INFORMATION SHEET

WDRs ORDER NO. _____
THE VENDO COMPANY
GROUNDWATER REMEDIATION SYSTEM
FRESNO COUNTY

Background Information

The Vendo Company (hereafter Discharger) proposes to continue to discharge treated groundwater from the Phase III Ground Water Remediation System (GWRS) located within the Pinedale area of Fresno at 7209 North Ingram Avenue (hereafter site). The site covers about 36 acres and has been owned and operated by the Discharger since 1963 when it purchased the site from its predecessor, the Vendorlator Company. The Discharger manufactures vending machines at its site. The site is part of a 500-acre tract that has been used for the last 80 years as a lumber mill, warehouse, and Camp Pinedale military base; and for the manufacturing of mattresses, military hardware, airplane parts, mainframe computers, and automatic teller machines. These activities have historically generated hazardous wastes, including metals, acids, caustics, paints, waste oil, and solvents that are detected in groundwaters below and in the vicinity of the site. Industries and parties now or formerly occupying properties within the tract that may have contributed to areal soil and groundwater contamination include Calcot, Industrial Waste Processing Corporation, Pinedale Solid Waste Disposal Site, Kepco Dry Dump solid waste disposal site, and the U.S. Army's Camp Pinedale. The Pinedale Groundwater Site (PGS) is defined to encompass the area where constituents of concern, which primarily originated from the Pinedale Industrial Area (PIA), exist in groundwater. The PIA is defined within the PGS as the 375-acre parcel bounded by Ingram, Herndon, and Harrison Avenues and the San Joaquin River Bluffs.

Soils beneath the site are generally described as sandy silts and silty sands, with small clay lenses. Groundwater beneath the site is about 120 feet below ground surface (bgs) and moves southwesterly. Hydrogeologic evaluations and remedial activities indicate that areal soils and groundwater have been polluted, in part, by metals, hydrocarbons, and volatile organic compounds (VOCs) discharged at the site. In 1992, the Discharger implemented soil vapor extraction (SVE) to remove VOCs from impacted soils as part of an interim remedial measure (IRM). On
19 November 1998, the California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC), approved the 2 November 1998 Final Remedial Action Plan for PGS, Fresno, California, hereafter "RAP."

The RAP partitioned the remediation project into three phases - Phase I, Phase II, and Phase III. Phase III was implemented in January 2004. The three phases include investigation and treatment of groundwater. The treatment involved pumping and treating the contaminated groundwater using granular activated carbon (GAC) units. During Phase II, groundwater was extracted from six extraction wells (MW-13S, W-01, E-1A, E-2A, E-3A, and E-1B) and treated through two GAC units. Under Phase III, the interim treatment system was replaced with an expanded GAC system capable of treating substantially higher flow of groundwater extracted from two extraction wells only. Construction of Phase III on-site treatment system began in 1999 and was operational by January 2004. The salient features in Phase III GWRS include: (a) addition of extraction well E-2B, (b) extraction of groundwater from wells E-1B and E-2B only, (c) installation of two 20,000

pound GAC units, and (d) increasing the maximum discharge flow from 1.44 million gallons per day (mgd) to 2.88 mgd. As part of the Phase III system implementation, groundwater is extracted from wells E1-B and E2-B to intercept plume migration. The impacted groundwater is conveyed by pipeline to the two GAC units. Treated water from the GAC units is conveyed through the dual effluent lines into a single iron pipe, through a flow meter and to the PVC effluent/outfall piping to the FID Bullard Canal via Outfall 001. Outfall 001 is near the northwest corner of Ingram and Herndon Avenues in the South Valley Floor Hydrologic Unit, Fresno Hydrologic Area (No.551.30). Bullard Canal is completely underground in the vicinity of the PIA due to the development of the property. Access to the canal water can only be gained through manholes and vents.

Bullard Canal at the point of discharge is within the Tulare Lake Basin and flows seasonally downstream of the discharge point. The Bullard Canal originates where the Enterprise Canal terminates and becomes the Enterprise-Helm Colony and the Bullard Canal. The Enterprise Canal receives surface water from either the Kings River, via the Gould Canal, and/or the San Joaquin River, via the Friant Kern Canal. The Friant Kern Canal originates at Millerton Lake on the San Joaquin River. The Bullard Canal joins the Herndon Canal some distance downstream of the discharge. The Herndon Canal drains excess storm water to the San Joaquin River roughly nine miles downstream of the discharge point. The canals carry water for irrigation purposes and are owned and operated by the FID. They also carry urban storm runoff and surface waters from ephemeral streams that include Redbank Creek, Fancher Creek, Dog Creek, and Holland Creek. At times, primarily during the fall and winter non-irrigation season, the discharge is the only source of flow in the canals.

