Catalyst
ENVIRONMENTAL SOLUTIONS

Technical Memorandum

Date: September 6, 2018

To: Ms. Franca Rosengren

From: Daniel Tormey, Ph.D., P.G.

RE: **Ri-Nu Services LLC Application to Reinstate Conditional Use Permit Application No. PL15-0106**

At your request, I have reviewed the application materials provided by Ri-Nu LLC and predecessor companies at the former SCWW facility located at 815 Mission Rock Road in Santa Paula, California. I have two recommendations that should be provided to the Project applicants so that they can conduct the analysis that would lead to augmenting their Project description. One recommendation has to do with the hazards identified by the explosion that occurred at the facility in November 2014, and the other has to do with the condition of the 12-mile long sewer discharge line connecting the facility to the City of Oxnard wastewater treatment plant.

Risk Evaluation and Resulting Plans and Training

The facility experienced an explosion in November 2014, and a February 27, 2015 letter from Michael Bradbury provides a *Root Cause Investigatory Report*. The report indicates that a tote(s) of sodium chlorite, properly labeled and contained, was delivered to the facility as part of a proposed program to address odors in the pipeline, but was never used. Subsequently, the product in the tote was introduced into a vacuum truck with other materials with which the strongly oxidizing sodium chlorite was chemically incompatible, resulting in an explosion and other hazardous conditions that affected first responders. The conclusion of the *Root Cause Investigatory Report* was that certain policy changes should be implemented:

1) Facility will no longer accept any wastewater contained in totes.
2) Additional targeted safety training will reinforce this new tote policy

The administrative record includes a June 20, 2013 *Safety Handbook* prepared for the Santa Clara Waste Water Company by Green Compass. The Safety Handbook was in force at the time of the explosion. It includes specific measures to address safe transfer of materials stored in totes, specific provisions regarding chemical incompatibilities, and extensive requirements for training and record keeping. In summary, the policies and procedures in place prior to the

explosion include the two items identified by the *Root Cause Investigatory Report*, as well as additional measures, that proved to be inadequate to reduce the explosion risk at the facility. In addition, the *Root Cause Investigatory Report* specifies a prohibition on storage of wastewater in totes, but the root cause involved the storage or a product in totes.

The administrative record also includes a Draft *Operations and Maintenance Manual*, prepared by Ensafe Inc. in January 2017 for Ri-Nu, and focuses on the wastewater treatment plant. In many ways this manual is a step backwards from the pre-explosion *Safety Handbook*. This is in part due to the 2017 manual's focus on the wastewater treatment plant and not the entire facility, but there is no other plan in the record that would include post-explosion lessons learned and corrective measures. Specifically, the 2017 plan makes no reference to the explosion or to the causes of the explosion, and very minor mention of the chemical incompatibilities known to occur at the facility (less than in the 2013 *Safety Handbook*). There is no mention of "new policies" or "new training" specified in the *Root Cause Analysis Investigatory Report*, even these do not appear to address the root cause identified (use of a tote for product storage, and introducing it into a vac truck).

To assist the County in their consideration of whether or not to reinstate the Conditional Use Permit and allow an expansion of the operations at the facility compared to pre-explosion operations, I recommend that the Applicants conduct a *Risk Management Analysis* for the facilities proposed operations. The analysis would be conducted and facilitated by a firm with experience in this analysis and approved by the County prior to conducting the work. Such an analysis is common in the field of managing process risks at industrial facilities, particularly after an event, such as an explosion, that demonstrates "business as usual" is not adequate to protect the facilities, first responders, and the public.

The analysis would fully address chemical use, storage, handling, and disposal, with a focus (although not an exclusive focus) on chemical incompatibilities and toxicity. I would recommend that, after the firm conducting the work is selected, that the County review and approve their workplan to ensure that the objectives of this recommendation are met.

