SFPP, L.P.
Operating Partnership

June 27, 2008

Michael P. McCann
Assistant Executive Officer
9174 Sky Park Court
Suite100
San Diego, California 92123-4353

RE: Complaint No. R9-2008-0046 for Administrative Civil Liability
Violation of Order No. R9-2001-0096, NPDES No. CAG919002
SFPP, L.P. Mission Valley Terminal, San Diego, California

Dear Mr. McCann:

We are in receipt and review of Complaint No. R9-2008-0046 for Administrative Civil Liability ("ACL") dated June 6, 2008 issued by the Regional Water Quality Control Board, San Diego Region, ("RWQCB") to SFPP, L.P., for discharges from SFPP, L.P.'s Mission Valley Terminal, in San Diego, California. SFPP, L.P. is an operating partnership of Kinder Morgan Energy Partners, L.P. (Kinder Morgan).

The purpose of this letter to you is to provide the RWQCB our comments on the ACL with the intent to clarify the facts and the record, and to allow reasonable resolution of this matter. Also in this letter, Kinder Morgan requests that the RWQCB's Executive Officer issue a Time Schedule Order ("TSO") pursuant to Water Code Section 13300 and in accordance with Water Code Section 13385(j)(3) to provide Kinder Morgan a time schedule to undertake identified facility actions and modifications to address the unexpected concentrations of nitrogen compounds in the discharged groundwater, described in detail below. Kinder Morgan does acknowledge the appropriateness of penalties for certain exceedances subject to Mandatory Minimum Penalties. However, as discussed further below, the ACL also cites circumstances that can be shown not to represent violations. We also establish that a number of the constituents and toxicity alleged violations have been resolved in a manner that does not warrant the substantial discretionary penalties listed in the ACL.

We appreciate this opportunity to provide our response to the ACL. Please know that Kinder Morgan has responded to unexpected changes in the effluent discharge from the treatment system with appropriate investigation studies and treatment options. Our actions have demonstrated a strong commitment to achieving compliance with the RWQCB Order No. R9-2001-096 ("General Permit"). We will continue our strong commitment to compliance with the General Permit as well as to diligently respond to evolving groundwater quality conditions that may potentially arise as part of the on-going Mission Valley Terminal (MVT") remediation project.

Importantly, Kinder Morgan has not realized any economic benefit for noncompliance, contrary to paragraph 8(d) of the ACL. In fact, the discharge from the MVT facility is not from a process that is part of a manufacturing, development or business activity, but is produced solely from the remediation work. The remediation project as well as the operation, monitoring and investigative studies associated with NPDES compliance represent a significant commitment as well as a substantial expense to the company. As such we will continue in that endeavor.

Kinder Morgan requests a prompt resolution to its comments and request for a TSO. To that end, Kinder Morgan has requested a meeting with the RWQCB staff, and understands that you are presently in the process of coordinating RWQCBs staff and attorney schedules so that a meeting can take place either during the weeks of July 7th or July 14th, 2008. Kinder Morgan and the RWQCB have worked closely and cooperatively in the past and we look forward to continuing in this manner.

We have organized this response letter into the following sections for ease in reading and responding:

1.0 Background
2.0 Past Enforcement Actions
3.0 Status of Kinder Morgan Actions Addressing Manganese and Total Nitrogen
4.0 Kinder Morgan Response to Discharge Violations Presented in Complaint No. R9-2008-0046
5.0 Additional Requested Corrections to Complaint No. R9-2008-0046
6.0 Request for Time Schedule Order

The discussion on each of these topics is presented below:

1.0 Background

Kinder Morgan operates, maintains, and monitors the groundwater extraction and treatment system located at the Mission Valley Terminal. The treatment system effectively removes petroleum hydrocarbons from groundwater. The Complaint does not allege, nor have there been over this entire period, violations relating to the target hydrocarbon constituents.

The treated groundwater is discharged to Murphy Canyon Creek pursuant to RWQCB Order No. 2001-0096, NPDES Permit No. CAG919002, a general permit with hundreds of effluent limitations designed to be stringent enough to protect all receiving waters in the region. Use of the general permit as an alternative to individual permits for remediation system discharge conserves agency resources and streamlines the application and oversight process.

The groundwater treatment system has been discharging treated groundwater in accordance with RWQCB Order No. 2001-0096, NPDES Permit No. CAG919002 since October 2001. Since that time, the groundwater extraction and treatment system has operated on a continuous basis with the exception of periodic shutdowns for maintenance and system upgrades. Kinder Morgan has monitored and reported on discharges from this treatment system in accordance with the requirements of Order No. 2001-0096.

2.0 Past Enforcement Actions

The Complaint cites past enforcement and investigation orders relating to the discharge. Detailed review of these events indicates diligent work by Kinder Morgan to maintain compliance, which we suggest is not a reason to impose the substantial discretionary penalties proposed in and comprising more than half of the penalties set forth in the Complaint. In fact, after further study, many of the issues addressed in these orders were found not to represent noncompliance. Notably, these include whole effluent toxicity test issues, an area so well recognized as problematic that in 2003 the State Water Resources Control Board indicated that numeric toxicity limits are not appropriate in NPDES permits until new policies are developed.[1] Other issues addressed in these orders also were promptly resolved. In the case of manganese, a naturally occurring mineral, Kinder Morgan has completed installation of a manganese removal treatment system despite the fact that exceedances have not been found in discharge monitoring samples since the third quarter of 2006.

The following is a summary of previous enforcement actions by the RWQCB cited in the Complaint.

Order No. R9-2002-0385

Order No. R9-2002-0385, Administrative Assessment of Civil Liability with Mandatory Minimum Penalties of $21,000 was adopted by the RWQCB on December 16, 2002 in response to Complaint No. R9-2002-0205 (RWQCB, 2002b). The order addressed five alleged violations of the numeric chronic toxicity limit, one alleged violation of the acute toxicity limitations, two violations for total phosphorus, and one violation for manganese. The order assessed MMPs for whole effluent toxicity limit issues, most of which were later shown to represent discrepancies with the testing process rather than discharge of problematic toxicants. Further, the chronic toxicity issues were then mistakenly believed to be subject to MMPs.[2]

The issues addressed in this 2002 ACL were further investigated under Investigation Order No. R9-2002-0420, issued on December 26, 2002. The order called for a series of technical reports meant to assist the RWQCB staff in "evaluation of measures taken to achieve compliance with Order No. 2001-96, minimize the threat to water quality posed by the discharge of extracted groundwater, and to evaluate potential impacts to the waters of the State." Kinder Morgan responded to these requirements in the following transmittals:

- January 14, 2003 – Investigation of Treatment System Effluent and Status of Toxicity Identification Evaluation, Mission Valley Terminal, San Diego, California (LFR, 2003a).

[1] *See* SWRCB ORDER WQO 2003 – 0012 (relating to Long Beach/Los Coyotes NPDES Permits), available at http://www.swrcb.ca.gov/board_decisions/adopted_orders/water_quality/2003/wqo/ wqo2003-0012.pdf (Sept. 16, 2003).

[2] Numeric chronic toxicity limits can under some circumstances be subject to MMPs, but are exempted by Water Code section 13385 because the General Permit has effluent limits for more numerous specific toxic pollutants, as recognized in the present ACL Complaint.

- April 2, 2003 – Work Plan for Water Quality and Aquatic Habitat Assessment, Mission Valley Terminal, San Diego, California (LFR, 2003b).

- June 30, 2003 – Water Quality and Aquatic Habitat Assessment, Mission Valley Terminal, San Diego, California (LFR, 2003c).

- February 13, 2004 - Progress Update Regarding Investigation of Groundwater Treatment Effluent Discharge from the Mission Valley Terminal, 9950 and 9966 San Diego Mission Road, San Diego, California (LFR, 2004a)

- May 26, 2004 - Conclusions and Recommendations Regarding Investigation of Groundwater Treatment System Effluent Discharge; Mission Valley Terminal, 9950 and 9966 San Diego Mission Road, San Diego, California (LFR, 2004b)

On August 19, 2004, the RWQCB issued Revised Requirements for Enrollment under Order 2001-96. This letter responded to the May 26, 2004 report and concurred with the conclusions and recommendations presented therein. Additionally, the RWQCB stated in this letter that *C. dubia* (water flea) chronic toxicity failures are not valid for determining compliance "and will not be considered for future enforcement actions" (RWQCB, 2004b).

As demonstrated by this chain of events and resulting revision to the requirements for enrollment under Order 2001-96, Kinder Morgan responded to the Orders issued by the RWQCB and addressed the need to be in compliance with the permit requirements.

Order No. R9-2004-0101

On May 12, 2004, the RWQCB issued Order R9-2004-0101, assessing a mandatory minimum penalty for a single exceedance of the average monthly effluent limitation for selenium based on a sample collected three years earlier, during the fourth quarter of 2001. This detection of selenium was uncharacteristic for discharges from the site. Kinder Morgan submitted a signed waiver of public hearing along with a check for $3,000. As noted below, 2005 evaluations also indicated that test methods subject to ionic interference might have been biased high, and compliance has been maintained consistently after appropriate changes were made to the test protocol after consultation and concurrence from the RWQCB staff (RWQCB, 2006a).

3.0 Status of Kinder Morgan Actions Addressing Manganese and Nitrogen

Manganese in Discharge Water

The discharge from the remediation system has indicated occasional exceedances of applicable manganese effluent limits, due to naturally occurring mineral content in the groundwater. Exceedances of manganese have not occurred since October 2006; the single 2007 violation alleged in the Complaint is an error in the RWQCB's reading of the result's units of 7 micrograms per liter instead of milligrams per liter. Nonetheless, Kinder Morgan has just completed installation of, and will operate, additional treatment system components to assure continued compliance with manganese effluent limits.

On April 14, 2006, Kinder Morgan submitted a Dissolved Manganese Investigation and Action Plan in response to a detection of dissolved manganese in excess of the applicable effluent limitations. (LFR, 2006(a). This submittal provided a detailed history of issues related to dissolved manganese concentrations and a proposed plan of action to investigate and implement a technology to reduce dissolved manganese concentrations and restore compliance with Order No. R9-2001-0096. Since that time, project status updates have been provided to the RWQCB in monthly self monitoring reports. Upon discovery of this dissolved manganese condition, Kinder Morgan took steps towards implementation of a treatment solution to remove manganese from the process stream prior to discharge.[3]

Discharges have been in compliance with discharge limitations for manganese beginning with the semiannual sample collected on April 10, 2007. While the manganese removal system was not yet in place, it is believed that modifications to the existing granular activated carbon adsorption system (September 2006 - modified influent nozzles) and subsequent replacement of that system with a larger version (May 2007 – three-stage system) had the effect of increasing residence time and incidentally providing a degree of manganese removal. Therefore, sufficient manganese removal was achieved prior to delivery and installation of the manganese removal system.

Kinder Morgan submitted a Notification of Installation and Startup of Manganese Removal System letter on March 19, 2008 that detailed the status of the manganese removal system and the anticipated schedule to startup (LFR, 2008a). Installation of the system was completed between April and May 2008. Shakedown and startup procedures have been performed throughout June 2008. Full-time continuous operation of the manganese removal system is scheduled to begin on June 30, 2008.