Granular Activated Carbon (GAC) Vessel Design Considerations

The Report of Waste Discharge (RWD) originally proposed to operate the two GAC vessels in parallel as extraction rates increase up to 2,000 gpm or 2.88 mgd. The reported design flow capacity is 1,100 gpm (1.58 mgd) when the GAC vessels are operated in series and 2,200 gpm (3.17 mgd) when operated in parallel. A 22 August 2005 letter from the Discharger's consultant, BSK, Inc., stated that the vessels are currently operated in series, due to low extraction rates; and it reaffirmed its request for a maximum permitted flow of 2,000 gpm (2.88 mgd). Industry standard GAC treatment system design provides for two GAC vessels: (a) the first operated in a lead position, and (b) the second operated in a polishing position. The role of the second vessel is to remove any pollutants that may break through the carbon in the first vessel; thus providing a factor of safety to ensure that discharges reliably meet effluent limits. The Discharger has not demonstrated how it will treat flows up to 2.88 mgd while maintaining industry standard design. Operating the GAC in parallel is not best practicable treatment or control (BPTC). Parallel operation would not provide the safety factor necessary to ensure compliance with effluent limits. This Order prohibits parallel operation of primary GAC vessels without secondary polishing and limits discharge flow to 1,000 gpm (1.44 mgd) until the system can be modified to reflect BPTC.

History of Compliance with Effluent Limitations

Effluent monitoring data submitted by the Discharger for the period December 2003 through February 2005 was evaluated for compliance with effluent limitations required through WDRs Order No. 99-012. The Discharge exceeded the effluent limitations on the following occasions:

- The Discharger reported a analytical results for samples collected on 1 July 2004. The concentration for cis-1,2-Dichloroethylene (cis-1,2-DCE) was reported as 1.6 μg/L. This was the only sample reported for cis-1,2-DCE for the month of July. The monthly median of the sampling events equals 1.6 μg/L exceeding the monthly median effluent limitation of less than 0.5 μg/L.
- The Discharger reported analytical results for samples collected on 9 August 2004 and 23 August 2004 for cis-1,2-DCE of 2.9 μg/L and 3.4 μg/L, respectively. Using these data the monthly median for the reported data was 3.15 μg/L exceeding the monthly median effluent limitation of less than 0.5 μg/L.
- The Discharger reported concentrations of Trichloroethylene (TCE) for samples collected on 23 August 2004 as 0.74 μg/L. This was the only sample reported for TCE for the month of August. The monthly median of the sampling events equals 0.74 μg/L exceeding the monthly median effluent limitation of less than 0.5 μg/L.

In addition, the Discharger did not report analytical results for total and dissolved concentrations of chromium (III) and chromium (VI) in accordance with WDRs Order No. 99-012.

Beneficial Uses of the Receiving Water

Bullard Canal is the receiving water for discharges from the GWRS. Bullard Canal discharges to the Herndon Canal that drains to the San Joaquin River. The San Joaquin Basin Plan identifies the following beneficial uses for the San Joaquin River at the point the Herndon Canal drains to the river:

- municipal and domestic supply (MUN),
- agricultural supply (AGR),
- industrial process supply (PRO),
- water contact recreation (REC-1),
- non-contact water recreation (REC-2),
- warm freshwater habitat (WARM),
- cold freshwater habitat (COLD),
- migration of aquatic organisms (MIGR),
- spawning, reproduction, and/or early development (SPWN), and
- wildlife habitat (WILD).

The beneficial uses of the underlying groundwater are MUN, AGR, industrial service supply (IND), and PRO.

Dilution Considerations

The Bullard Canal, absent the discharge, may at times be dry and therefore, no credit for receiving water dilution is available for this discharge.

