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## Phase 1 Soil RFI Report for DuPont Oakley Site

### EXECUTIVE SUMMARY

#### 1.0 INTRODUCTION

E.I. du Pont de Nemours and Company (DuPont) owns 378 acres at 6000 Bridgehead Road in Oakley, Contra Costa County, California (Oakley Site). Approximately 155 acres of the property were used for chemical manufacturing of chlorofluorocarbons (CFCs), fuel-additive anti-knock compounds (AKCs) and titanium dioxide (TiO<sub>2</sub>) and manufacturing support activities (e.g., a parking lot) until operations were discontinued in 1998 (See Figure ES-1). This portion of the Oakley Site is referred to as the Northern Development Area (NDA) and the Southern Development Area (SDA).

The NDA and SDA are undergoing investigation and remediation activities in accordance with the Resource Conservation and Recovery Act (RCRA). This Phase 1 Soil RCRA Facility Investigation (Phase 1 Soil RFI) document has been prepared to comply with the provisions of the Corrective Action Consent Agreement (CACA) executed between the Department of Toxic Substances Control (DTSC) and DuPont, effective June 17, 2003 (DTSC, 2003) and was conducted in accordance with the Phase 1 Soil RFI Work Plan (CRG, 2004a).

The objective of the Phase 1 Soil RFI is to characterize the nature and extent of constituent releases and the potential human-health risks to support the future redevelopment of the Oakley Site as a business park with a mix of industrial, commercial, and retail uses.

The Phase 1 Soil RFI Report describes the comprehensive investigation of soils in 59 evaluation units consisting of solid waste management units (SWMUs) and other areas within the NDA and SDA. The results of the Phase 1 Soil RFI include the following:

- ❑ Thirty-four of the evaluation units are currently suitable for commercial / industrial redevelopment.
- ❑ One unit requires additional consideration depending on specific future land-use plans.
- ❑ The remaining 24 evaluation units require additional characterization as part of the Phase 2 Soil RFI and/or remediation as part of an expedited Corrective Measures Study (CMS).

The Phase 2 Soil RFI will provide additional characterization where needed to address any remaining uncertainties regarding the nature and extent of constituent concentrations. The Phase 1 Soil RFI process and results are summarized in the following sections.

#### 2.0 SOIL INVESTIGATION AND DATA QUALITY ASSESSMENT

Samples were collected from 445 locations as part of the Phase 1 Soil RFI field program. Samples collected from 148 locations as part of previous site investigations were also included in the Phase 1 Soil RFI data evaluation. A total of 995 Phase 1 Soil RFI samples and 278 historical

samples collected from 593 sample locations were used to evaluate the soil within the NDA and SDA at the Oakley Site. Data verification was performed for all Phase 1 Soil RFI and historical samples analyzed by the laboratories. With the exception of a few rejected analytical results, laboratory quality control procedures were of a high enough quality to permit the use of all analytical data.

### **3.0 CHARACTERIZATION OF THE NATURE AND EXTENT OF CONSTITUENTS IN SOIL**

Data collected during the Phase 1 Soil RFI and historical sampling programs were used to characterize the nature and extent of constituents of potential concern (COPCs). COPCs are constituents with maximum detected concentrations above background levels and/or risk-based screening concentrations (RBSCs).

The characterization included a description of the operational history and regulatory status (as applicable), the data used for the evaluation, risk-based screening and identification of COPCs, and the conclusions and recommendations for each evaluation unit. These conclusions and recommendations are summarized in Figure ES-2 and below:

- ❑ Thirty-four evaluation units are adequately characterized. No Phase 2 sampling was recommended for these evaluation units, and the potential risks associated with these units are evaluated in Section 6.0.
- ❑ One unit (i.e., SWMU 4.29) had been previously evaluated and certified as closed by DTSC, and no further sampling was recommended for this unit.
- ❑ Phase 2 soil sampling is proposed to further characterize the extent of COPCs or to address data gaps for 24 evaluation units. Eight of these 24 evaluation units are candidates for moving directly to an expedited CMS because the current soil data indicate that some degree of remediation will likely be necessary at these units and moving them directly to the CMS will better integrate remediation planning with site redevelopment planning efforts. Moreover, these units had similar operational histories and COPCs that may require similar remedial approaches. Any additional COPC delineation efforts necessary to define the extent of remediation for these units will be conducted as the initial step in the CMS.