Kinder Morgan has taken purposeful steps from the start to implement a treatment solution capable of removing manganese from the process stream prior to discharge and further assuring compliance with the manganese limit in Order No. 2001-0096. Significant actions were undertaken in the absence of any enforcement action by the RWQCB. The RWQCB has not provided any objections or commentary with respect to the course of action proposed or progress made by Kinder Morgan to remedy the situation. Kinder Morgan's actions demonstrate its strong commitment to maintain compliance with the Revised Requirements for Enrollment, Order No. 2001-0096.

Total Nitrogen in Discharge Water

Kinder Morgan first notified the RWQCB of uncharacteristically elevated concentrations of total nitrogen in the March 2006 Monthly and First Quarter of 2006 NPDES Monitoring report dated

[3] The schedule for implementation presented in the letter anticipated completion of bench-scale/pilot-scale testing by July 2006, design of a full-scale system by August 2006, and installation by January 2007 (LFR, 2006a). As discussed in the self monitoring reports, there have been delays to the schedule of implementation presented in the plan of action letter. Most significantly, the vendor that was selected to design and implement the greensand filtration system unexpectedly, and without explanation, backed out of the project on February 27, 2007 after more than *six months* of effort and collaboration; not including the time invested by Kinder Morgan and LFR, Inc. for vendor/technology selection. Kinder Morgan responded by expediting the selection of a new vendor and initiating the steps necessary to implement a treatment solution (LFR, 2007a).

April 28, 2006 (KMEP, 2006a). After subsequent routine sampling confirmed nitrogen levels previously observed were likely valid, Kinder Morgan initiated an in-depth investigation of nitrogen in extracted groundwater and began evaluating potential compliance options. On November 14, 2006, Kinder Morgan submitted a Total Nitrogen Investigation of Impact letter to the RWQCB. This letter presented the results of investigative efforts conducted to characterize the nature of the total nitrogen, provide valuable information for evaluation of compliance options, and to propose a study of the site-specific impacts of the nitrogen present in the discharge water (LFR, 2006b). A copy of the November 14, 2006 letter report is attached to this letter as Attachment 1.

Between December 16, 2006 and April 19, 2007, LFR inquired by email with the RWQCB on four occasions as to the status of their review and response of the November 14, 2006 letter**.** Each time, the RWQCB indicated that their response letter was in varying stages of review and that Kinder Morgan should not initiate the study before a response was issued (LFR, 2007b). Further, Kinder Morgan understood from the communications with the RWQCB staff that an approval of the study was forthcoming. A written response was not received until 18 months later in the RWQCB's Response to Total Nitrogen Impact Investigation and Proposed Nitrogen Study dated May 15, 2008 (RWQCB, 2008a).

In June 2007, Kinder Morgan initiated plans to investigate and implement a treatment solution for nitrogen prior to receiving a response from the RWQCB to its November 14, 2006 letter. By February 2008, Kinder Morgan had identified an appropriate treatment technology and vendor to provide a treatment solution to remove nitrates from the process stream prior to discharge. A purchasing contract for fabrication of the system was issued on April 7, 2008. The denitrification system is expected to be delivered and operational by December 2008. A verbal status update was provided to the RWQCB staff during a meeting held on April 22, 2008 with representatives of both Kinder Morgan and LFR.

Throughout the period of nitrogen limit exceedances cited in the Complaint, Kinder Morgan has pursued actions to develop acceptable compliance options, as described above. Significant actions were undertaken well in advance of notices or enforcement action by the RWQCB. Kinder Morgan has pursued alternate compliance options (i.e., a treatment solution) on their own accord even with the understanding that an alternative path to resolution (i.e., site-specific impacts study) was still under consideration by the RWQCB. Kinder Morgan has provided information to the RWQCB in a timely manner throughout this period. Again, Kinder Morgan believes that their actions demonstrate a strong commitment to maintain compliance with Order No. 2001-0096.

4.0 Discharge Violations Presented in Complaint No. R9-2008-0046

On June 6, 2008 the RWQCB issued Complaint No. R9-2008-0046 for alleged violations of effluent limitations for dissolved oxygen, fluoride, lead, manganese, pH, phosphorus, total nitrogen, total residual chlorine, and chronic toxicity to fathead minnows and green algae for the period from January 2005 through January 2008. The following is a summary of the alleged violations noted in Table 3 of Complaint No, 2008-0046 followed by Kinder Morgan's comments.

Total Nitrogen

For more than ten years of operation, the total nitrogen limit was not exceeded in the discharge. As noted above, background nitrate in the groundwater increased unexpectedly in 2006. Total nitrogen is commonly found in groundwater influenced by development and agriculture.

Eighteen alleged violations were noted for total nitrogen in discharge water between January 2006 and January 2008. As previously detailed in Section 3.0, the presence of total nitrogen in the discharge water is an issue for which Kinder Morgan has been diligently pursuing a remedy through the design and installation of engineering controls to remove nitrate from the process stream prior to discharge. Engineering controls will include an anaerobic fluidized bed reactor denitrification system that will be followed by an oxygen injection system.[4]

Kinder Morgan does not disagree with the list of reported values noted in Complaint No. R9-2008-0046. However, as discussed above, Kinder Morgan's actions have demonstrated a strong commitment to restoring compliance with Order No. 2001-0096. Given the significant effort being pursued towards installation of a permanent remedy and the on-going communication that Kinder Morgan has provided to the RWQCB during this process, assessment of penalties greater than the MMPs does not seem appropriate. Kinder Morgan respectfully requests that the RWQCB staff eliminate the assessment of discretionary liability for the nitrogen limit violations.

Manganese

Manganese is a naturally occurring constituent found in groundwater that is present due to leaching from minerals in the strata.

Alleged violations were noted for manganese in discharge water at concentration of 3.9 mg/L (April 12, 2005), 2.9 mg/L (October 11, 2005), 2.7 mg/L (October 10, 2006) and 7.0 mg/L (October 9, 2007) in comparison to the instantaneous discharge limitation of 1.0 mg/L. As previously detailed in Section 3.0, the concentration of manganese has been in compliance with discharge limitations since the third quarter of 2006. In addition, Kinder Morgan has designed and installed of engineering controls to remove manganese from the water, to further assure future compliance.

Kinder Morgan does not disagree with the list of reported values noted above for 2005 and 2006. However, Kinder Morgan requests deletion of one alleged violation which is clearly listed in error (Violation ID 74168):

- The result for the sample collected on October 9, 2007 is 7.0 *micrograms* per liter (µg/L), which is in compliance with the permitted discharge limitation. This is the value that was reported on the DMR and in the original laboratory analytical report.

Kinder Morgan believes that their actions have consistently demonstrated a strong commitment to restore compliance with Order No. 2001-0096. Given the significant effort Kinder Morgan is

[4] The oxygen injection system is needed because the biological denitrification process that precedes it will deplete the processed groundwater of all dissolved oxygen. The oxygen injection system will raise the dissolved oxygen concentration above the minimum level required by the discharge permit.

putting towards installation of a permanent remedy and the level of communication that Kinder Morgan has provided to the RWQCB on this issue, using these data as influencing factors for assessing other penalties greater than the MMPs does not seem appropriate.

Phosphorus

Phosphorus is a naturally occurring constituent found in groundwater that is present due to leaching from minerals in the strata.

An alleged violation was noted for phosphorus in discharge water at an Average Monthly Effluent Limitation (AMEL) of 0.167 mg/L (January 20, 2006), as compared to the AMEL discharge limitation of 0.1 mg/L. (Violation ID No. 742342.) This average was based on analytical results of 0.15 mg/L (January 3, 2006) and 0.183 mg/L (January 20, 2006). Kinder Morgan does not dispute that these are the values reported. However, upon further review of the data, sufficient reason to question the validity and accuracy of these data have been identified by Laboratory Data Consultants, Inc. (LDC), of Carlsbad, California. LDC specializes in the evaluation of quality assurance/quality control issues in environmental chemistry. For instance:

- **0.183 mg/L (January 20, 2006)** – Phosphorus is routinely analyzed using colorimetric methods (EPA 365.3, colorimetry) that are capable of accurate results at low concentrations. However, this particular sample was analyzed using a spectroscopy method that is susceptible to spectral interferences due to high dissolved solids concentrations (EPA's Method 6010), a common characteristic of groundwater in Mission Valley.

Considering the factor presented above and that phosphorus exceedances have not been detected using colorimetric methods during the entire period addressed in the Complaint, there is sufficient reason to question the accuracy and validity of this data. Therefore these data and the complete available record of associated quality control data are currently being more thoroughly reviewed by LDC and those findings will be submitted to the RWQCB as part of an addendum to these comments.

Lead

An alleged violation was noted for lead in discharge water at a concentration of 10.8 µg/L (January 20, 2006), compared to the instantaneous discharge limitation of 2.5 µg/L. (Violation ID No. 742343.) Kinder Morgan does not dispute this is the value that was reported. However, upon further review of the data LDC has identified sufficient reason to question the validity and accuracy of these data. For instance:

- **10.8 µg/L (January 20, 2006)** – Review of the laboratory quality control data included in the analytical laboratory report indicates that the percent relative standard deviation (%RSD) was 19.99%, which is high enough to raise concerns on the reliability of these results.

Considering the factor presented above, that this is the first alleged violation of lead on record, and that historical analytical results for lead have been non-detect to a reporting limit of 1.0

µg/L, there is sufficient reason to question the accuracy and validity of these data. Therefore these data and the complete available record of associated quality control data are currently being more thoroughly reviewed by LDC and those findings will be submitted to the RWQCB as part of an addendum to these comments.

Fluoride

Fluoride is a naturally occurring constituent found in groundwater that is present due to leaching of minerals from the strata.

Alleged violations were noted for fluoride in discharge water at concentration of 1.1 mg/L (April 12, 2005), 2.2 mg/L (January 20, 2006), and 1.1 mg/L (October 9, 2007) as compared to the instantaneous discharge limitation of 1.0 mg/L. No other fluoride issues have been encountered during the life of the project. Kinder Morgan does not dispute the cited values were reported. However, upon further review of the data, sufficient reason to question the validity and accuracy of these data have been identified by Laboratory Data Consultants, Inc. (LDC), of Carlsbad, California. Data validity and accuracy issues identified by LDC include:

- **1.1 mg/L (April 12, 2005)** (Violation ID No. 443858) – This result was reported below the analytical laboratory's QA/QC reporting limit of 2.5 mg/L and the laboratory report states that this data is of "unknown quality".

- **2.2 mg/L (January 20, 2006) – (**Violation ID No. 742344) Review of the raw analytical laboratory data (not included in original lab report) suggests that the value for fluoride may have been miscalculated by the analysis software.

- **1.1 mg/L (October 9, 2007)** (Violation ID No. 741647) –The matrix spike sample and matrix spike duplicate sample for fluoride had percent recovery (%REC) values of 111% and 109%, respectively.