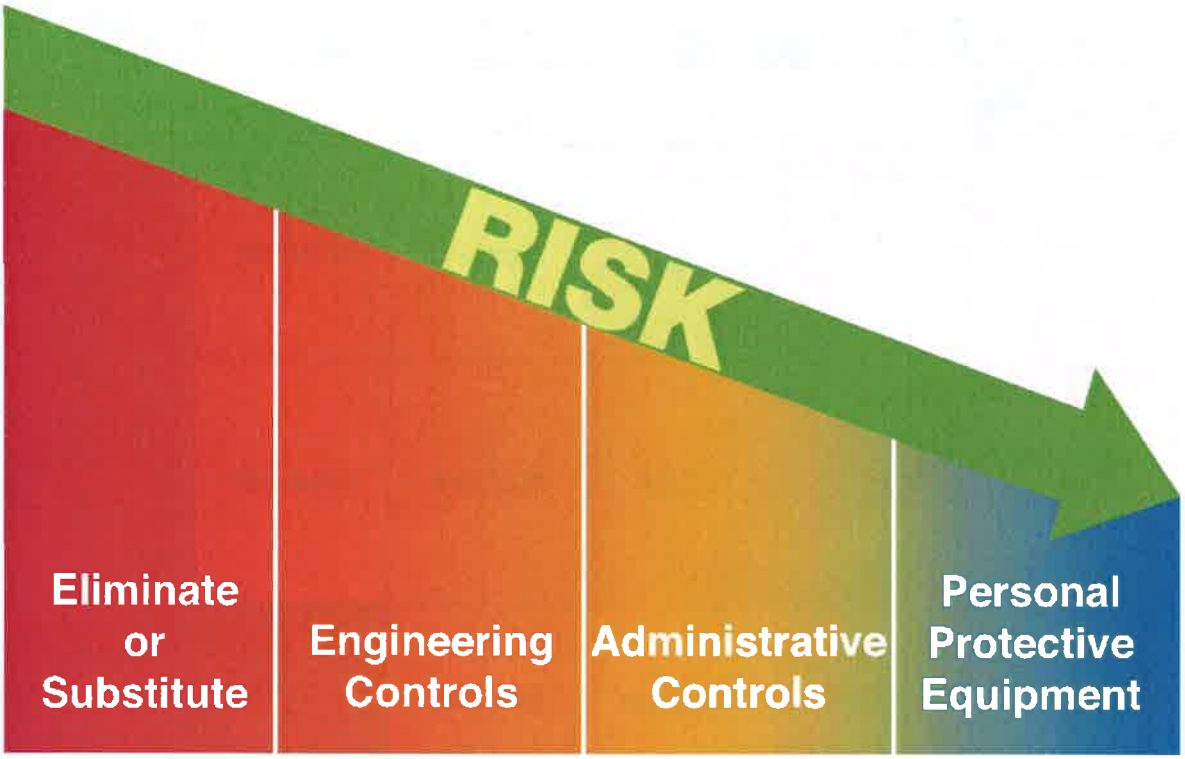
The general scope of the analysis would be as follows:

1) The selected firm would conduct a review of past and proposed chemical use, storage, handling, and disposal at the facility and develop a list of actions, potential adverse consequences, and the likelihood of occurrence of the adverse consequences. The summary would also include likely receptors (workers, first responders, public), and include a site inspection.

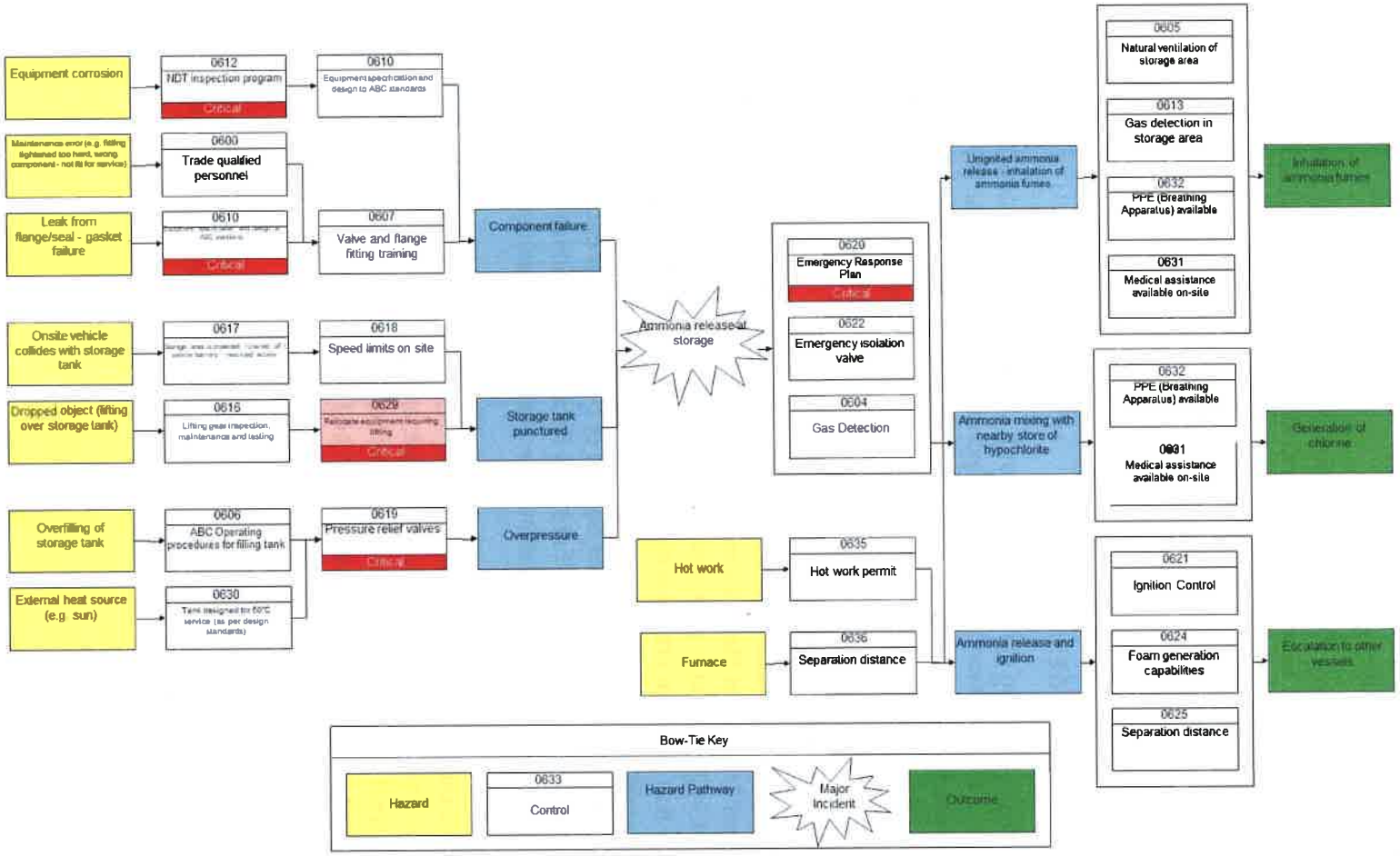
2) The selected firm would facilitate a workshop or workshops with Ri-Nu management and staff to rank the likelihood of occurrence and consequence level of accident conditions. A typical graphical tool supporting this facilitate workshop, and leading to a prioritization of process risks, is shown below. If no management or staff are available, the firm could conduct the ranking based on their experience and on their observations of the facility and future construction plans.