### **4.0 HUMAN HEALTH RISK ASSESSMENT**

The Human Health Risk Assessment (HHRA) in the Phase 1 Soil RFI Report evaluated the potential human health risks for the 34 evaluation units that were identified as adequately characterized (see Section 5.0 of the document). Risk assessments will be performed for the remaining 24 evaluation units after completion of the Phase 2 Soil RFI or to accompany corrective measures. The HHRA for each evaluation unit accounted for the populations (e.g., adults or children) and exposure scenarios (e.g., security guard, construction worker) that may occur now and in the future. Individuals representing the plausible exposure scenarios for the HHRA were the same as those used to develop RBSCs, and included the following:

- ❑ A commercial or industrial worker who conducts business in the future once development is complete (Commercial/Industrial Worker)

- ❑ A construction worker or utility worker who is involved in future site redevelopment activities (Construction/Utility Worker)
- ❑ An occasional trespasser or security guard who may be present at the site under current and future conditions (Trespasser/Security Guard)
- ❑ A person who utilizes the wetland areas for recreational purposes in the future (Recreator)

Risks were calculated for each exposure scenario assuming potential exposure via incidental soil ingestion, dermal contact with soil, and inhalation of particulates from soil.

Based on the outcome of the risk assessments, evaluation units were placed in one of the following Risk Management Groups based on the unit's cancer risk and hazard index (HI):

- ❑ **Group 1** – Includes units where the cumulative cancer risk is less than 1.0E-06 and the HI is less than 1. These units are suitable for redevelopment and no further actions are needed.
- ❑ **Group 2** – Includes units where the cumulative cancer risk is greater than 1.0E-06 but less than 1.0E-04, and/or the HI is greater than 1 but less than 10. These units will be subject to future consideration and evaluation based on the final land-use plan developed for the NDA and SDA. Decisions regarding the nature and extent of remediation for the evaluation units in this group will be deferred until the final land-use plan is established.
- ❑ **Group 3** – Includes units where the cumulative cancer risk is greater than 1.0E-04 and/or the HI is greater than 10. Evaluation units in this group will be remediated to reduce potential health risks, and will be evaluated as part of the CMS.

Figure ES-2 presents the Risk Management Group for each evaluation unit and shows that the majority of the evaluation units were placed in Group 1 (shown in green on Figure ES-2). Only one of the 34 adequately characterized evaluation units (i.e., SWMU 4.18, AOC 5) had a cancer risk above the benchmark value of 1.0E-06 and was placed into Group 2 (as shown in yellow on Figure ES-2). No evaluation units were placed in Group 3. The 24 evaluation units requiring additional characterization and Phase 2 sampling that were not included in the HHRA are shown in grey. Of these, units that may be candidates for an expedited CMS are shown in grey with a red border.

## 5.0 UNCERTAINTY ANALYSIS

The Uncertainty Analysis (Section 7.0) identified key uncertainties associated with the nature and extent characterization of site-related constituents and the HHRA, in order to determine the potential impact of these uncertainties on the Phase 1 Soil RFI results and redevelopment decisions. The key uncertainties evaluated in this analysis were associated with soil analytical data, the identification of an appropriate background concentration for arsenic, exposure assumptions, and toxicity values. In all cases where uncertainty existed in the assessment, assumptions and inputs were selected to ensure that site risks were not underestimated.

## 6.0 RESULTS, CONCLUSIONS, AND RECOMMENDATIONS

Fifty-nine evaluation units were considered as part of the Phase 1 Soil RFI and the results are detailed in Figure ES-3. Based on the results of the risk assessment, 35 units were placed in one of three risk management groups:

- ❑ **Group 1** – Thirty-three evaluation units (shaded in green in Figure ES-3) are suitable for redevelopment without any additional actions. One unit, the Container Storage Area (SWMU 4.29) had been previously evaluated and certified as closed by DTSC based on target cleanup levels that were below the current background concentrations and RBSCs. This evaluation unit (shaded in light green on Figure ES-3) is suitable for redevelopment without any additional action.
- ❑ **Group 2** – One unit, the Fluoride Storage Tank Unit, Fluoride Containment Box (SWMU 4.18, AOC 5) had a cumulative cancer risk between 1.0E-06 and 1.0E-04. It was closed with institutional controls (deed restriction) in December 1998. The decision on whether or not to further remediate this evaluation unit (shaded in yellow on Figure ES-3) will be deferred until the final land-use plan is established.
- ❑ **Group 3** – There are currently no evaluation units in this group.

Phase 2 Soil RFI Sampling - Additional characterization is recommended for 24 evaluation units shaded in grey on Figure ES-3. The Phase 2 Soil RFI Sampling Scope is presented in Appendix E. Eight of these 24 evaluation units may be moved directly to an expedited CMS because the current soil data indicate that some degree of remediation will likely be necessary at these units, and moving them directly to the CMS will better integrate remediation planning with site redevelopment planning efforts. These units are shaded in grey with a red border.

In conclusion, over half of the units evaluated in the Phase 1 Soil RFI are considered to be suitable for redevelopment. The results of this Phase 1 Soil RFI and subsequent Phase 2 sampling will be used in conjunction with investigation results for other media (e.g., groundwater, surface water, indoor air) to finalize the redevelopment plan for the Oakley Site.