In light of the issues identified by LDC's preliminary review there is sufficient reason to question the accuracy and validity of these data. Therefore more detailed evaluation of the data will be completed by LDC upon receipt of all available records and associated quality control data from the analytical laboratory that conducted the original analyses. LDC's findings will be submitted to the RWQCB as an addendum to these comments. Using these data as influencing factors for assessing other penalties greater than the MMPs does not seem appropriate given the issues identified above.

pH

Alleged violations were noted for pH in discharge water at concentration of 6.33 (January 18, 2005), 6.36 (June 7, 2005), 6.47 (November 21, 2005), 6.42 (June 20, 2006), 6.45 (August 1, 2006), 6.47 (August 15, 2006), 6.3 (September 26, 2006), and 6.4 (December 5, 2006). Kinder Morgan does not dispute these are the values that were reported. Kinder Morgan agrees that five of these monthly pH readings (readings between 6.3 and 6.4) were lower than the minimum pH limit, and should be counted as violations. However, Kinder Morgan does dispute the designation of the values reported as 6.47, 6.45, and 6.47 as violations of the Permit discharge

limitations, as explained below. Kinder Morgan requests that the RWQCB delete from the ACL Complaint alleged violations for July , 2006, August 1, 2006 and August 15, 2006 (Violation ID Nos. 742358, 742355, and 742356).

The permit requires that pH in discharge be "within the limits of 6.5 and 8.5." While these measurements were reported to the number of decimal places displayed by the meter used, rounding of these values to the number of significant digits that corresponds with the permit limit would result in values of 6.5, 6.5, and 6.5, respectively. The reported values should be rounded to the same number of significant digits cited in the Permit. The State Water Resources Control Board ("SWRCB") and other Regional Water Quality Control Boards support limiting reported values to the proper number of significant digits for purposes of determining compliance and assessing mandatory minimum penalties. See, for example, the May 15, 2008 MMP Enforcement Staff Report prepared by the Regional Water Quality Control Board, Central Valley Region, at page 3, "Rounding Turbidity to Nearest Whole Number."

Kinder Morgan would like to note that pH has remained within the Permit limitations since the violation on December 5, 2006 referenced above. It is believed that improvements in the field measurement equipment used and additional training of field staff regarding equipment calibration methods have increased the accuracy and precision of pH measurements over the last approximately 18 months. The pH of the extracted groundwater should remain relatively stable, and the unit processes used to treat the groundwater have a negligible effect on this parameter. For these reasons, Kinder Morgan expects that pH will remain within the specified Permit limits for future discharges.

Kinder Morgan respectfully requests that the RWQCB staff eliminate the assessment of MMPs attributed to the three reported pH values that should be rounded to 6.5. Designating these measurements as violations based on values reported with extraneous significant digits is not in accordance with the permit requirements. Future monitoring and reporting will ensure that values are reported to the number of significant digits required by the discharge limitation noted in Order No. 2001-0096.

Dissolved Oxygen

Dissolved oxygen is naturally present in groundwater and surface water in contact with the atmosphere. Dissolved oxygen concentrations can change quickly and so testing is performed using grab samples and field test kits, typically a standard-calibrated water quality meter.

Alleged violations were noted for dissolved oxygen in discharge water at concentrations of 4.9 mg/L (July 31, 2007), 0.64 mg/L (September 11, 2007), and 3.09 mg/L (December 4, 2007), which are below the instantaneous minimum discharge limitation of 5.0 mg/L. Kinder Morgan does not dispute these are the values reported. However, the quality of these measurements were previously disputed and discussed in the self monitoring reports submitted on August 24, 2007, October 29, 2007, and January 29, 2008. As stated in those reports, based on historically stable observed concentrations of dissolved oxygen it was believed that the uncharacteristic and anomalous low measurements of dissolved oxygen were more likely due to faulty measurements (e.g., calibration errors or improperly maintained monitoring equipment). The equipment being used was checked for proper function and calibration during this time period and was tested

against calibration standards and separate, factory-calibrated meters. The results of this evaluation suggested that previous measurements were likely reported at levels below the actual dissolved oxygen concentrations. Kinder Morgan has since replaced the previous dissolved oxygen monitoring equipment with a more reliable meter that utilizes an optical dissolved oxygen sensor that is virtually free of susceptibility to calibration errors and maintenance issues that can influence the accuracy of the measurements.

Kinder Morgan raised concerns with these data at the time that they were reported to the RWQCB and therefore does not believe that these data should be used for determination of compliance with discharge requirements of Order No. 2001-0096.

Additionally, the treatment process being developed to remove total nitrogen from the effluent also depletes the dissolved oxygen content of the treated groundwater. To counter this effect, an oxygen injection system is incorporated into the downstream side of the nitrogen removal system to restore the dissolved oxygen content to the levels required by the Permit.

Chronic Toxicity for P. promelas (Fathead Minnow)

The Complaint alleges exceedance of chronic toxicity limitations on four occasions: once in October, 2005, twice in February, 2006 and once in August, 2006. In each of these cases the laboratory data was reviewed for Quality Assurance and Quality Control (QA/QC) by Risk Sciences. Concerns were raised about the validity of the data in Kinder Morgan's self monitoring reports, supported by the Risk Sciences technical evaluation. Risk Sciences was asked to review these alleged whole effluent toxicity (WET) violations in the Complaint. We attach as Attachment 2 the letter dated June 24, 2007 from Risk Sciences to LFR which addresses the alleged violations and summarizes the past analysis of these whole effluent toxicity test results. Risk Sciences indicates that of the four violations alleged in the Complaint, all but one can be more easily attributed to analytical error or method variability than to effluent toxicity. The one remaining test failure (fathead minnow growth in February 2006) could not be confirmed with subsequent accelerated monitoring. The rest of the fourteen chronic toxicity tests performed between January 2005 and January 2008 reported no failures.

As explained in the attached Risk Sciences letter and acknowledged by USEPA, infrequent test failures such as these are an unavoidable part of using an inherently imperfect method. Therefore, we urge that the RWQCB heed USEPA's guidance and consider the related SWRCB's policy reasons for disfavoring numeric whole effluent limits, and that these test results not be cited as the basis for penalties or any other enforcement action.

5.0 Additional Requested Corrections to Complaint No. R9-2008-0046

The ACL Recipient Name is Incorrect

The ACL was issued to "Kinder Morgan, MVT, SFPP, L.P." No such entity exists. The ACL should be modified to name the ACL recipient as "SFPP, L.P., an operating partnership of Kinder Morgan Energy Partners, L.P.," and Footnote 3 should delete reference to a 1998 assumption of responsibility because Kinder Morgan did not assume responsibility for Santa Fe Pacific Pipeline Partners, L.P. but instead for a successor entity named SFPP, L.P. now a Kinder Morgan entity.

The ACL Listing of Violations and Calculation of Penalties Require Revision

Revisions to Eliminate Specific Alleged Violations

Section 3.0 above explains why a number of alleged violations should be eliminated from the ACL Complaint. Kinder Morgan requests that Paragraph 13, Table 1, and Paragraph 14, Table 3, be revised accordingly. The revisions to Table 3 will require recalculation of mandatory minimum penalties, as well as changes to the chronic toxicity violations counted in assessing discretionary penalties. In addition, Kinder Morgan requests that Paragraph 13 (including Table 1) be revised to delete results that have been reported or explained as not evidencing violations of the permit. This would include, for example, the green algae chronic toxicity and total residual chlorine listings.

Errors in Tallying Number of Non-Serious Alleged Violations Subject to MMPs

Kinder Morgan believes the RWQCB made several errors in tallying the number of non-serious alleged violations that are subject to MMPs. The Water Code prescribes a $3,000 minimum penalty for non-serious violations "whenever the person does any of the following four or more times in *any period of six consecutive months*…" *See* Water Code §13385(i)(1) (emphasis added). For purposes of this section, a "period of six consecutive months" means "the period commencing on the date that one of the violations described in this subdivision occurs and ending 180 days *after* that date." *See* Water Code §13385(a)(2) (emphasis added). Thus, the tallying of the number of non-serious alleged violations subject to MMPs must only count the fourth and subsequent alleged violation for each prospective, consecutive six month period. In this case, the RWQCB erroneously counted six of the alleged violations on six occasions, as follows:

Violation ID No. 742362: Violation ID No. 742362 should not be subject to an MMP. This alleged violation occurred on October 11, 2005. The period of six consecutive months prior to this alleged violation ran from January 18, 2005 to July 12, 2005. Thus, the next period of six consecutive months should commence on October 11, 2005, and the alleged non-serious violation in Violation ID No. 742362 should be exempt from MMPs pursuant to Water Code section 13385(i)(1), as it is the first exceedance in that period of six consecutive months.

Violation ID No. 742357: Violation ID No. 742357 should not be subject to an MMP. This alleged violation occurred on June 20, 2006. The period of six consecutive months prior to this alleged violation ran from October 11, 2005 to April 9, 2006. Thus, the next period of six consecutive months should commence on April 25, 2006 (Violation ID No. 742339), and the alleged non-serious violation in Violation ID No. 742357 should be exempt from MMPs pursuant to Water Code section 13385(i)(1), as it is the third exceedance in that period of six consecutive months.

Violation ID No. 742336: Violation ID No. 742336 should not be subject to an MMP. This alleged violation occurred on December 5, 2006. The period of six consecutive months prior to this alleged violation ran from April 25, 2006 to October 21, 2006. Thus, the next period of six consecutive months should commence on December 5, 2006, and the alleged non-serious

violation in Violation ID No. 742336 should be exempt from MMPs pursuant to Water Code section 13385(i)(1), as it is the first exceedance in that period of six consecutive months.

Violation ID Nos. 708512 and 708513: Violation ID Nos. 708512 and 708513 should not be subject to MMPs. These alleged violations occurred on July 31, 2007 and September 11, 2007, respectively. The period of six consecutive months prior to these alleged violations ran from December 5, 2006 to June 3, 2007. Thus, the next period of six consecutive months should commence on July 3, 2007 (Violation ID No. 741644), and the alleged non-serious violations in Violation ID Nos. 708512 and 708513 should be exempt from MMPs pursuant to Water Code section 13385(i)(1), as they are the second and third exceedances in that period of six consecutive months.

Violation ID No. 741581: Violation ID No. 741581 should not be subject to an MMP. This alleged violation occurred on January 15, 2008. The period of six consecutive months prior to this alleged violation ran from July 3, 2007 to December 29, 2007. Thus, the next period of six consecutive months should commence on January 15, 2008, and the alleged non-serious violation in Violation ID No. 741581 should be exempt from MMPs pursuant to Water Code section 13385(i)(1), as it is the first exceedance in that period of six consecutive months.

For these reasons, Kinder Morgan requests that MMPs not be assessed for Violation ID Nos. 742362, 742357, 742336, 708512, 708513, and 741581 in accordance with Water Code section 13385(i)(1). In addition, the same principles should be followed in tallying violations after elimination of specific violations described in Section 3.0 above.

6.0 Request for Time Schedule Order:

Kinder Morgan requests the RWQCB's Executive Officer to issue a Time Schedule Order ("TSO") pursuant to Water Code section 13300 and in accordance with Water Code section 13385(j)(3) to allow Kinder Morgan to complete the significant, identified facility modifications necessary to achieve consistent compliance with the effluent limitations for nitrogen compounds set forth in the General Permit.

