Method 2000 (DMRQA WET)

Method: EPA 2000.0 (2002)

Method Number 10264809

| | Result Units | Assigned Value | Accept. Window | Z | Evaluation |
|--------------------------------------------------------------------------------------------|--------------------------------|----------------|----------------|------|--------------------------------------------|
| Fathead Minnow Acute MHSF 25° - LC50 ^{1,2,3,4} 754 / WET013-1EA - Lot LRAA3994 | 32.0 % | 28.8 | 12.1 to 45.5 | 0.38 | Acceptable |
| | <i>Evaluation Criteria - 5</i> | | | | <i>Evaluation Parameter - deviations:2</i> |

Test Code 15 / EPA Method 1000

Test Code 15 / EPA Method 1000 (DMRQA WET)

Method: EPA 1000

Method Number 10114600

| | Result Units | Assigned Value | Accept. Window | Z | Evaluation |
|------------------------------------------------------------------------------------------------------|--------------------------------|----------------|----------------|-------|-----------------------------------------------------|
| Fathead Minnow Chronic MHSF - Survival NOEC ^{1,2,3,4} 756 / WET015-1EA - Lot LRAA3999 | <6.25 % | 6.25 | <6.25 to 12.5 | | Acceptable |
| | <i>Evaluation Criteria - 8</i> | | | | <i>Evaluation Parameter - a:1, b:0, c:0, d:25</i> |
| Fathead Minnow Chronic MHSF - Growth IC25 (ON) ^{1,2,3,4} 808 / WET015-1EA - Lot LRAA3999 | 3.32 % | 4.44 | 0.345 to 11.1 | -0.33 | Acceptable |
| | <i>Evaluation Criteria - 5</i> | | | | <i>Evaluation Parameter - deviations:2</i> |
| Fathead Minnow Chronic MHSF - Growth NOEC (ON) ^{1,2,3,4} 810 / WET015-1EA - Lot LRAA3999 | <6.25 % | 6.25 | <6.25 to 12.5 | | Acceptable |
| | <i>Evaluation Criteria - 8</i> | | | | <i>Evaluation Parameter - a:1, b:0, c:0, d:12.5</i> |

Test Code 19 / EPA Method 2002

Test Code 19 / EPA Method 2002 (DMRQA WET)

Method: EPA 2000.0 (2002)

Method Number 10264809

| | Result Units | Assigned Value | Accept. Window | Z | Evaluation |
|------------------------------------------------------------------------------------------|--------------------------------|----------------|----------------|---|--------------------------------------------|
| Ceriodaphnia Acute MHSF 25° - LC50 ^{1,2,3,4} 764 / WET019-1EA - Lot LRAA4001 | >100 % | 64.1 | 10.0 to 125 | | Acceptable |
| | <i>Evaluation Criteria - 5</i> | | | | <i>Evaluation Parameter - deviations:2</i> |

Test Code 21 / EPA Method 1002

Test Code 21 / EPA Method 1002 (DMRQA WET)

Method: EPA 1002

Method Number 10115001

| | Result Units | Assigned Value | Accept. Window | Z | Evaluation |
|-----------------------------------------------------------------------------------------------------------|--------------|--------------------------------|----------------|-------|-----------------------------------------------------|
| Ceriodaphnia Chronic MHSF - Survival NOEC ^{1, 2, 3,} 766 / WET021-1EA - Lot LRAA4002 | <6.25 % | 6.25 | <6.25 to 12.5 | | Acceptable |
| | | <i>Evaluation Criteria - 8</i> | | | <i>Evaluation Parameter - a:1, b:0, c:0, d:12.5</i> |
| Ceriodaphnia Chronic MHSF - Reproduction IC25 767 / WET021-1EA - Lot LRAA4002 | 1.61 % | 4.34 | 0 to 9.38 | -1.08 | Acceptable |
| | | <i>Evaluation Criteria - 5</i> | | | <i>Evaluation Parameter - deviations:2</i> |
| Ceriodaphnia Chronic MHSF - Reproduction NOEC ^{1, 2, 3, 4} 768 / WET021-1EA - Lot LRAA4002 | <6.25 % | 6.25 | <6.25 to 12.5 | | Acceptable |
| | | <i>Evaluation Criteria - 8</i> | | | <i>Evaluation Parameter - a:1, b:0, c:0, d:12.5</i> |

Test Code 32 / EPA Method 2021

Test Code 32 / EPA Method 2021 (DMRQA WET)