Effluent Limitations and Monitoring

Federal regulations, 40 CFR Part 122.44 (d)(1)(i), require that NPDES permit effluent limitations must control all pollutants which are or may be discharged at a level which will cause or have the reasonable potential to cause or contribute to an in-stream excursion above any State water quality standard, including any narrative criteria for water quality. Beneficial uses, together with their corresponding water quality objectives or federally promulgated water quality criteria, are defined per federal regulations as water quality standards.

State Water Resources Control Board Resolution No. 68-16 requires implementation of Best Practicable Treatment and Control (BPTC) to ensure that the highest water quality is maintained consistent with the maximum benefit to the people of the State. Federal Regulations require effluent limits representing best available technology economically feasible (BAT) for all toxic pollutants. For treatment of VOCs associated with groundwater cleanups, BAT is consistent with BPTC. As no federal effluent limit guidelines exist for discharges from groundwater cleanup systems, limits are based on Regional Board staff's best professional judgment. BPTC for groundwater cleanup of VOCs provides that the pollutants should be discharged at concentrations less than quantifiable levels for each pollutant.

The effluent limitations consider BPTC for VOC removal, the historical performance of the on-site treatment system, receiving water conditions, USEPA Method quantitation limits, and are less than California Primary Maximum Contaminant Levels.

The following major revisions to WDRs Order No. 99-012 have been made to this Order:

- Technology-based daily maximum limits for chloroform, 1,1-Dichloroethane (1,1-DCA), cis-1,2 DCE, 1,2-Dichloropropane (1,2-DCP), methylene chloride, Tetrachloroethylene (PCE), trans-1,2 Dichloroethene (trans-1,2-DCE), 1,1,1-Trichloroethane (1,1,1-TCA), and TCE were made more stringent based on Best Practicable Treatment and Control (BPTC). Effluent limits of less than 0.5 µg/L are included as opposed to 5 µg/L. Technology-based monthly median effluent limits for these constituents were removed from this Order based on BPTC.

- The technology-based effluent limitation for total VOCs was made more stringent based on BPTC. The limitation for the sum of the VOC constituent concentrations was revised from 5 µg/L to 0.5 µg/L.

- Water quality based average monthly and daily maximum effluent limits were established for dichlorodifluoromethane, 1,1-DCE, and trichlorofluoromethane.

- Variable effluent limits for chromium (III), copper, and zinc have been revised to maximum limitations based on a receiving water hardness of 8.8 mg/L as $CaCO_3$.

- Monitoring requirements for all priority pollutants at least once during the term of this Order and at least 180 days prior to the expiration of this Order have been added, as set forth in the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (known as the State Implementation Policy or SIP).

- Influent monitoring requirements have been established under this Order.

Reasonable Potential Analysis (RPA) and Water Quality-based Effluent Limitations (WQBELs)

Section 1.3 of the SIP requires that the Regional Board impose water quality-based effluent limitations for a priority pollutant if (1) the maximum effluent concentration (MEC) is greater than the most stringent CTR or NTR criterion or applicable site-specific Basin Plan objective, or (2) the ambient background concentration is greater than the CTR or NTR criterion or applicable site-specific Basin Plan objective and the pollutant is detected in the effluent, or (3) other information is available to determine that a water quality-based effluent limitation is necessary to protect beneficial uses.

The Discharger was issued an Order on 27 February 2001 pursuant to CWC Section 13267, requiring effluent and receiving water monitoring meeting the requirements of the SIP. These data were requested in order to assist the Regional Board in conducting RPAs.

The Discharger submitted some but not all of the required monitoring data for the effluent and no receiving water data, as required by the 27 February 2001 letter, and therefore the Regional Board is unable to conduct an RPA for all required CTR and non-CTR constituents. Provision F.5 of this Order directs the Discharger to conduct a Priority Pollutant evaluation study within a time schedule. This Order also includes a reopener to allow the Regional Board to reopen this Order and establish effluent limitations or other requirements if necessary based on the results of the study.

The dates in the compliance schedule do not extend or supersede those in the 27 February 2001 13267 Order. Should the Discharger fail to comply with the compliance schedule, it would be appropriate to assess administrative civil liabilities based on the due dates in the 13267 Order.