The RWQCB possesses authority to issue the requested TSO on the basis that:

> Unanticipated changes in the quality of the municipal or industrial water supply available to the discharger are the cause of unavoidable changes in the composition of the waste discharge, the changes in the composition of the waste discharge are the cause of the inability to comply with the effluent limitation, no alternative water supply is reasonably available to the discharger, and new or modified measures to control the composition of the waste discharge cannot be designed, installed, and put into operation within 30 calendar days.

See Cal. Water Code section 13385(j)(3)(B)(iii).

Kinder Morgan's discharge qualifies for the TSO because unanticipated changes in the groundwater influent (i.e. the "water supply" available to the discharger), caused unavoidable changes in nitrogen levels in the discharge that exceeded the permit effluent limit. Previously, over more than ten years, the discharge consistently met the nitrogen effluent limit. Nitrogen in

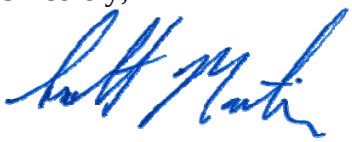
the discharge has been identified as primarily nitrate, which is attributable to background water conditions unaffected by Kinder Morgan and not previously characterized.

Obviously, no alterative water source cannot is reasonably available because it consists of groundwater requiring treatment, the entire purpose of this remediation system. Modifications to remove nitrate could not be made within 30 days, because they required study of the distribution of the source, evaluation and selection of appropriate treatment options; and engineering, design, procurement and installation of the treatment system. This process typically requires up to several years to complete and it was not technically feasible to obtain and operate an effective nitrate treatment within 30 days.

Components of the new fluidized bed reactor denitrification system are currently being fabricated by the prime contractor, Shaw Environmental, Inc., which, in turn, is having portions fabricated by subcontractors. After the system is delivered and installed, startup will require several weeks to integrate into the larger treatment system and to ensure proper operations of related controls and software. While Kinder Morgan expects the system to be fully operational in December 2008, a reasonable additional period is needed for supplier and contractor contingencies. Therefore, we propose that the TSO call for completion of startup activities and full compliance with the nitrogen effluent limit by February 28, 2009.

In closing, Kinder Morgan appreciates the RWQCB's consideration of our comments and requested corrections regarding Complaint No. R9-2008-0046, as well as issuance of a Time Schedule Order to allow Kinder Morgan to undertake final, identified facility modifications to address the concentration of nitrogen compounds in the discharged groundwater. We look forward to meeting with you in July to discuss further. Please feel free to contact me at 714-560-4775 if you have any questions or need additional information.

Sincerely,



Scott E. Martin, P.G.
Manager, EHS – Remediation

cc: Nancy Van Burgel, Kinder Morgan
Kevin Ryan, Kinder Morgan
Katharine Wagner, Downey Brand
Jennifer Rothman, LFR
Beatrice Griffey, SDRWQCB
Jeremy Haas, SDRWQCB

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Attachment No. 1

Total Nitrogen Investigation of Impact
Mission Valley Terminal
9950 and 9966 San Diego Mission Road
San Diego, California
November 14, 2006

LFR ENVIRONMENTAL MANAGEMENT & CONSULTING ENGINEERING

November 14, 2006 002-10175-07

Ms. Whitney J. Ghoram
Sanitary Engineering Associate
Industrial Compliance Unit
California Regional Water Quality Control Board, San Diego Region
9174 Sky Park Court, Suite 100
San Diego, California 92123

Subject: Total Nitrogen Investigation of Impact; Mission Valley Terminal, 9950 and 9966 San Diego Mission Road, San Diego, California

Dear Ms. Ghoram:

LFR, Inc. (LFR) has prepared this letter on behalf of SFPP, L.P., an operating partnership of Kinder Morgan Energy Partners, L.P. (KMEP) to notify you of the current status of efforts aimed at investigating the concentration of total nitrogen in discharges from the subject site and restoring compliance with Order No. 2001-96. The Regional Water Quality Control Board (RWQCB) was first notified of uncharacteristically elevated concentrations of total nitrogen in the March 2006 Monthly and First Quarter of 2006 NPDES Monitoring Report dated April 28, 2006. This report noted that analytical results for quarterly samples collected on January 3, 2006 indicated concentrations in excess of the applicable effluent limitation noted in NPDES General Permit No. CAG919002. Before this time, concentrations of total nitrogen in the treated water discharge had historically remained below reporting limits and below permitted discharge limits.

The March 2006 Monthly and First Quarter of 2006 NPDES Monitoring Report noted that analytical results for quarterly samples collected on January 3, 2006 indicated a total nitrogen concentration of 3.1 milligrams per liter (mg/L), which is above the instantaneous maximum discharge limits of 2.0 mg/L. Historically, concentrations of total nitrogen have remained below the discharge limit, so it was unexpected that this analyte would be detected at this concentration. Subsequent samples collected in fulfillment of quarterly monitoring requirements had detections of total nitrogen of 3.0 and 4.7 mg/L (April 25, 2006) and 2.5 mg/L (July 6, 2006).

As reported in the July 2006 Monthly NPDES monitoring report, subsequent investigation activities included collection and analysis of samples from individual groundwater extraction wells, total extraction influent, as well as confirmation samples of total discharges in order to verify and better characterize the condition. Samples were collected from these locations on August 15, 2006 and analytical results were received on August 29, 2006. These analytical results confirmed the earlier detections of total nitrogen, which appear to be composed of nitrate (NO_3^-) with essentially no contribution from nitrite (NO_2^-) or total kjeldahl nitrogen (TKN). Samples collected upstream and downstream of the discharge outfall at Murphy Canyon Creek (receiving waters) and upstream and downstream of the creek's confluence with the San Diego River were also analyzed for total

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nitrogen constituents. The concentration of total nitrogen observed in the receiving water samples collected upstream and downstream of the discharge outfall were 0.97 mg/L and 1.7 mg/L, respectively. The concentration of total nitrogen observed in the samples collected upstream and downstream of the creek's confluence with the San Diego River were 0.74 mg/L and 0.79 mg/L, respectively.

In response to these results, discussions were initiated with Nautilus Environmental (Nautilus), a local environmental toxicology consultant, to evaluate the potential site specific impacts of the nitrogen concentrations observed in the discharges. A detailed description of a proposed evaluation based on EPA approved methods is attached. The time to complete this study is estimated to be approximately two to three months.

KMEP would like to initiate this study as soon as feasible upon concurrence from the RWQCB regarding the proposed methodology for the evaluation. If you have any questions or comments regarding this matter, please contact Scott Martin, KMEP, at 714-560-4775 or either of the undersigned at 714-444-0111.

Sincerely,

LFR, Inc.

Marcello A. Garbiero
Senior Project Engineer

Jennifer S. Rothman, P.E.
Principal Civil Engineer

Attachment

cc: Kelly Dorsey, RWQCB
Brian Kelley, RWQCB
Nancy Van Burgel, KMEP
Katherine Wagner, Downey Brand
Scott Martin, KMEP

Nautilus Environmental

October 5, 2006

To: Jennifer Rothman/Marcello Garbiero
Levine-Fricke (LFR)

RE: Nitrate Study at the Kinder Morgan Mission Valley Terminal

Dear Jennifer and Marcello,

This letter is to provide you with more detail and associated costs for the proposed investigation into the potential impacts of the elevated nitrate concentrations recently measured in the Mission Valley Terminal (MVT) effluent. This study would involve a two-step approach, which is described below.

The first step would involve a site assessment to qualitatively document the current conditions of the receiving water body both up- and downstream of the discharge, as well as quantitatively characterize the water quality. Water quality measurements would include pH, dissolved oxygen, conductivity, temperature, total nitrogen, nitrate, total phosphorous, and orthophosphate. The conductivity measurements can be used to define the zone of discharge influence. According to information provided by LFR, this zone can vary widely depending on the flow rate of their discharge in comparison to total flow in the creek. Elevated dissolved oxygen and/or pH may be secondary indicators of increased algal production (i.e. would likely be observed where visible algal growth is observed). The nitrogen and phosphorous data, in conjunction with historical data, can be used to determine the natural N: P ratio for the receiving water, which influences the assimilative capacity for nutrient loading.

The second step would include a series of algal growth tests using *Selenastrum*. The test series would include the following evaluations:

1. *Determination of algal growth potential of upstream water prior to addition of the MVT sample:* Test the undiluted upstream sample.
2. *Determine the nitrate assimilative capacity of upstream water:* Test undiluted upstream sample spiked with 0.5, 1.0, 2.0, 5.0, 10, and 20 mg/L of nitrate.
3. *Determine the effect of TDS contributed by the MVT effluent on algal growth:* Test a) a dilution series made with water that mimics natural ion concentrations in MVT effluent diluted with upstream sample; and b) the same dilution series spiked with 5 mg/L nitrate in all dilutions (the highest level measured in recent MVT samples).
4. *Determine the effect of MVT effluent on algal growth:* Repeat Step 3 with MVT effluent. This will allow us to separate the effects of TDS and whole effluent.
5. *Determine the effect of nitrate addition on the downstream receiving water:* Test the downstream sample with and without the addition of 5.0 mg/L nitrate. The primary downstream sample would be collected within the zone of discharge influence. However, depending on conditions observed during the site assessment, collection of two discreet samples may be required.

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Burnaby, British Columbia
V5A 4N7
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Nitrate would be measured in-house using a simple test kit for the low, middle, and high concentrations of each dilution series. Concentrations of the nitrate stock solution used to spike samples, as well as the highest concentration from each test series would be verified by an outside laboratory using more rigorous techniques.

In addition to nitrate, total nitrogen, total phosphorous, orthophosphate, and a suite of major seawater ions will be measured in the upstream, effluent, mimicked effluent TDS, and downstream samples. Please note that an effluent sample will be collected for ion analysis prior to performance of the complete test series. These data will be used to create the mimicked TDS sample, and the concentrations will be verified as part of the complete test series.

A number of documents have been used to aid in establishing the study design. Further review of these documents will also benefit the testing and reporting process. These include the following:

1. Nutrient Criteria Technical Guidance Manual. US EPA Office of Water (EPA-822-B-00-002), July 2000.
2. Ambient Water Quality Criteria Recommendations. Information Supporting the Development of State and Tribal Nutrient Criteria. Rivers and Streams in Nutrient Ecoregion III. US EPA Office of Water (EPA-822-B-00-016), December 2000.
3. National Strategy for the Development of Regional Nutrient Criteria. US EPA Office of Water (EPA-822-R-98-002), June 1998.
4. Basin Plan Amendment and Technical Report for Total Nitrogen and Total Phosphorus Total Maximum Daily Loads for Rainbow Creek (Draft). California Regional Water Quality Control Board, San Diego Region. January 27, 2005.

We are pleased to submit the costs associated with all of the aforementioned tasks (Table 1 on the following page of this letter). Please note that the estimated data analysis and reporting budget (Task 5) takes into account some uncertainty related to this being a rather complex issue. If study results are favorable (i.e nitrate does not appear to be contributing to nuisance plant growth at the concentrations being discharged), we envision preparing a report with substantial support from the literature, possible application of available models, and integration of the field and laboratory data to provide an in-depth justification of the discharge. If the study results show that the concentrations of nitrate have the potential to impair the water body through eutrophication, then the reporting budget would be substantially less (cut by at least two-thirds). This is, in part, due to the fact that unit costs provided for *Selenastrum* testing (under Task 4) include review, analysis, and summary of the test data.