Method: EPA 2021.0

Method Number 9954621

| | Result Units | Assigned Value | Accept. Window | Z | Evaluation |
|----------------------------------------------------------------------------------------------|--------------|--------------------------------|----------------|-------|--------------------------------------------|
| Daphnia Magna Acute MHSF 25° - LC50 ^{1, 2, 3, 4} 788 / WET032-1EA - Lot LRAA4003 | 4.4 % | 12.3 | 0.780 to 24.7 | -1.27 | Acceptable |
| | | <i>Evaluation Criteria - 5</i> | | | <i>Evaluation Parameter - deviations:2</i> |

Test Code 38 / EPA Method 2021

Test Code 38 / EPA Method 2021 (DMRQA WET)

Method: EPA 2021.0

Method Number 9954621

| | Result Units | Assigned Value | Accept. Window | Z | Evaluation |
|----------------------------------------------------------------------------------------|--------------|--------------------------------|----------------|-------|--------------------------------------------|
| Daphnia Pulex MHSF 25° - LC50 ^{1, 2, 3, 4} 794 / WET038-1EA - Lot LRAA4003 | 13.03 % | 15.8 | 1.83 to 31.0 | -0.36 | Acceptable |
| | | <i>Evaluation Criteria - 5</i> | | | <i>Evaluation Parameter - deviations:2</i> |

End of WETT 34

Sample Information

Fathead Minnow Acute MHSF 25°C

WET013-1EA / Lot LRAA3994

| | Units | Gravimetric Value | Study Mean | Study Std. Dev. |
|----------------------------------------------------------------------------|-------|-------------------|------------|-----------------|
| Fathead Minnow Acute MHSF 25° - LC50 754 Test Code 13 / EPA Method 2000 | % | 33.4 | 28.8 | 8.36 |

Fathead Minnow, 7Day, MHSF

WET015-1EA / Lot LRAA3999

| | Units | Gravimetric Value | Study Mean | Study Std. Dev. |
|--------------------------------------------------------------------------------------|-------|-------------------|------------|-----------------|
| Fathead Minnow Chronic MHSF - Survival NOEC 756 Test Code 15 / EPA Method 1000 | % | 6.25 | | |
| Fathead Minnow Chronic MHSF - Growth IC25 (ON) 808 Test Code 15 / EPA Method 1000 | % | 3.45 | 4.44 | 3.35 |
| Fathead Minnow Chronic MHSF - Growth IC25 (SN) 809 Test Code 15 / EPA Method 1000 | % | 6.50 | 6.57 | 4.19 |
| Fathead Minnow Chronic MHSF - Growth NOEC (ON) 810 Test Code 15 / EPA Method 1000 | % | 6.25 | | |
| Fathead Minnow Chronic MHSF - Growth NOEC (SN) 811 Test Code 15 / EPA Method 1000 | % | 6.25 | | |

Ceriodaphnia Acute MHSF 25°C

WET019-1EA / Lot LRAA4001

| | Units | Gravimetric Value | Study Mean | Study Std. Dev. |
|--------------------------------------------------------------------------|-------|-------------------|------------|-----------------|
| Ceriodaphnia Acute MHSF 25° - LC50 764 Test Code 19 / EPA Method 2002 | % | 100 | 64.1 | 30.7 |

Ceriodaphnia Chronic MHSF

WET021-1EA / Lot LRAA4002

| | Units | Gravimetric Value | Study Mean | Study Std. Dev. |
|-------------------------------------------------------------------------------------|-------|-------------------|------------|-----------------|
| Ceriodaphnia Chronic MHSF - Survival NOEC 766 Test Code 21 / EPA Method 1002 | % | 6.25 | | |
| Ceriodaphnia Chronic MHSF - Reproduction IC25 767 Test Code 21 / EPA Method 1002 | % | 4.34 | 1.61 | 0.640 |
| Ceriodaphnia Chronic MHSF - Reproduction NOEC 768 Test Code 21 / EPA Method 1002 | % | 6.25 | | |

Daphnia Magna Acute MHSF 25°C

WET032-1EA / Lot LRAA4003

| | Units | Gravimetric Value | Study Mean | Study Std. Dev. |
|---------------------------------------------------------------------------|-------|-------------------|------------|-----------------|
| Daphnia Magna Acute MHSF 25° - LC50 788 Test Code 32 / EPA Method 2021 | % | 7.80 | 12.3 | 6.20 |

