

**ADDENDUM to the
14 October 2005 Draft *Additional Remedial Investigation Work Plan*
160-Acre Parcel, Rialto, California
14 November 2005**

BACKGROUND

This *Addendum* has been prepared to supplement the 14 October 2005 Draft *Additional Remedial Investigation Work Plan* (Work Plan), which outlines work to continue the remedial investigation concerning the “160-acre parcel” located in Rialto, California (the Site), with respect to the occurrence of perchlorate and trichloroethylene (TCE) in groundwater. This Addendum is intended to provide additional detail related to the scope of work of the Additional Remedial Investigation and to clarify the objectives and context of the investigation. This Addendum responds to various comments submitted by the United States Environmental Protection Agency (USEPA) and other entities about the Work Plan. The Work Plan and this Addendum were prepared by GeoSyntec Consultants, Inc. (GeoSyntec), on behalf of Goodrich Corporation (Goodrich), in cooperation with the Regional Water Quality Control Board, Santa Ana Region (RWQCB).

ADDITIONAL EXPLANATION AND CLARIFICATION OF WORK PLAN

Objective of the Work Plan

This Work Plan is part of the multi-step Remedial Investigation/Feasibility Study process proscribed in the National Oil and Hazardous Substance Pollution Contingency Plan (NCP), 300 CFR 300, *et seq.*, for addressing potential releases of perchlorate and TCE associated with the use of the Site. Prior phases of the Remedial Investigation process have included an investigation of groundwater and soils at the Site as described in the 24 March 2005 draft *Remedial Investigation (RI) Report* [GeoSyntec, 2005a]. Additional investigations of the Site, other suspected sources and sites, and the region’s groundwater have been performed by other potentially responsible parties to varying degrees pursuant to orders and directives of the RWQCB.

As noted in the Work Plan, the purpose of the investigation is to collect data necessary (i) to assess the nature and extent of contamination and the threat, if any, to

the public health, welfare, or the environment caused by the release or threatened release of hazardous substances, pollutants or contaminants at or from the Site; and (ii) to adequately characterize the Site conditions for the purpose of developing and evaluating effective remedial alternatives. In particular, the primary objectives of the proposed investigation are to evaluate the extent of perchlorate and TCE migration and to obtain data needed to develop a remedy for contaminated groundwater potentially originating from the Site.

More specifically, the intent of this Additional Remedial Investigation is to define the downgradient extent of the potential perchlorate and TCE plume(s) and to characterize the groundwater quality in and around the areas of certain groundwater production wells reported to contain perchlorate and/or TCE. As noted above, this Work Plan is intended to collect data to support the analysis and design of potential response actions through the preparation of a feasibility study. After obtaining the data described in the Work Plan, a feasibility study may be prepared to develop appropriate remedial alternatives and select an appropriate remedy. One potential remedial alternative is the installation of a barrier groundwater treatment system at the downgradient edge of the plume. If an extraction system consisting of a row of barrier wells were to be considered as a remedial alternative, it will be important to place these extraction wells at the downgradient edge of the plume(s); the proposed well locations have been designed with this in mind. Specific rationale for each of the five proposed groundwater monitoring well locations is provided below.

Additional steps outside of the Work Plan in the RI/FS process could include additional remedial investigation, investigation to gather data potentially necessary for the design of a remedial system (e.g., aquifer testing), and preparation of a feasibility study of potential remedial alternatives.

Groundwater Monitoring Well Installation

Monitoring Well Locations

Five locations for multi-level groundwater monitoring wells are proposed, with the potential for the installation of four additional wells, based on analytical results from the first five locations. The wells were located based on the direction of groundwater flow in the basin, the current distribution of groundwater monitoring and

production wells in the basin and the November / December interpretation of the plume prepared by USEPA and its contractor (Figure A). The well locations were checked in the field for accessibility concerns and are believed to be physically accessible, mostly in public right-of-way, subject to landowner permission. The specific rationale for each well location is outlined below:

- PW-5 is intended to evaluate the transitional area between the “eastern plume” (i.e., from the 160-acre parcel) and the “western plume” (i.e., from the Mid-Valley Sanitary Landfill and historical bunkers), as identified by USEPA. PW-5 is approximately 1,400 ft downgradient of where USEPA identifies the end of the 60 µg/L contour of the eastern plume. PW-5, being downgradient of Rialto #2, also will help to provide a vertical profile of impacts near that production well.
- PW-6 is intended to assess the centerline of the western plume and aid in differentiating between the eastern and western plumes. Accurately assessing the relationship between both plumes will be important in choosing and designing an effective remedial measure.
- PW-7 is located approximately 3,300 ft downgradient of Rialto #2 and is intended to assess the downgradient edge of the eastern plume. As shown by USEPA’s contour map, the distribution of perchlorate in this area has not been characterized such that the plume contours can be confidently drawn.
- PW-8 is intended to confirm the concentrations of perchlorate that have been detected in production well Rialto #4 and to provide a vertical concentration profile at that location. This well also may assist in evaluating the source of perchlorate concentrations at Rialto #6.
- PW-9 is intended to assess conditions downgradient of Rialto #6. It is approximately downgradient not only of Rialto #6 but also proposed monitoring well PW-8, and may help define the southern extent of the plume(s), both laterally and vertically.