Our proposed approach is, of course, stepwise and we will provide regular data and financial updates throughout the process. Please let us know if you have any questions, or require any additional information. It has been a pleasure working with you, and we look forward to continuing the relationship and providing support for the MVT.

Best Regards,

Chris Stransky
California Operations Manager

Attachment No. 2

Review of Alleged Whole Effluent Toxicity Violations
at Mission Valley Terminal
June 24, 2008

24 June 2008

Marcello Garbiero
LFR Levine-Fricke
3150 Bristol St., Suite 250
Costa Mesa, CA 92626-7324

RE: Review of alleged whole effluent toxicity violations at Mission Valley Terminal

Dear Mr. Garbiero:

On June 6, 2008 the California Regional Water Quality Control Board for the San Diego Region issued Complaint No. R9-2008-0046 alleging certain violations of Order No. R9-2001-0096, NPDES No. CAG919002, *General Waste Discharge Requirements for Groundwater Extraction Waste Discharges from Construction, Remediation, and Permanent Groundwater Extraction Projects to Surface Waters Within the San Diego Region Except for San Diego Bay.* In Table 3 of the letter, the Regional Board asserts that effluent discharges from the Mission Valley Terminal (MVT) exceeded the chronic toxicity limitations on four occasions: once in October, 2005, twice in February, 2006 and once in August, 2006.

I am very familiar with the aforementioned toxicity tests and was directly responsible for performing the Quality Assurance and Quality Control (QA/QC) review on the laboratory data and I assisted LFR Levine-Fricke and the discharger in preparing the Discharge Monitoring Reports (DMR). In each case, I raised serious concerns about the validity of the data and, in two instances, concluded that the results were unreliable and should not be used to assess compliance with NPDES permit limits and documented the basis for this recommendation in written reports.

It is my understanding that my previous reports were transmitted to the Regional Board at attachments to the DMR at the time the suspect data was first reported. Therefore, it is not necessary to repeat the detailed analysis previously provided. Rather, I will simply summarize the key issues.

1) Fathead Minnow Test Performed in October, 2005

Weston Solutions, Inc (WSI) initiated a chronic toxicity test of MVT's effluent, using Fathead minnows, on October 11, 2005. The test was completed on October 18th and the final report was sent to LFR Levine-Fricke on November 11th. The lab reported no apparent toxicity based on the survival endpoint but concluded that there was low-level chronic toxicity (1.3 TUc) based on the growth endpoint.

I reviewed the laboratory results and submitted a written report to LFR Levine-Fricke on January 25, 2006 (copy attached). In my report I concluded that the observed difference in fish growth were a statistical anomaly and that the data should not be certified as a "true and accurate" representation of actual effluent quality on the DMR.

In my report, I explained that control performance was abnormally high. As a result, even though the effluent-exposed fish grew much larger than normal for this particular species, the relative difference compared to control organisms made it appear that the discharge was toxic. I also noted that some of the apparent difference in average fish weight was caused by false assumptions introduced into the calculated means. Specifically, dead fish were assumed to have zero mass regardless of how much they actually weighed. I reanalyzed the data and demonstrated that there was no statistically-significant difference in the average weight per surviving minnow.

I recommended that the discharger report the laboratory results in uncensored form and attach a copy of my reanalysis to the DMR as an explanation for why the data should not be used to assess compliance with permit conditions prohibiting toxicity. It appears that the Regional Board relied on the uncensored data to conclude that a violation occurred; but, it is not clear why the Regional Board concluded that the data was adequately reliable given the concerns documented in the DMR.

I affirm my previous conclusion that control organisms in the subject test were much larger than normal for Fathead minnows and this, in turn, made the effluent-exposed organisms look bad despite the fact that they were also very large for this particular fish species. I also reaffirm my previous conclusion that any relative difference in growth between the control organisms and the effluent-exposed organisms was caused by assuming deceased organisms weighed nothing when there was physical evidence to the contrary.

Therefore, the results of the Fathead minnow growth test performed in October, 2005 are unreliable and inconclusive. This data should not be used to determine compliance with the toxicity limitations in the discharger's NPDES permit.

2) Fathead Minnow Test Performed in February, 2006

Weston Solutions, Inc (WSI) initiated a chronic toxicity test of MVT's effluent, using Fathead minnows, on January 31, 2006. The test was completed on February 7, 2006. The lab reported apparent toxicity based on both the survival endpoint and the growth endpoint. However, the laboratory also noted that the test was unusually sensitive due to low variability among the replicate organisms.

I reviewed the laboratory results and helped LFR Levine-Fricke prepare the DMR submitted in March of 2006. In that DMR, we noted the laboratory's comment and indicated our intention to initiate accelerated testing immediately.

Two additional Fathead minnow tests were performed and neither showed any indication of chronic toxicity. Therefore, in the DMR submitted on May 31, 2006 the discharger concluded that the test failure observed in early February was most likely a statistical anomaly. Such anomalies are a normal and expected occurrence in toxicity testing.

In the period between January, 2005 and January, 2008 fourteen separate chronic toxicity tests were performed on samples of MVT effluent using Fathead minnows. Since the statistical techniques used to analyze the data only provide a 95% confidence level, there is a 5% chance of reporting a false positive (an apparent difference in survival rates caused by sampling error rather than actual effluent toxicity). In fact, given the large number of Fathead minnow survival tests performed during the last three years, there is a 50% chance that at least one false positive will occur within the overall group of tests despite the fact that the probability of a false positive for any single test is relatively low (e.g. 5%).

This problem is better understood by examining the three tests referenced by the Regional Board. In February, 2006 thirty-four out of forty fish exposed to undiluted effluent survived. In October, 2005 thirty-four out of forty fish exposed to undiluted effluent also survived. And, by strange coincidence, thirty-four out of forty fish exposed to undiluted effluent survived in the test completed in August, 2006. However, the first test was considered a "failure" and the lab reported that the other two tests "passed" the survival endpoint. The inconsistency was due to a very small difference in control performance.

In October, 2005 and August, 2006 thirty-nine of the forty (≈98%) fish assigned to the control group survived. However, in February, 2006 all forty control organisms survived. The difference of one fish in the control group was sufficient to cause the discharge to appear toxic in February, 2006 despite the fact that survival rates among effluent-exposed organisms were identical in all three tests.

Results from EPA's interlaboratory WET variability study show that the true natural mortality rate among Fathead minnows, under known non-toxic control conditions, is approximately 2-3%. Therefore, WSI was correct when they concluded that the failure observed in February, 2006 might be due to unusually high test sensitivity caused by abnormally low variability among the control organisms. The apparent failure was not due to any change in effluent quality but, rather, to the lack of normal mortality among control organisms.

Thus, I conclude now as I did in 2006 that the survival data is atypical and should not be used to assess compliance with the NPDES limitations prohibiting toxicity in the effluent discharge. There is no evidence to indicate that the second failure, based on Fathead minnow growth, is a statistical anomaly. The Regional Board can rely on this data to allege that a permit violation occurred. However, EPA guidance repeatedly recommends against initiating an enforcement action based on a single WET test failure.[1] This is especially true, as in this case, where accelerated monitoring shows no persistent pattern of toxicity.

[1] U.S. EPA. 67 Fed. Reg. 223 @ 69,968 (11/19/2002) and EPA's Response to Public Comments included by reference. See also U.S. EPA, Clarifications Regarding Toxicity Reduction and Identification Evaluations in the NPDES Program; May 15, 2001 @ pg. 10.

3) **Fathead Minnow Test Performed in August, 2006**

Weston Solutions, Inc (WSI) initiated a chronic toxicity test of MVT's effluent, using Fathead minnows, on July 25, 2006. The test was completed on August 1 and the laboratory issued a final report on August 24th. The lab reported no apparent toxicity based on the survival endpoint. However, the laboratory did report some low level chronic toxicity based on the growth endpoint.

I reviewed the laboratory results and submitted a written report to LFR Levine-Fricke on October 27, 2006 (copy attached). In my report I concluded that the test results were unreliable because the reference toxicant tests used to demonstrate adequate QA/QC were outside the normal and acceptable range. I further noted that the lab failed to note this problem because they had miscalculated the acceptance range by including historical data that should have been rejected.

As before, I recommended that the discharger report the uncensored results but attach a copy of my written report to the DMR explaining why the data could not be used to assess compliance with toxicity limitations in the permit. The WET results were reported as "Provisional (QA/QC)" on the DMR. The discharger is required to transmit the test data to the Regional Board but is not obligated to certify the results as "true and accurate" representations of actual effluent quality if there is a good faith basis to suspect the information is unreliable.

All subsequent Fathead minnow tests have passed. And, it is important to note that no unusual incidents have occurred in the control data or the reference toxicant tests during this time. Therefore, I conclude that the test failures that occurred 2-3 years ago were more likely due to errors and aberrations in the laboratory then any actual change in effluent quality.

Other Considerations

In 2002, when EPA repromulgated the whole effluent toxicity test methods under 40 CFR Part 136, it stated that the Coefficient-of-Variation (CV) for the Fathead minnow growth test was approximately 0.3 CV.[2] This is a standard way of expressing the expected level of analytical variability in a test method. It is more easily understood by translating the numbers into something more familiar. For example, if an ATM at the bank had a CV of 0.3 and you requested $100 on your debit card, there is a 95% chance that the ATM will deliver somewhere between $40 and $160. In this case, a 0.3 CV translates into an error band of plus or minus 60%.

The same holds true for toxicity testing. The 1.3 TUc values reported in October, 2005 and August, 2006 were well within the known error band of the Fathead minnow growth test method. In fact, when EPA sends out identical split samples to hundreds of laboratories each year as part of the annual DMR-QA Performance Test Program, results routinely vary between 2.0 TUc and 8 TUc for specially prepared solution with a known toxicity of approximately 4.0 TUc. This also one of the reasons the State Water Resources Control Board disallowed the use of numeric WET limits in various NPDES permits issued in 2003.

[2] USEPA. Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Water to Freshwater Organisms, Fourth Ed. EPA-821-R-02-013. October, 2002.