	CONSEQUENCES				
LIKELIHOOD:	1 Extreme	2 High	3 Medium	4 Low	5 Negligible
Frequent 1	Extreme	High	Medium	Medium	Low
Occasional 2	Extreme	High	Medium	Medium	Low
Possible 3	High	Medium	Medium	Low	Low
Unlikely 4	High	Medium	Low	Low	Low
Improbable 5	Medium	Low	Low	Low	Low

3) For the highest risk level actions, and specifically including those triggered by chemical incompatibilities that could lead to explosion, develop preventative measures. The measures are typically selected based on a preferred hierarchy of controls, with preference given to either elimination of the risk or to an engineering control to reduce the risk, followed by less preferable training and personal protective equipment as the only preventative measures. A typical graphic illustrating this is shown below.



4) For the specific causes, consequences, and likelihood of the sodium chlorite-triggered explosion, include a more detailed evaluation of the root cause, controls (including those that failed), and consequences. A typical graphic illustrating this is shown below.



Note that this graphic applies to an explosion related to a release from an ammonia tank, but the process depiction is applicable.

5) Develop designs, plans, and procedures that implemented the risk reduction measures. Such plans will in part depend on the outcome of the *Risk Management Analysis*, but at a minimum would include:

    a. *Risk Management Plan*, summarizing all of the proposed actions and control points; the plan should be suitable to allow inspection by VC EHD to ensure that all elements are in place and operational

    b. *Emergency Response Plan*, with contingency measures for such things as response actions under conditions of an accident-induced power outage

    c. *Training Plan*, with specific modules identified that reflect the outcome of the Risk Management Analysis and provisions for record keeping, available for inspection by VC EHD

    d. Provisions for an annual *Spill Drill* with the local first responders, to ensure that both facility personnel and first responders are aware of facility risks by location, safe response actions, and other components.

The material provided by the Applicant under this recommendation would be included in the Project Description as Applicant-proposed measures related to safety.

Pipeline Condition Assessment and Repair

The administrative record includes data that the pipeline connecting the facility to the City of Oxnard Wastewater Treatment Plant is impaired, in part because it failed a pressure test and experienced a leak in 2015, and in part owing to concerns related to internal corrosion. The inspections of the line after the pressure test, however, only appeared to evaluate external corrosion, not internal. The observations did, however, note sediment buildup in the line which would indicate low flow conditions and the buildup of chemicals and bacteria that could lead to deleterious levels of internal corrosion. There is no data in the administrative record indicating any further testing of the pipeline. The pipeline operates under a franchise agreement with the County of Ventura.

Prior to allowing further use of the pipeline, I would recommend that the County require testing for pipeline integrity by another pressure test, and an electromagnetic test of wall thickness using a smart pig too. The electromagnetic testing would identify "anomalies" with relatively low wall thickness that would be exposed and tested for actual wall thickness. If the anomaly level tested in the first round indicates inadequate wall thickness, then the contractor will evaluate anomalies at a lower level.

I understand that the City of Oxnard may have additional concerns related to odor, sedimentation that may restrict pipe flow, and other matters. These are not necessarily addressed by the pipeline integrity testing.