The well locations may be adjusted based on field considerations, data gathered during the investigation and further consultation with the RWQCB. Locations

of the four additional wells, as needed, will be decided with the RWQCB after the results from the first five wells described above have been reviewed. Furthermore, after data from the County's multi-port wells M-1 and M-3 are available for review, and the production wells have been sampled as described below, more informed decisions can be made as to placement of the four additional wells.

Monitoring Well Depth

The Work Plan proposed the installation of monitoring wells to a depth of 650 feet below ground surface, which was consistent with the installation of other monitoring wells installed in the basin, including multi-port wells installed by the County within the western plume. A potential concern recently has been raised as to whether deeper monitoring wells may be appropriate in some instances. To address concerns over the depths of the wells, the vertical extent of perchlorate will be assessed during drilling and prior to permanent well installation by the installation of temporary wells. A temporary well will be installed when, based on field observations, the C Zone has been penetrated. After constructing and developing the temporary well, it will be sampled and the sample will be sent to a laboratory certified by the California Department of Health Services Laboratory Accreditation Program (ELAP) for analysis of perchlorate. The results will be requested on an expedited turn-around time. The results of the perchlorate analysis will be shared with the RWQCB and a decision will be made whether to drill deeper or to finish the boring at that depth and begin with geophysical logging and monitoring well construction.

The process of installing and sampling temporary wells will be repeated, as necessary, in major water-bearing units, until a trend of decreasing perchlorate concentrations is observed and the vertical extent of the impacts to be remediated can be considered assessed. This process may be used for one or more monitoring locations, until a sense of the appropriate depth of the wells can be established. The minimum depth of the wells is expected to be approximately 700 ft each. Data from discrete-depth sampling of selected production wells also will be used to evaluate the appropriate depth of the monitoring wells.

Monitoring Well Screen Intervals

The Work Plan provides that wells will be constructed with a minimum of two to a maximum of seven screens. The screen intervals will be evaluated as follows:

- One screen near the groundwater table when first encountered;
- One screen in a relatively thick water-bearing zone within what has been defined as the B Zone; and
- One screen near the top of what has been defined by others as the C Zone.

As such, in most, if not all circumstances, each well will have a minimum of three screens. Other screens may be installed as necessary, based on the results of the downhole geophysics and the perchlorate analyses of samples from temporary wells. Additional screens may be constructed in other significant water-bearing zones in either the B Zone or C Zone. The screen interval is expected to be 5 to 10 ft long. Video logs will be obtained after installation and development of the 4-in casing and prior to the installation of the Westbay® system. Although vertical gradients do exist within the aquifer systems being investigated, there is a relatively small potential for cross-contamination in short periods (i.e., overnight or on weekends) during which the wellbore is open. While straddle packers could be used to reduce this potential, setting and retrieving the packers daily is an extremely time-intensive task (i.e., additional four to six hours per day). For these reasons, straddle packers are not planned to be installed within the wells during development. This procedure is consistent with methods employed during the recent installation of multi-port wells by the County.

Sampling of Production and USGS Wells

Goodrich has been working closely with the City of Rialto to establish protocols for depth-discrete sampling of production wells Rialto #1, #3, #4, #5 and #6. Due to lack of electrical power to Rialto #2 at this time, and the unavailability of convenient water disposal options at that well, currently it is uncertain whether Rialto #2 will be part of the sampling program. Specific procedures for monitoring the wells will be established between Goodrich and the City after a thorough review of well

conditions has been completed. At this time, the sampling procedure is expected to be as follows:

- Lift well pump system to allow well survey tools to enter and operate in the well during dynamic conditions;
- Perform static video, temperature and conductivity surveys of the well;
- Operate the well until the groundwater level during pumping is stable;
- Conduct three dynamic flowmeter surveys of the well from the top to the bottom of the screened interval at logging speeds of 30, 60, and 90 ft/min;
- Conduct five to eight stop-point surveys following the dynamic flowmeter survey;
- Perform dynamic downhole and side-scan video and conductivity surveys; and
- Collect up to eight discrete water samples from target intervals within the well using a “thief” sampler; the target intervals will be based on field review of the video and flowmeter surveys.

Goodrich expects to be in contact with West Valley Water District in the near future to obtain cooperation and access to sample the two monitoring wells / piezometers now located within WVWD #22.

Lastly, the RWQCB has made contact with the United States Geological Survey (USGS) regarding sampling of the USGS monitoring wells. The USGS appears willing to cooperate in obtaining contemporaneous data for the basin perchlorate investigation.

Documentation

A Field Sampling Plan (FSP), Quality Assurance Project Plan (QAPP) and Data Management Plan (DMP) were prepared for the Site for the first phase of the Remedial Investigation under USEPA. These plans will be modified as necessary to address the scope of work proposed under this Additional Remedial Investigation. The revised plans will be submitted to the RWQCB prior to mobilization to the field.

CONCLUSION

This Addendum addresses questions raised by the USEPA and others regarding the 14 October 2005 draft *Additional Remedial Investigation Work Plan* and provides additional detail regarding aspects of the Work Plan. Other aspects of the implementation of the scope of work will be discussed with the RWQCB prior to and during implementation in the field.

ATTACHMENT

Figure A Proposed Groundwater Level Gauging and/or Sampling Locations