The U.S. Court of Appeals spoke directly to the issue of unavoidable variability in WET testing:

> *[Petitioner's] concern is that some discharge permits may specify an acceptable non-zero level of toxicity, which the effluent may not exceed, and that the WET tests have the potential to produce arbitrary permit violations. For example, if a permittee were subject to a toxicity limit of 3 TUc, and a WET test of its effluent would yield a 2 TUc result most of the time, but up to 4 TUc some of the time, the latter outcome would constitute a permit violation and potentially trigger an EPA enforcement action. This is certainly a problem for which EPA's system must account.*[3]

On a more general level, the U.S. Court of Appeals – D.C. Circuit has also addressed the issue of how measurement error affects enforcement proceedings:

> *The possibility of statistical measurement error, which is often unavoidable where regulations set quantitative standards, does not detract from an agency's power to set such standards, it merely deprives the agency of the power to find a violation of the standards, in enforcement proceedings, where the measured departure from them is within the boundaries of probable measurement error.*[4]

A common misperception is that because the federal courts upheld the general validity of WET test methods, dischargers must accept all test results without reservation. This is not true:

> *"There is an important distinction between the validity of a test method and the validity of a particular result from the test when it is used to determine compliance with permit conditions. Even by EPA's calculations, WET tests will be wrong some of the time, which is why EPA warned against using a single test result to institute an action for a civil penalty. Nothing we have written thus far, and nothing we write in the balance of this opinion forecloses consideration of the validity of a particular test result in an enforcement action. That issue is not before us. The case involves only the validity of WET test methods…we are concerned here only with test methodology, not results of particular tests in the field. Our decision does not endorse the validity of any test result in the future, nor does it foreclose a defense that the result is wrong. Those issues are simply not presented in this judicial review of rulemaking."*[5]

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[3] Edison Electric Institute, et al v. Environmental Protection Agency; Case No. 96-1062; Dec. 10, 2004; pg. 8
[4] Amoco Oil Co. v. EPA, 501 F.2d 722, 743 (D.C. Cir. 1974) (emphasis in orig.).
[5] Edison Electric Institute, et al v. Environmental Protection Agency; Case No. 96-1062; Dec. 10, 2004; pg. 9

Finally, even if one assumes that the reported differences in Fathead minnow growth rates are "real," it does not necessarily mean the effluent is toxic. The WET test method is poorly suited to measure certain types of water. For example, pure rain water will routinely fail chronic toxicity tests not because of pollution in the precipitation but, rather because rainwater has relatively low pH and lacks many essential micronutrients. The same problem has been repeatedly reported for many groundwater samples. Well water is often too clean to grow big fish; there just aren't enough micronutrients in the water.

The ionic chemistry of natural groundwater is also known to interfere with some WET test methods. Kinder-Morgan worked closely with the Regional Board to select an alternate test species (Hyallela azteca) when it was discovered that natural ionic imbalances in the local groundwaters were causing false failures in the Ceriodaphnia dubia method. And, similar concerns have recently arisen with natural calcium concentrations causing potential interference with the green algae toxicity test.[6] Therefore, when groundwater samples appear to fail the WET test, the results must be carefully investigated and confirmed before concluding that the discharge actually violated an effluent limitation.

Of the four violations cited by the Regional Board as evidence of chronic toxicity in MVT's effluent all but one can be more easily attributed to analytical error or method variability then to effluent toxicity. And, the one remaining failure (Fathead minnow growth in February, 2006) could not be confirmed in subsequent accelerated monitoring. Therefore, it is probably appropriate in this instance to heed EPA's guidance and avoid initiating an enforcement action based on a single WET test failure. As demonstrated earlier, and acknowledged by EPA, such infrequent failures are an unavoidable part of using an inherently imperfect method:

> *"The interpretation of the results of the analysis of the data from any of the toxicity tests described in this manual can become problematic because of the inherent variability and sometimes unavoidable anomalies in biological data."*[7]
>
> *"The allowable frequency for criteria excursions should refer to true excursions of the criteria, not to spurious excursions caused by analytical variability or error."*[8]

Timothy F. Moore, President, Risk Sciences

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[6] See, for example, Finding #13 on page 6 of Complaint No. R9-21008-0046 (dated June 6, 2008)

[7] USEPA. Short-Term Methods for Estimating the Chronic Toxicity of Effluent and Receiving Water to Freshwater Organisms, Fourth Ed. EPA-821-R-02-013. October, 2002. Section 9.4.1.1 @ pg. 39

[8] U.S. Environmental Protection Agency. Technical Support Document for Water Quality Based Toxics Control - Responsiveness Summary, May 9, 1991, Item 12 @ pg. 11

25 January 2006

Marcello Garbiero
LFR Levine-Fricke
3150 Bristol St., Suite 250
Costa Mesa, CA 92626-7324

RE: Fathead minnow WET Test Performed in October, 2005 on Mission Valley Effluent

Dear Mr. Garbiero:

On October 11, 2005 Weston Solutions, Inc. (WSI) initiated a chronic toxicity test of effluent samples from Mission Valley Terminal using Fathead minnows. That test was concluded on October 18th and a final report sent to LFR Levine-Fricke on November 11th. The laboratory observed no apparent toxicity based on the survival endpoint, however, WSI reported low levels of chronic toxicity based on the growth endpoint (NOEC = 75%, IC25 = 87%).

I have reexamined all results from the test and performed an independent statistical analysis of the data. Based on this review, I conclude that there is not a statistically-significant difference in fish weight after controlling for other relevant factors that bias the data.

I recommend that you report the uncensored results to the Regional Board just as the laboratory reported them to you. However, I also recommend that you do not certify the laboratory's conclusions as a "true and accurate" representation of actual effluent quality. A copy of my report should be appended to the DMR to explain the basis for withholding full certification of the data. The basis for my recommendations follows.

Re-Analysis of Fathead minnow Chronic Survival Data

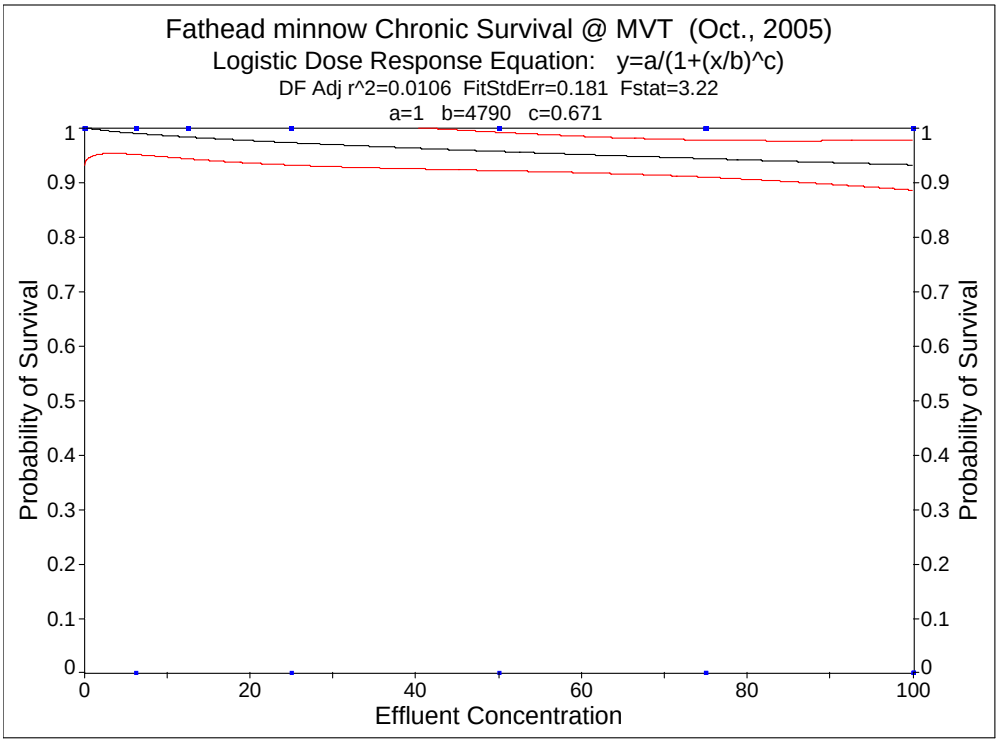
WSI exposed 282 Fathead minnows to various effluent concentrations for 168 hours. Approximately 40 fish were assigned to each of seven treatment groups. Results are summarized in Table 1. There was no statistically-significant increase in mortality in any of the effluent-exposed treatment groups when compared to the control group. Consequently, the laboratory correctly reported that the No-Observed-Effect-Concentration (NOEC) for Fathead minnow survival was 100%.

Table 1: Survival Data from Fathead minnow Test in October, 2005

Effluent Concentration	Number Alive	Percent Survival	Significant Difference?
0% (control)	40 out of 40	100%	n/a
6.25%	41 out of 42	97.6%	No
12.5%	40 out of 40	100%	No
25.0%	39 out of 40	97.5%	No
50.0%	39 out of 40	97.5%	No
75.0%	38 out of 40	95.0%	No
100%	34 out of 40	85.0%	No

In addition, logistic regression analysis demonstrates the absence of any statistically-significant dose-response relationship (see Fig. 1). The estimated probability of survival ranges between 94% and 100% for control organisms and between 89% and 98% for the minnows exposed to undiluted effluent.

Figure 1: Non-Linear Dose-Response Analysis of Chronic Survival Data



The absence of any statistically-significant increase in mortality and of any statistically-significant dose-response relationship means that the null hypothesis cannot be rejected and that the effluent must continue to be presumed non-toxic.

Re-Analysis of Fathead minnow Growth Data

WSI exposed 282 Fathead minnows to various effluent concentrations for 168 hours. Approximately 40 fish were assigned to each of seven treatment groups. At the end of the test, the fish were dried and weighed. Results are summarized in Table 2.

Table 2: Growth Data from Fathead minnow Test in October, 2005

Effluent Concentration	Avg. Weight (per original fish)	Significant Difference?	Avg. Weight (per surviving fish)	Significant Difference?
0% (control)	0.898	n/a	0.898	n/a
6.25%	0.981	No	1.006	No
12.5%	0.968	No	0.968	No
25.0%	1.031	No	1.057	No
50.0%	0.993	No	1.019	No
75.0%	0.819	No	0.861	No
100%	0.638	Yes	0.751	No

There was no statistically-significant reduction in weight observed for five of the six treatment groups. Only the minnows exposed to undiluted effluent showed a statistically-significant weight reduction when compared to the control group. Consequently, the laboratory reported that the No-Observed-Effect-Concentration was 75% effluent and the estimated IC25 was 87% effluent.