Daphnia Pulex Acute MHSF 25°C

WET038-1EA / Lot LRAA4003

| | Units | Gravimetric Value | Study Mean | Study Std. Dev. |
|---------------------------------------------------------------------|-------|-------------------|------------|-----------------|
| Daphnia Pulex MHSF 25° - LC50 794 Test Code 38 / EPA Method 2021 | % | 18.3 | 15.8 | 7.59 |

Definitions and Interpretation of Statistical Analysis:

Assigned Value: Value attributed to a particular quantity and accepted, sometimes by convention, as having an uncertainty appropriate for a given purpose. See ISO/IEC 17043 for additional information. In general the assigned value is the value used to assess proficiency and may or may not be the made to value (gravimetric value).

Accept. Window: The range of values that constitute acceptable performance for a laboratory participating in this PT study.

Z: A Z-Score tells how a single data point compares to normal data. A Z-Score says not only whether a point was above or below average, but how unusual the measurement is. Generally, a method result with a Z-Score less than |2| is considered to be in control, a Z-Score between |2| and |3| is considered 'Questionable', but still within control and a Z greater than |3| is considered not acceptable and the method is out of control. Calculated as $Z = (\text{Reported Value} - \text{Assigned Value}) / \text{Proficiency Std. Dev.}$

Proficiency Std. Dev.: Standard deviation calculated based on **Evaluation Criteria**.

Study Mean: Statistical study mean calculated using a robust statistical model (RTC employs the 'Biweight Program'). Robust statistical techniques to minimize the influence that extreme results can have on estimates of the mean and standard deviation. NOTE - These techniques assign less weight to extreme results, rather than eliminate them from a data set.

Study Std. Dev.: Standard deviation calculated from study data using robust statisticals (Biweight).

Gravimetric Value: The 'prepared to' value, determined by gravimetric means. The uncertainty associated to this value is standard uncertainty and based on RTC's gravimetric tolerances.

Evaluation Criteria:

1 - Regression Equation - Acceptance windows based on TNI adopted equation of proficiency value +/- 3 proficiency standard deviations and check limits of proficiency value +/- 2 proficiency standard deviations. Proficiency value and proficiency standard deviation are calculated from gravimetric variables a, b, c, & d as proficiency value = a * gravimetric + b and proficiency standard deviation = c * gravimetric + d.

2 - Study Robust Mean and c,d regression - Acceptance windows based on TNI adopted equation of proficiency value +/- 3 proficiency standard deviations and check limits of proficiency value +/- 2 proficiency standard deviations. Proficiency value and proficiency standard deviation calculated from robust study mean and variables c & d as proficiency value = robust mean and proficiency standard deviation = c * proficiency value + d.

3 - Fixed Limits - Acceptance windows based on span of gravimetric percentage from gravimetric as gravimetric +/- gravimetric * percentage.

4 - Adjustable Fixed Limits - Acceptance windows base on a span of gravimetric percentage from gravimetric as gravimetric +/- gravimetric * lowPercentage where gravimetric < break and gravimetric +/- gravimetric * highPercentage where gravimetric >= break.

5 - Study Statistics - Acceptance windows based on a number of standard deviations span from the study mean as study mean +/- (deviations * standard deviation).

6 - Log Transform Statistics - Acceptance windows based on lognormal distributed data. Acceptance windows = mean(lognormal) +/- span * standard deviation(lognormal).

7 - Reserved

8 - Regression Equation 2SD - Acceptance windows based on EPA equation of proficiency value +/- 2 proficiency standard deviations. Proficiency value and proficiency standard deviation are calculated from gravimetric variables a, b, c, & d as proficiency value = a * gravimetric + b and proficiency standard deviation = c * gravimetric + d. Generally reserved for drinking water studies.

Proficiency Test Item Preparation, Homogeneity and Stability Assessment - RTC uses proprietary and published methods for the manufacture, homogeneity and stability testing of proficiency test items. RTC's proficiency test materials meet requirements of

ISO Guide 34. For more information contact RTC. Additionally RTC complies with TNI Volume 3 'General Requirements for Environmental Proficiency Test Providers', EL-V3-2009, 2009 for all TNI Fields of Proficiency Testing analytes.

Metrological Traceability - All preparations are made using balances calibrated annually traceable to NIST standards. Where appropriate analytical measurements are traceable through an unbroken chain to NIST standards, or a Certified Reference Material manufactured under ISO Guide 34 in conjunction with ISO/IEC 17025.