Monitoring data used to conduct the reasonable potential analysis consisted of influent and effluent data (including data provided in the special monitoring study required by the SIP), and data provided in the RWD. The maximum detectable concentrations reported by these data sets are summarized as follows:

Parameter	Units	M&RP Influent Monitoring Data	M&RP Effluent Monitoring Data	RWD Data	Maximum Concentration used in RPA
Benzene	µg/L	0.66	<0.5	n/a	0.66
Chromium	µg/L	660	<50	522	660

Parameter	Units	M&RP Influent Monitoring Data	M&RP Effluent Monitoring Data	RWD Data	Maximum Concentration used in RPA
Copper	µg/L	14	<50	n/a	14
Dichlorodifluoromethane	µg/L	n/a	<0.5	1.2	1.2
1,1-DCA	µg/L	32	<1	1.8	32
1,1-DCE	µg/L	25	<0.5	13	25
cis-1,2-DCE	µg/L	360	3.4	38	360
PCE	µg/L	540	<0.5	4.2	540
1,1,1-TCA	µg/L	0.85	<0.5	n/a	0.85
Trichlorofluoromethane	µg/L	1.6	<2	3.5	3.5
TCE	µg/L	14,000	0.74	2300	14000
Toluene	µg/L	0.73	<0.5	n/a	0.73
Zinc	µg/L	130	<50	n/a	130

Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs, the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for the following constituents: chromium, copper, dichlorodifluoromethane, 1,1-DCA, 1,1-DCE, cis-1,2-DCE, PCE, trichlorofluoromethane, TCE, and zinc.

A summary of all the monitoring data used to conduct the RPA is provided in Tables 1 and 2 attached to this Information Sheet. A summary of the RPA analysis for all constituents reported in detectable concentrations is in Table 3 (attached).

Water quality based effluent limitations (WQBELs) calculated for these constituents, based on the most restrictive water quality objectives and the methodology presented in the SIP, are summarized below:

		Most Stringent WQBEL	
Constituent	Units	Daily Max	Monthly Average
Chloroform	µg/L	2.2	1.1
Chromium (III)	µg/L	46	23
Chromium (VI)	µg/L	16	8
Copper	µg/L	1.4	0.7
Dichlorodifluoromethane	µg/L	0.38	0.19
1,1-DCA	µg/L	10	5
1,1-DCE	µg/L	0.11	0.06
Cis-1,2-DCE	µg/L	12	6
1,2-DCP	µg/L	1.1	0.52
Methylene Chloride	µg/L	5	2.5
PCE	µg/L	1.6	0.8
Trans-1,2-DCE	µg/L	20	10
1,1,1-TCA	µg/L	402	200
TCE	µg/L	5.4	2.7
Trichlorofluoromethane	µg/L	0.38	0.19
Zinc	µg/L	15	7.6

Table 4 (attached) provides a summary of the final effluent limitations for each constituent and provides a summary of how each limit was calculated.

Technology Based Effluent Limits (TBEL)

Section 1.4 of the SIP requires that WQBELs be compared to TBELs and that the more protective limit is applied in the permit. Therefore, TBELs must be developed for each constituent. For establishing BAT based upon BPJ, 40 CFR 125 requires consideration of several specific factors. The following factors were considered:

Appropriate Technology for Category or Class of Discharges, Processes Employment, Engineering Aspects of Various Control Techniques: GAC treatment is commonly used to remove VOCs from extracted groundwater at cleanup sites to non-detectable concentrations. Properly operated and maintained systems perform reliably and ensure essentially complete removal of VOCs. The Discharger employs a GAC system to treat impacted groundwater.

Age of Equipment Portions of the Phase III on-site treatment system were installed in 1999 and the remainder of the system is currently under construction and is substantially complete. The GAC system installation was completed in 2003.

Influent and Effluent Data: The groundwater investigation reports and the information provided by the Discharger show that the groundwater is contaminated with VOCs. Effluent data submitted by the Discharger show that the effluent VOC concentrations are below the detection limit of 0.5 µg/L, and thus will meet the proposed effluent limits. The Regional Board assumes that the exceedances of the detection limits are likely attributable to lack of timely maintenance.

Unique Factors Relating To The Applicant: The Discharger has not identified any unique factors that would justify discharges equaling or exceeding quantifiable concentrations of VOCs.

Non-Water Quality Environmental Impacts, Including Energy Requirements; Cost of Achieving Proposed Effluent Reduction: The system currently in place reliably removes VOCs to nondetectable concentrations of less than 0.5 µg/L, therefore, implementation of the proposed limits would not create additional non-water quality impacts, or financial costs for The Vendo Company.