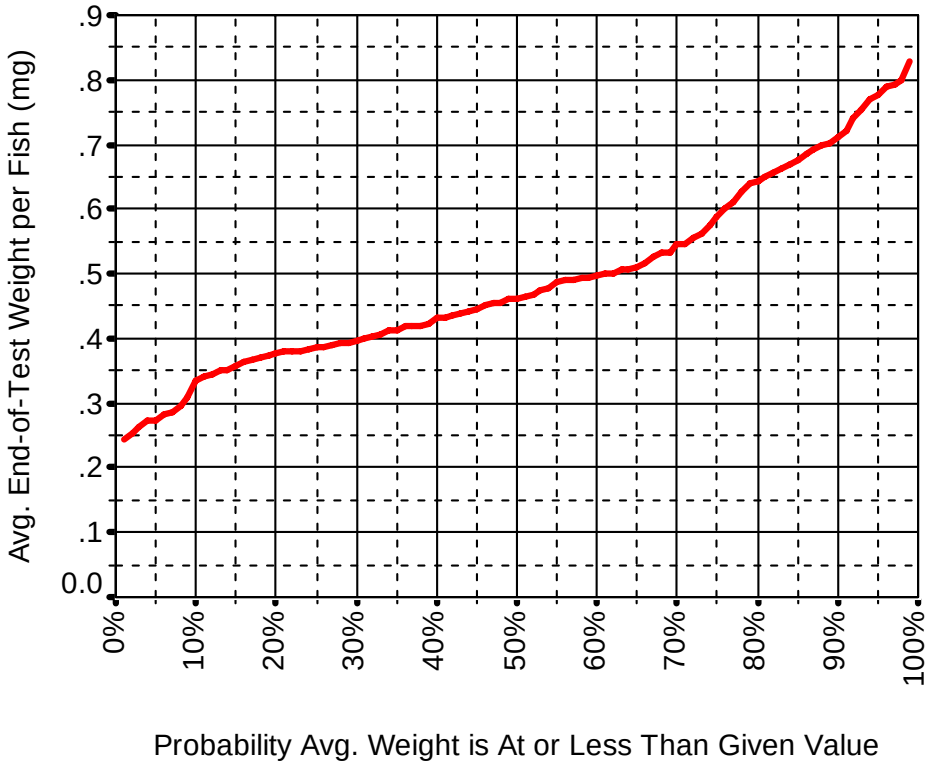
However, the laboratory's statistical analysis was based on the average-of-test weight per original fish. This approach is biased by the fact that all dead fish are assumed to weigh zero milligrams regardless of the actual true weight of these individual organisms. The bias is apparent in the data shown in Table 2.

Among control organisms (e.g. 0% effluent exposure), there is no difference between the average weight per original fish and the average weight per surviving fish because no mortality occurred in that treatment group. However, there is a large difference between the average weight per original fish (0.638 mg/fish) and the average weight per surviving fish (0.751 mg/fish) in the last treatment group. This occurs because six of the forty fish exposed to undiluted effluent died. These six fish were assumed to weigh nothing when then averages were calculated. If those six fish are excluded entirely from the calculations, then the weight per surviving fish is no longer significantly different than the control organisms because it is only 16% lower not 29% lower as originally estimated.

In addition, it is important to note that the average weight recorded for all of the treatment groups was well above the average for this test species under known non-toxic conditions even if one bases the calculation on the number of original fish rather than the number of surviving fish. Figure 2 shows the normal range of growth for Fathead minnows in non-toxic dilution water measured during EPA's study of WET variability[1].

[1] U.S. EPA. Final Report: Interlaboratory Variability Study of EPA Short-term Chronic and Acute Whole Effluent Toxicity Test Methods-Vol. 1 & 2; EPA-821-B-01-004; September, 2001.

Fig. 2: Fathead minnow Growth in Non-toxic Dilution Water



The median end-of-test weight for Fathead minnows exposed solely to non-toxic dilution waster is 0.46 mg/fish. The minnows exposed to samples of Mission Valley's undiluted effluent in October, 2005 weighed approximately 0.64 mg/fish. That is equivalent to the 80th percentile on the normal, non-toxic performance curve.

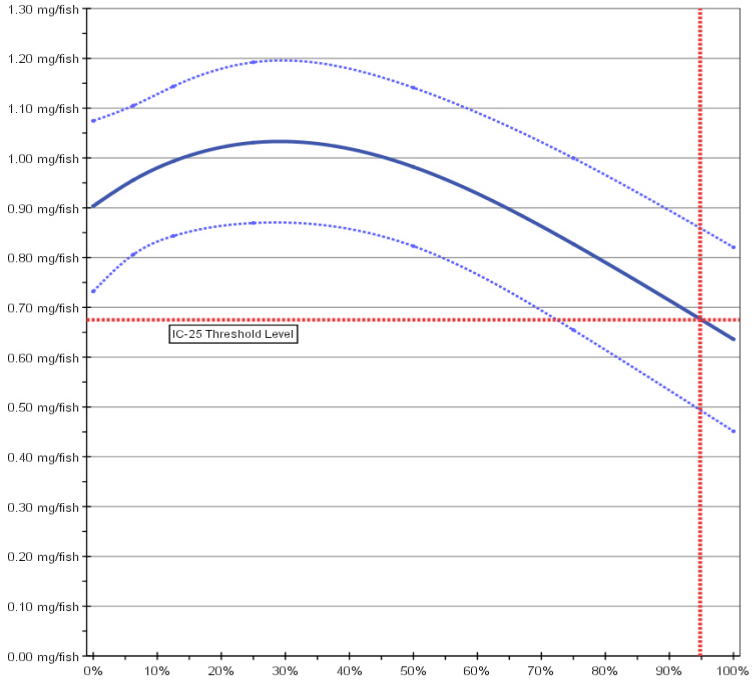
It is illogical to conclude that fish that grow much larger than average for their species are evidence of toxicity because of insufficient weight gain. The fallacy can be better explained by examining the control data from Mission Valley's test in greater detail.

Control organisms weighed an average of 0.898 mg/fish at the end of the 7-day test period. This is beyond the 99th percentile of normal performance for the species. In other words, the Fathead minnows assigned to the control group in Mission Valley's chronic toxicity test were statistically-significantly larger when compared to a very large sample of control organisms from similar tests performed at other highly qualified labs throughout the country. The effluent group only appears to be toxic because the control organisms performed so well not because the effluent-exposed organisms performed poorly.

Finally, it appears that the IC-25 was miscalculated due to "smoothing error." Smoothing error occurs when the average weight in some of the lower effluent concentrations is actually greater than the control group. The statistical software averages the weight of all these treatment groups together with the control group to form a new (and higher) estimate of control performance.

In this instance, the true end-of-test average weight for the actual control group was 0.898 mg/fish. However, after the software combines results from the 6.25%, 12.5%, 25% and 50% effluent concentrations with the original control group, the new estimate of the average control performance is 0.974 mg/fish. The new estimate is 8.4% higher than the true value for the control group. And, the higher estimate makes it appear that the lower weight measured among organisms exposed to undiluted effluent is worse than it actually was.

Fig. 3: Smoothing Error Corrected in Fathead minnow Growth Data



EPA guidance acknowledges the existence of "smoothing error" and allows appropriate corrections to be applied before interpreting the test data.[2] EPA identified and corrected several such errors during their interlaboratory variability study.[3] After making such corrections to the Fathead minnow growth data from the test performed on Mission Valley's effluent in October, 2005 it is evident that the estimated IC-25 is approximately 95% effluent. And, the 99% confidence interval for the estimated IC-25 ranges between 72% effluent and >100% effluent (see Figure 3, above).

[2] Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing (40 CFR Part 136). EPA-821-B-00-004; July, 2000. See pages 4-8 thru 4-10 for explanation of smoothing error.

[3] U.S. EPA. Final Report: Interlaboratory Variability Study of EPA Short-term Chronic and Acute Whole Effluent Toxicity Test Methods-Vol. 1 & 2; EPA-821-B-01-004; September, 2001. See, for example, pages 63-64 & 77.

Conclusions

The Fathead minnow growth should not be used to certify the presence or absence of toxicity in the Mission Valley effluent sample tested in October, 2005. Control performance was outside the normal range for the species and is, therefore, unrepresentative. In addition, biases introduced by the averaging procedure and the smoothing techniques severely undermine the reliability of subsequent statistical analyses.

Respectfully submitted,

Timothy F. Moore
President

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27 October 2006

Marcello Garbiero
LFR Levine-Fricke
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RE: Fathead minnow WET Test Performed in July, 2006 on Mission Valley Effluent

Dear Mr. Garbiero:

On July 25, 2006 Nautilus Environmental initiated a chronic toxicity test of effluent samples from Mission Valley Terminal using Fathead minnows. That test was concluded on August 1st and a final report issued on August 24th. Nautilus observed no apparent toxicity based on the survival endpoint, however, the laboratory reported low levels of chronic toxicity based on the growth endpoint (NOEC = 50%).

I have reexamined all results from the test and performed an independent statistical analysis of the data. Based on this review, I conclude that the test results are unreliable and inconclusive based on poor performance in the reference toxicant tests.

I recommend that you report the uncensored results to the Regional Board just as the laboratory reported them to you. However, I also recommend that you do not certify the laboratory's conclusions as a "true and accurate" representation of actual effluent quality. A copy of my report should be appended to the DMR to explain the basis for withholding full certification of the data. The basis for my recommendations follows.

Re-Analysis of Fathead minnow Chronic Survival Data

Nautilus exposed 280 Fathead minnows to various effluent concentrations for 166 hours. Forty fish were assigned to each of six treatment groups. Results are summarized in Table 1. There was no statistically-significant increase in mortality in any of the effluent-exposed treatment groups when compared to the control group. Consequently, the laboratory correctly reported that the No-Observed-Effect-Concentration (NOEC) for Fathead minnow survival was 100%.

Table 1: Survival Data from Fathead minnow Test in October, 2005

Effluent Concentration	Number Alive	Percent Survival	Significant Difference?
0% (control)	39 out of 40	98%	n/a
13%	39 out of 40	98%	No
25%	38 out of 40	95%	No
50%	37 out of 40	93%	No
75%	33 out of 40	83%	No
100%	34 out of 40	85%	No

Re-Analysis of Fathead minnow Growth Data

Nautilus exposed 280 Fathead minnows to various effluent concentrations for 166 hours. Forty 40 fish were assigned to each of six treatment groups. At the end of the test, the surviving fish were dried and weighed. Results are summarized in Table 2.

Table 2: Growth Data from Fathead minnow Test in July, 2006

Effluent Concentration	Avg. Weight (per original fish)	Significant Difference?	Avg. Weight (per surviving fish)	Significant Difference?
0% (control)	0.428 mg	n/a	0.438 mg	n/a
13%	0.409 mg	No	0.420 mg	No
25%	0.359 mg	No	0.378 mg	No
50%	0.360 mg	No	0.390 mg	No
75%	0.286 mg	Yes	0.347 mg	No
100%	0.238 mg	Yes	0.282 mg	Yes