Statistical Analysis - RTC uses robust statistics to calculate study means and standard deviations - Reference - Kafadar, K, A *Biweight Approach to the One-Sample Problem*, Journal of the American Statistical Association, Vol. 77, No. 378, June, 1982, pp. 416-424.

Additional Information - Go to www.rt-corp.com/reporting for additional information on summary statistics for specific methods, advice on the interpretation of the statistical analysis, and additional comments/recommendations. If you failed an analyte it may be required to perform a corrective action and/or retest. RTC recommends that you contact your accreditation body for specific instruction.

Program analyte accrediting footnotes

- 1 NELAC Compliant, covered by RTC's ACLASS Proficiency Testing Provider accreditation, Cert. AP-1469
- 4 ISO 17043 Accredited, covered by RTC's ACLASS Proficiency Testing Provider accreditation, Cert AP-1469



Authorizing Officer:
Patrick Brumfield, ASQ CQA
QA Manager

Date: 7/31/2014

**This section of the report is for informational purposes only.
If unsure about specific accreditation requirements please contact your state coordinator.**

PASS RATE

Number of Reported Results: 10
Number of Passing Results: 10
Pass Rate: 100.00%

PERFORMANCE EVALUATION



Scheduled Study

WETT 33

WETT / DMRQA 33

25-Mar-2013 through 8-Jul-2013

RT1971

RTC Labcode

CO01003

US EPA Labcode

Participating Laboratory:

GEI Consultants, Inc.
Natalie Love
4601 DTC Blvd. Suite 900
Denver CO 80237

Thank you for participating in study WETT 33. Additional information about this study may be found online at www.rt-corp.com/reporting. If it is your first time to our website give me a call and I will simplify the initial registration process. If you have any questions or comments about this study please contact me:

Sigma-Aldrich, RTC Inc.
2931 Soldier Springs Rd.
Laramie, WY 82070 USA
1-307-742-5452
www.rt-corp.com

This report shall not be reproduced except in full, without written approval of the laboratory. The data and results reported in this document are the property of the participating laboratory and are confidential. If you wish to appeal an evaluation listed in this report please contact our QA Supervisor at 1(307) 742-5452 or RTCreports@sial.com

Sincerely,

A handwritten signature in black ink, appearing to read 'JDuhon'.

Jennifer Duhon
Proficiency Testing Coordinator

Dataset

WETT 33

Include in DMRQA Study

Evaluations from this dataset will be included in DMRQA 33.

RTC is accredited to perform PT programs for the scope of accreditation to ISO/IEC 17043 under ACLASS certificate AP-1469.



PROFICIENCY TESTING PROVIDER

Test Code 13 / EPA Method 2000

Test Code 13 / EPA Method 2000 (DMRQA WET)

Method: EPA 2000.0 (2002)

Method Number 10264809

| | Result Units | Assigned Value | Accept. Window | Z | Evaluation |
|--------------------------------------------------------------------------------------------|--------------------------------|----------------|----------------|------|--------------------------------------------|
| Fathead Minnow Acute MHSF 25° - LC50 ^{1,2,3,4} 754 / WET013-1EA - Lot LRAA0893 | 17.1 % | 17.0 | 7.46 to 26.6 | 0.02 | Acceptable |
| | <i>Evaluation Criteria - 5</i> | | | | <i>Evaluation Parameter - deviations:2</i> |

Test Code 15 / EPA Method 1000

Test Code 15 / EPA Method 1000 (DMRQA WET)

Method: EPA 1000

Method Number 10114600

| | Result Units | Assigned Value | Accept. Window | Z | Evaluation |
|---------------------------------------------------------------------------------------------------------|--------------------------------|----------------|----------------|------|-----------------------------------------------------|
| Fathead Minnow Chronic MHSF - Survival NOEC ^{1,2,3,4} 756 / WET015-1EA - Lot LRAA0895 | 25 % | 12.5 | 6.25 to 25 | 0.50 | Acceptable |
| | <i>Evaluation Criteria - 8</i> | | | | <i>Evaluation Parameter - a:1, b:0, c:0, d:25</i> |
| Fathead Minnow Chronic MHSF - Growth IC25 (ON) ^{1,2,3,4} 808 / WET015-1EA - Lot LRAA0895 | 34.3 % | 23.4 | 7.34 to 39.5 | 1.35 | Acceptable |
| | <i>Evaluation Criteria - 5</i> | | | | <i>Evaluation Parameter - deviations:2</i> |
| Fathead Minnow Chronic MHSF - Growth NOEC (ON) ^{1,2,3,4} 810 / WET015-1EA - Lot LRAA0895 | 12.5 % | 12.5 | 6.25 to 25 | 0.00 | Acceptable |
| | <i>Evaluation Criteria - 8</i> | | | | <i>Evaluation Parameter - a:1, b:0, c:0, d:12.5</i> |