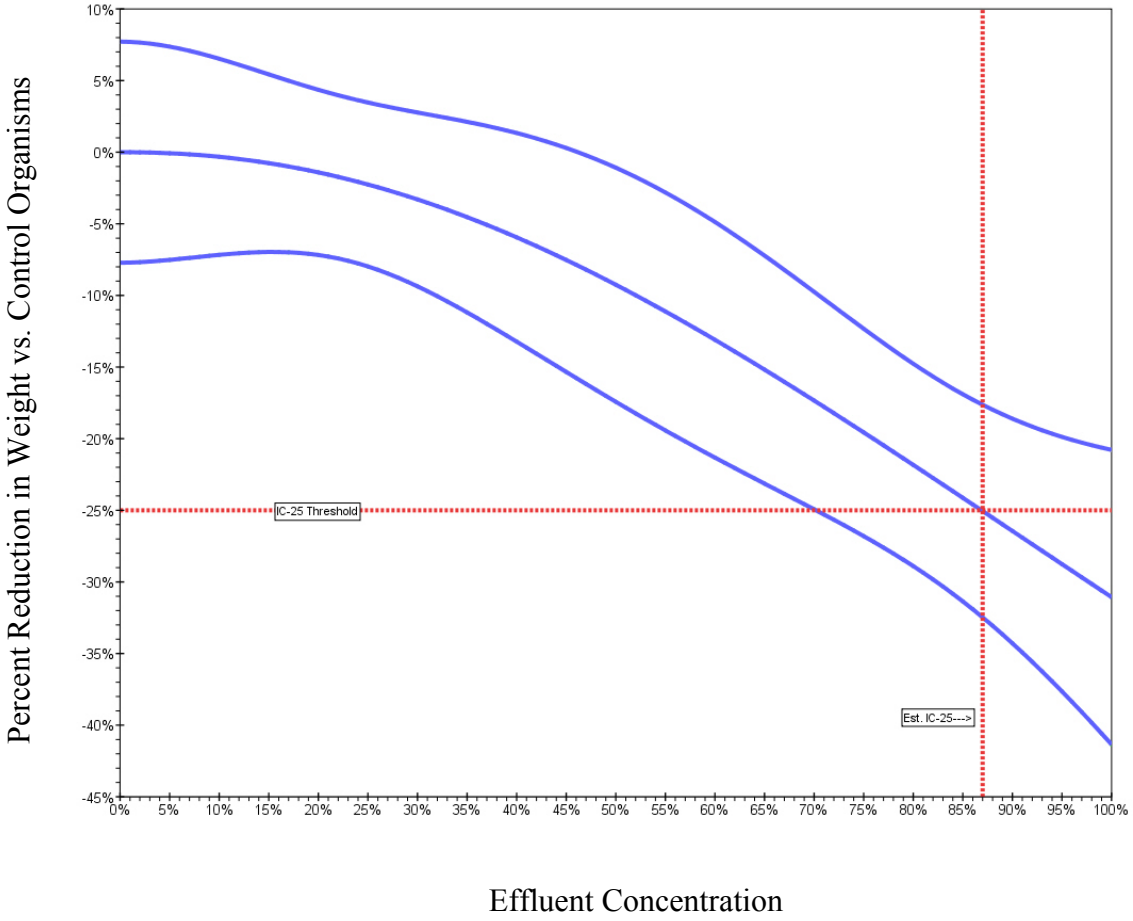
There was a statistically-significant reduction in growth observed for in the two highest effluent concentrations (75% & 100%) when the average weight is calculated based on the number of fish originally assigned to each treatment group (aka "biomass"). However, only the undiluted effluent caused a significant reduction in growth when calculated based on the average weight of surviving fish.

It is more appropriate to use the latter metric in this instance. Dead organisms are discarded prior to weighing the remaining fish at the end of each test. Therefore, if the average is calculated based on the number of fish originally assigned to each treatment group, the result is biased lower by the false assumption that each dead fish weighed zero grams. This would be an acceptable approach if it had already been determined that there was a statistically-significant difference in mortality observed among the treatment groups. However, that did not occur here. There was a difference in survival, but it was not statistically-significant.

Since fewer organisms survived in the undiluted effluent, one would expect the total cumulative weight of all remaining organisms to be less. And, if one divides that total by the number of original organisms, it will (by definition) be less than if one divided by the number of surviving fish. Therefore, the observed difference in average weight may be more related to the fact that the weight of some fish was assumed to be zero when, in reality, it was not.

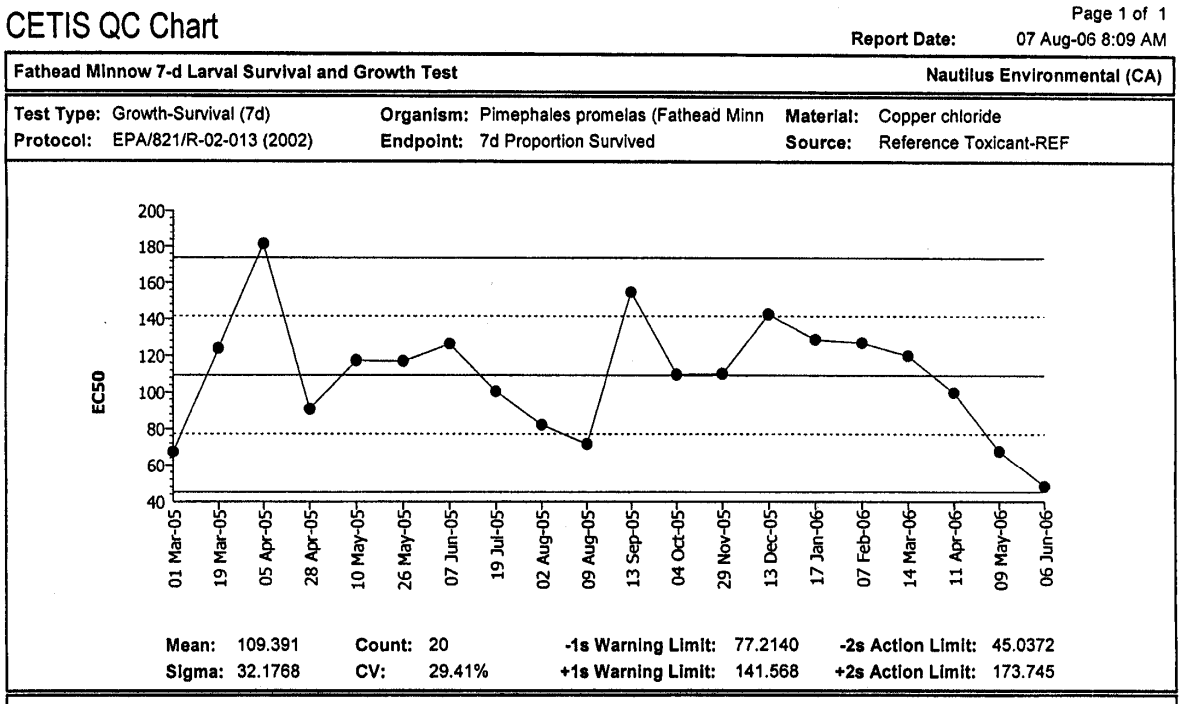
Using non-linear regression analysis, I re-estimated the IC-25 based on the average weight per surviving fish. The IC-25 is approximately 87% effluent and the 95% confidence level ranges between 70% and >100% effluent. The estimated adverse effect ranges between 21% and 31% inhibition in the undiluted effluent. Because it is uncertain whether or not the IC-25 falls above or below 100% effluent, results from this test are inconclusive. Results are shown in the following chart.

Fig. 1: Fathead minnow Growth



In addition, close inspection of the reference toxicant test results reveals that the culture organisms were abnormally sensitive at the time MVT's effluent was analyzed. Figure 2 shows the reference toxicant control chart that was provided by Nautilus Laboratory.

Fig. 2: Reference Toxicant Control Chart for Fathead minnow Survival @ Nautilus

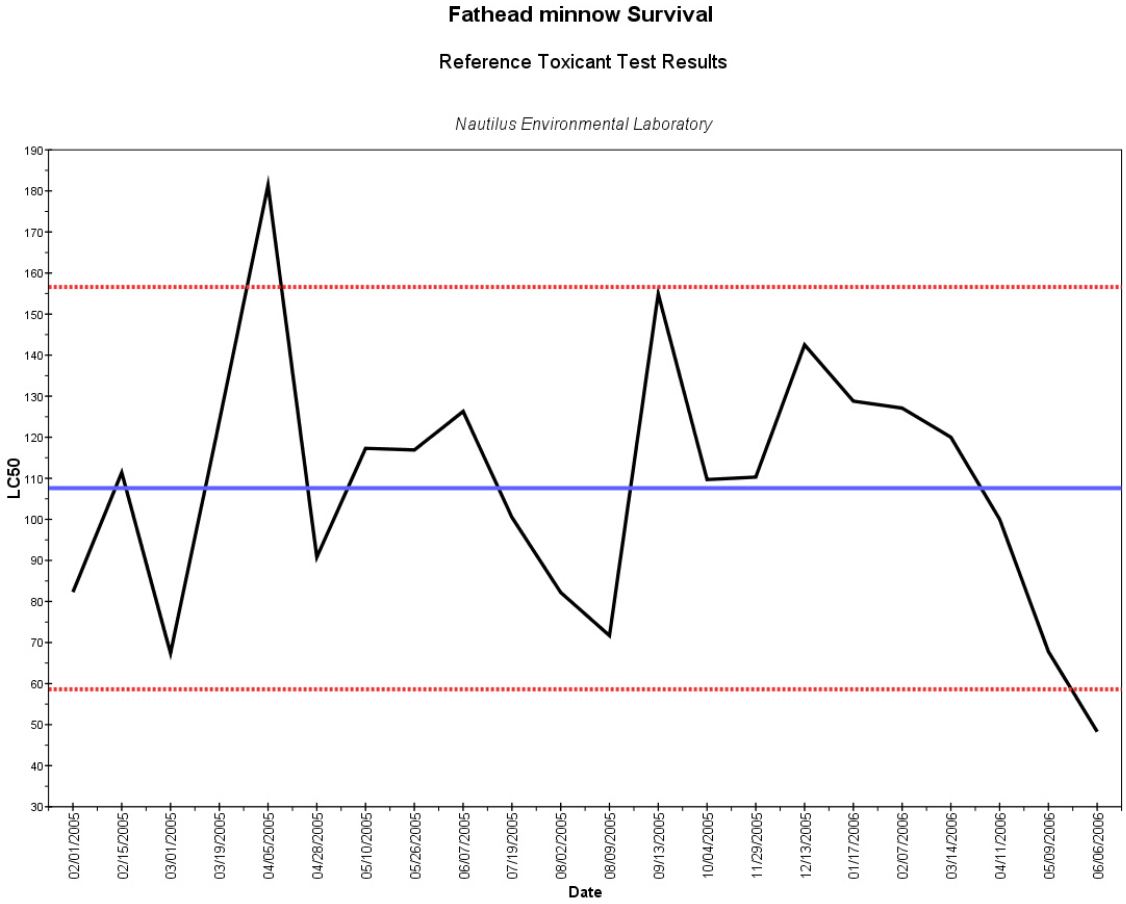


The estimated LC50 in June of 2006 was 48.3; the warning limit was 77.2 and the action limit was 45.0. Therefore, Nautilus found that the reference toxicant results were within the "acceptable" range (e.g. greater than 45). However, the acceptance range was incorrectly calculated.

Nautilus use the twenty most recent reference toxicant test results to calculate the acceptance range. However, their graph shows that the test result from April 5, 2005 was well outside the normal range. That value should not have been used to calculate the acceptance range for subsequent tests.

In addition, it is improper to use the current test result to calculate the tolerance range for evaluating the acceptability of that same test result. Rather, the acceptance range should be calculated based on the twenty previous valid reference toxicant test results. Figure 3 shows the reference toxicant control chart after properly calculating the acceptance range.

Fig. 3: Corrected Reference Toxicant Control Chart



Using the twenty previous valid reference toxicant test results (e.g. excluding the extreme value recorded in early April, 2005 and the current test) shows that the reference toxicant test performed in June, 2006 was well below the acceptable range. This does not automatically disqualify the test, but it does indicate that the results may be unreliable. The data should not be relied on to certify adherence to or violation of the WET limit in MVT's NPDES permit. Results should be considered provisional pending confirmation in the next scheduled WET test.

Respectfully submitted,

Timothy F. Moore, President

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