Test Code 19 / EPA Method 2002

Test Code 19 / EPA Method 2002 (DMRQA WET)

Method: EPA 2000.0 (2002)

Method Number 10264809

| | Result Units | Assigned Value | Accept. Window | Z | Evaluation |
|------------------------------------------------------------------------------------------|--------------------------------|----------------|----------------|------|--------------------------------------------|
| Ceriodaphnia Acute MHSF 25° - LC50 ^{1,2,3,4} 764 / WET019-1EA - Lot LRAA0897 | 87.1 % | 61.1 | 18.4 to 104 | 1.22 | Acceptable |
| | <i>Evaluation Criteria - 5</i> | | | | <i>Evaluation Parameter - deviations:2</i> |

Test Code 21 / EPA Method 1002

Test Code 21 / EPA Method 1002 (DMRQA WET)

Method: EPA 1002

Method Number 10115001

| | Result Units | Assigned Value | Accept. Window | Z | Evaluation |
|-----------------------------------------------------------------------------------------------------|--------------|--------------------------------|----------------|------|-----------------------------------------------------|
| Ceriodaphnia Chronic MHSF - Survival NOEC ^{1,2,3} 766 / WET021-1EA - Lot LRAA0898 | 12.5 % | 12.5 | 6.25 to 25 | 0.00 | Acceptable |
| | | <i>Evaluation Criteria - 8</i> | | | <i>Evaluation Parameter - a:1, b:0, c:0, d:12.5</i> |
| Ceriodaphnia Chronic MHSF - Reproduction IC25 767 / WET021-1EA - Lot LRAA0898 | 10.4 % | 9.90 | 0.854 to 19.8 | 0.10 | Acceptable |
| | | <i>Evaluation Criteria - 5</i> | | | <i>Evaluation Parameter - deviations:2</i> |
| Ceriodaphnia Chronic MHSF - Reproduction NOEC ^{1,2,3,4} 768 / WET021-1EA - Lot LRAA0898 | 6.25 % | 6.25 | <6.25 to 12.5 | 0.00 | Acceptable |
| | | <i>Evaluation Criteria - 8</i> | | | <i>Evaluation Parameter - a:1, b:0, c:0, d:12.5</i> |

Test Code 32 / EPA Method 2021

Test Code 32 / EPA Method 2021 (DMRQA WET)

Method: EPA 2021.0

Method Number 9954621

| | Result Units | Assigned Value | Accept. Window | Z | Evaluation |
|-------------------------------------------------------------------------------------------|--------------|--------------------------------|----------------|-------|--------------------------------------------|
| Daphnia Magna Acute MHSF 25° - LC50 ^{1,2,3,4} 788 / WET032-1EA - Lot LRAA0899 | 11.7 % | 18.8 | 3.04 to 34.7 | -0.90 | Acceptable |
| | | <i>Evaluation Criteria - 5</i> | | | <i>Evaluation Parameter - deviations:2</i> |

Test Code 38 / EPA Method 2021

Test Code 38 / EPA Method 2021 (DMRQA WET)

Method: EPA 2021.0

Method Number 9954621

| | Result Units | Assigned Value | Accept. Window | Z | Evaluation |
|-------------------------------------------------------------------------------------|--------------|--------------------------------|----------------|-------|--------------------------------------------|
| Daphnia Pulex MHSF 25° - LC50 ^{1,2,3,4} 794 / WET038-1EA - Lot LRAA0899 | 9.3 % | 30.1 | 3.68 to 59.0 | -1.43 | Acceptable |
| | | <i>Evaluation Criteria - 5</i> | | | <i>Evaluation Parameter - deviations:2</i> |

End of WETT 33

Sample Information

Fathead Minnow Acute MHSF 25°C

WET013-1EA / Lot LRAA0893

| | Units | Gravimetric Value | Study Mean | Study Std. Dev. |
|----------------------------------------------------------------------------|-------|-------------------|------------|-----------------|
| Fathead Minnow Acute MHSF 25° - LC50 754 Test Code 13 / EPA Method 2000 | % | 20.5 ± 0.025 | 17.0 | 4.79 |

Fathead Minnow, 7Day, MHSF

WET015-1EA / Lot LRAA0895

| | Units | Gravimetric Value | Study Mean | Study Std. Dev. |
|--------------------------------------------------------------------------------------|-------|-------------------|------------|-----------------|
| Fathead Minnow Chronic MHSF - Survival NOEC 756 Test Code 15 / EPA Method 1000 | % | 12.5 ± 0.0012 | | |
| Fathead Minnow Chronic MHSF - Growth IC25 (ON) 808 Test Code 15 / EPA Method 1000 | % | 27.0 | 23.4 | 8.05 |
| Fathead Minnow Chronic MHSF - Growth IC25 (SN) 809 Test Code 15 / EPA Method 1000 | % | 36.0 | 29.7 | 18.4 |
| Fathead Minnow Chronic MHSF - Growth NOEC (ON) 810 Test Code 15 / EPA Method 1000 | % | 12.5 | | |
| Fathead Minnow Chronic MHSF - Growth NOEC (SN) 811 Test Code 15 / EPA Method 1000 | % | 12.5 | 15.7 | 10.1 |

Ceriodaphnia Acute MHSF 25°C

WET019-1EA / Lot LRAA0897

| | Units | Gravimetric Value | Study Mean | Study Std. Dev. |
|--------------------------------------------------------------------------|-------|-------------------|------------|-----------------|
| Ceriodaphnia Acute MHSF 25° - LC50 764 Test Code 19 / EPA Method 2002 | % | 53.2 | 61.1 | 21.3 |

Ceriodaphnia Chronic MHSF

WET021-1EA / Lot LRAA0898

| | Units | Gravimetric Value | Study Mean | Study Std. Dev. |
|-------------------------------------------------------------------------------------|-------|-------------------|------------|-----------------|
| Ceriodaphnia Chronic MHSF - Survival NOEC 766 Test Code 21 / EPA Method 1002 | % | 12.5 | | |
| Ceriodaphnia Chronic MHSF - Reproduction IC25 767 Test Code 21 / EPA Method 1002 | % | 8.54 | 9.90 | 4.96 |
| Ceriodaphnia Chronic MHSF - Reproduction NOEC 768 Test Code 21 / EPA Method 1002 | % | 6.25 | | |

Daphnia Magna Acute MHSF 25°C

WET032-1EA / Lot LRAA0899

| | Units | Gravimetric Value | Study Mean | Study Std. Dev. |
|---------------------------------------------------------------------------|-------|-------------------|------------|-----------------|
| Daphnia Magna Acute MHSF 25° - LC50 788 Test Code 32 / EPA Method 2021 | % | 17.0 | 18.8 | 7.90 |

Daphnia Pulex Acute MHSF 25°C

WET038-1EA / Lot LRAA0899

| | Units | Gravimetric Value | Study Mean | Study Std. Dev. |
|---------------------------------------------------------------------------|-------|-------------------|------------|-----------------|
| Daphnia Pulex Acute MHSF 25° - LC50 794 Test Code 38 / EPA Method 2021 | % | 36.8 ± 0.0115 | 30.1 | 14.5 |

Definitions and Interpretation of Statistical Analysis:

Assigned Value: Value attributed to a particular quantity and accepted, sometimes by convention, as having an uncertainty appropriate for a given purpose. See ISO/IEC 17043 for additional information. In general the assigned value is the value used to assess proficiency and may or may not be the made to value (gravimetric value).

Accept. Window: The range of values that constitute acceptable performance for a laboratory participating in this PT study.

Z: A Z-Score tells how a single data point compares to normal data. A Z-Score says not only whether a point was above or below average, but how unusual the measurement is. Generally, a method result with a Z-Score less than $|2|$ is considered to be in control, a Z-Score between $|2|$ and $|3|$ is considered 'Questionable', but still within control and a Z greater than $|3|$ is considered not acceptable and the method is out of control. Calculated as $Z = (\text{Reported Value} - \text{Assigned Value}) / \text{Proficiency Std. Dev.}$

Proficiency Std. Dev.: Standard deviation calculated based on **Evaluation Criteria**.

Study Mean: Statistical study mean calculated using a robust statistical model (RTC employs the 'Biweight Program'). Robust statistical techniques to minimize the influence that extreme results can have on estimates of the mean and standard deviation.

NOTE - These techniques assign less weight to extreme results, rather than eliminate them from a data set.

Study Std. Dev.: Standard deviation calculated from study data using robust statisticals (Biweight).

Gravimetric Value: The 'prepared to' value, determined by gravimetric means. The uncertainty associated to this value is standard uncertainty and based on RTC's gravimetric tolerances.

Evaluation Criteria:

1 - Regression Equation - Acceptance windows based on TNI adopted equation of proficiency value ± 3 proficiency standard deviations and check limits of proficiency value ± 2 proficiency standard deviations. Proficiency value and proficiency standard deviation are calculated from gravimetric variables a, b, c, & d as proficiency value = $a * \text{gravimetric} + b$ and proficiency standard deviation = $c * \text{gravimetric} + d$.

2 - Study Robust Mean and c,d regression - Acceptance windows based on TNI adopted equation of proficiency value ± 3 proficiency standard deviations and check limits of proficiency value ± 2 proficiency standard deviations. Proficiency value and proficiency standard deviation calculated from robust study mean and variables c & d as proficiency value = robust mean and proficiency standard deviation = $c * \text{proficiency value} + d$.

3 - Fixed Limits - Acceptance windows based on span of gravimetric percentage from gravimetric as gravimetric \pm gravimetric * percentage.

4 - Adjustable Fixed Limits - Acceptance windows base on a span of gravimetric percentage from gravimetric as gravimetric \pm gravimetric * lowPercentage where gravimetric < break and gravimetric \pm gravimetric * highPercentage where gravimetric \geq break.

5 - Study Statistics - Acceptance windows based on a number of standard deviations span from the study mean as study mean \pm (deviations * standard deviation).

6 - Log Transform Statistics - Acceptance windows based on lognormal distributed data. Acceptance windows = $\text{mean}(\text{lognormal}) \pm \text{span} * \text{standard deviation}(\text{lognormal})$.

7 - Reserved

8 - Regression Equation 2SD - Acceptance windows based on EPA equation of proficiency value ± 2 proficiency standard deviations. Proficiency value and proficiency standard deviation are calculated from gravimetric variables a, b, c, & d as proficiency value = $a * \text{gravimetric} + b$ and proficiency standard deviation = $c * \text{gravimetric} + d$. Generally reserved for drinking water studies.

Proficiency Test Item Preparation, Homogeneity and Stability Assessment - RTC uses proprietary and published methods for the manufacture, homogeneity and stability testing of proficiency test items. RTC's proficiency test materials meet requirements of

ISO Guide 34. For more information contact RTC. Additionally RTC complies with TNI Volume 3 'General Requirements for Environmental Proficiency Test Providers', EL-V3-2009, 2009 for all TNI Fields of Proficiency Testing analytes.

Metrological Traceability - All preparations are made using balances calibrated annually traceable to NIST standards. Where appropriate analytical measurements are traceable through an unbroken chain to NIST standards, or a Certified Reference Material manufactured under ISO Guide 34 in conjunction with ISO/IEC 17025.

Statistical Analysis - RTC uses robust statistics to calculate study means and standard deviations - Reference - Kafadar, K, A *Biweight Approach to the One-Sample Problem*, Journal of the American Statistical Association, Vol. 77, No. 378, June, 1982, pp. 416-424.

Additional Information - Go to www.rt-corp.com/reporting for additional information on summary statistics for specific methods, advice on the interpretation of the statistical analysis, and additional comments/recommendations. If you failed an analyte it may be required to perform a corrective action and/or retest. RTC recommends that you contact your accreditation body for specific instruction.

Program analyte accrediting footnotes

- 1 NELAC Compliant, covered by RTC's ACLASS Proficiency Testing Provider accreditation, Cert. AP-1469
- 4 ISO 17043 Accredited, covered by RTC's ACLASS Proficiency Testing Provider accreditation, Cert AP-1469

Authorizing Officer:
Patrick Brumfield, ASQ CQA
QA Manager



Date: 7/18/2013

**This section of the report is for informational purposes only.
If unsure about specific accreditation requirements please contact your state coordinator.**

PASS RATE

Number of Reported Results: 10
Number of Passing Results: 10
Pass Rate: 100.00%

Appendix 2 – Solicitation Documents



RFP COMPLIANCE DECLARATION

RFP TITLE: Whole Effluent Toxicity Testing

RFP NO.: 14-15-154

DUE DATE/TIME: May 19, 2015 / 4:00 p.m.

In compliance with the requirements of this RFP, I, the undersigned, offer and agree to furnish any or all materials and/or services to the City of Las Cruces within the time agreed.

I further certify that this company has not been debarred, suspended, or otherwise made ineligible for participation in Federal Assistance programs under Executive Order 12549 Debarment and Suspension as described in the Federal Rules and Regulations.

Receipt of Addenda Nos.: 1 is hereby acknowledged (where none received, place a zero in this space)

Company Name and Address:

GEI Consultants, Inc.

4601 Dtc Blvd. Ste. 900

Denver, CO 80237

Handwritten signature of Sarah Skigen

Authorized Signature

Sarah Skigen

Typed or Printed Name

Senior Environmental Scientist

Title

Skigen@geiconsultants.com

Email address

Telephone number (303) 264-1126

Fax number (303) 662-8757

NM Tax & Revenue Dept. CRS # N/A

Current NM Public Regulatory Commission Registration # N/A (corporations only)

Current CLC Business Registration # N/A (respondents located in Las Cruces only)

Federal I.D. number 04-2468348 (mandatory for all respondents)

NM Resident Certificate from NM Tax and Revenue Department enclosed Yes X No

THIS FORM MUST BE COMPLETED AND INCLUDED WITH PROPOSAL FAILURE TO INCLUDE WILL SUBJECT RESPONSE TO REJECTION

Exhibit B Compensation

**GEI Consultants, Inc.
Cost Proposal**

Whole Effluent Toxicity Testing Cost Proposal

RFP No. 14-15-154

CITY OF LAS CRUCES



Submitted by

GEI Consultants, Inc.
4601 DTC Boulevard, Suite 900
Denver, CO 80237
T: 303-662-0100
F: 303-662-8757

May 19, 2015

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Cover Letter

May 19, 2015

Luis Guerra
City of Las Cruces,
PO Box 20000
Las Cruces, NM 88004

Re: Proposal for Whole Effluent Toxicity Testing Cost Proposal

Dear Mr. Guerra,

We appreciate the opportunity to submit this proposal for continued whole effluent toxicity (WET) testing for the City of Las Cruces (City), NM. GEI Consultants, Inc. has been successfully performing WET testing for the City for the past five years and we believe that our technical expertise as well as the historical knowledge of the permitting requirements for both the Jacob Hands Treatment Facility and the East Mesa Water Reclamation Facility make us uniquely qualified to continue to assist the City in its compliance needs.

Enclosed is our cost proposal for WET testing. The unit cost of each test has been included. We also understand that the City is working with State Agencies to demonstrate the *D. pulex* acute testing is more appropriate for the East Mesa Facility. Should this determination be made, the testing with *D. pulex* would resume; therefore, the costs for *D. pulex* testing are included in our quote as optional services.

Should you have any questions feel free to contact me; we look forward to working with the City in the future.

Sincerely,

GEI Consultants, Inc.



Sarah Skigen
Senior Environmental Scientist
Project Manager

Proposed Fee

The costs associated with testing are provided in Table 1 below, all testing is listed by unit price. GEI Consultants, Inc. proposes conducting the following tests:

- NM permit #NM0023311
 - Chronic whole effluent toxicity testing on *Ceriodaphnia dubia* and *Pimephales promelas*
 - Conducted quarterly
- NM permit #NM0030872
 - Chronic whole effluent toxicity testing on *Ceriodaphnia dubia*
 - Conducted quarterly
- OPTIONAL for NM permit #NM0030872
 - Acute whole effluent toxicity testing on *Daphnia pulex* if required under future permitting actions
 - Conducted quarterly

Table 1: All associated costs with quarterly whole effluent toxicity testing

| Test Cost | Unit Cost |
|---------------------------------------------------------------------|-----------------------------------|
| a. Chronic <i>Ceriodaphnia dubia</i> | \$1,146 |
| b. Chronic <i>Pimephales promelas</i> | \$1,268 |
| c. Organophosphate pesticide analysis (subconsultant) | \$425 |
| Other costs associated with services related to WET testing: | |
| d. Sample kit shipment | \$75/quarter |
| e. Accelerated testing | Same as standard tests |
| f. Toxicity Identification/Reduction Evaluations (TI/RE) | TBD – as needed |
| g. Subconsultants | See costs associated with c above |
| h. Any other costs that may be incurred by the City | None |
| Optional services: | |
| i. Acute <i>D. pulex</i> testing | \$684 |

Key assumptions:

1. Cost of shipping samples to the GEI Ecological Laboratory in Denver, CO will be incurred by the City