The technology-based standard for cleanup of VOCs in groundwater with an airstripper, GAC, or combination treatment system is that all effluent should be discharged with unquantifiable levels of VOCs in the effluent. For VOCs of concern, the MLs listed in Appendix 4 of the SIP or the Title 22, CCR, Section 64445.1, California Department of Health Services Detection Limits for Purposes of Reporting (DLRs) represent the minimum quantifiable levels of these constituents and serve as the technology-based effluent limits. A summary of the TBELs is listed below:

Constituent	Units	TBEL
Chloroform	µg/L	<0.5[1]
Dichlorodifluoromethane	µg/L	-
1,1-DCA	µg/L	<0.5[1]
1,1-DCE	µg/L	<0.5[1]
Cis-1,2-DCE	µg/L	<0.5[2]
1,2-DCP	µg/L	<0.5[1]
Methylene Chloride	µg/L	<0.5[1]
PCE	µg/L	<0.5[1]
Trans-1,2-DCE	µg/L	<0.5[1]
1,1,1-TCA	µg/L	<0.5[1]
Trichlorofluoromethane	µg/L	<5[2]
TCE	µg/L	<0.5[1]

[1] ML
[2] DLR

Final Effluent Limits

The more stringent of the TBEL or WQBEL has been implemented as the effluent limit in this Order for each constituent. A comparison of the TBEL and WQBEL for each constituent is provided below:

Constituent	Units	WQBEL Limit[1]		TBEL Limit[2]	Most Stringent Effluent Limit	
		Daily Maximum	Monthly Average	Daily Maximum	Daily Maximum	Monthly Average
Chloroform	µg/L	2.2	1.1	<0.5	<0.5	n/a
Chromium (III)	µg/L	46	23	-	46	23
Chromium (VI)	µg/L	16	8	-	16	8
Copper	µg/L	1.4	0.7	-	1.4	0.7
Dichlorodifluoromethane	µg/L	0.38	0.19	<0.5	0.38	0.19
1,1-DCA	µg/L	10	5	<0.5	<0.5	n/a
1,1-DCE	µg/L	0.11	0.06	<0.5	0.11	0.06
Cis-1,2-DCE	µg/L	12	6	<0.5	<0.5	n/a
1,2-DCP	µg/L	1.1	0.52	<0.5	<0.5	n/a
Methylene Chloride	µg/L	5.0	2.5	<0.5	<0.5	n/a
PCE	µg/L	1.6	0.8	<0.5	<0.5	n/a
Trans-1,2-DCE	µg/L	20	10	<0.5	<0.5	n/a
1,1,1-TCA	µg/L	402	200	<0.5	<0.5	n/a
Trichlorofluoromethane	µg/L	0.38	0.19	<0.5	0.38	0.19
TCE	µg/L	5.4	2.7	<0.5	<0.5	n/a
Zinc	µg/L	15	7.6	-	15	7.6

[1] Water Quality Based Effluent Limit.
[2] Technology-based Effluent Limit.
[3] n/a – not applicable

Filter Waste Disposal Limitations

Spent carbon, and other residual solids removed from liquid wastes or used to treat liquid wastes, except that approved by the Executive Officer, shall be recycled or disposed of in a manner that is consistent with California Code of Regulations (CCR) Title 27, Division 3; Title 23, Division 3 Chapter 15; and Title 22, Division 4.5, and approved by the Executive Officer. Any proposed change in filter waste use or solids disposal practice from a previously approved practice shall be reported to the Executive Officer and USEPA Regional Administrator at least 90 days in advance of the change.

Receiving Water Limitations

Receiving water limitations are based on water quality objectives from the Basin Plan and are a required part of this Order. They are included to protect beneficial uses of receiving waters. A receiving water condition not in conformance with a limitation is not necessarily a violation of the Order. The Regional Board may require an investigation to determine cause and culpability prior to asserting that a violation has occurred.

Groundwater Limitations

The beneficial uses of the underlying groundwater, as identified in the Tulare Lake Basin Plan, are municipal and domestic, industrial service, industrial process, and agricultural supply. Tulare Lake Basin Plan water quality objectives to protect the beneficial uses of groundwater include numeric objectives and narrative objectives, including objectives for chemical constituents, toxicity of groundwater, pesticides, salinity, and taste and odor. The toxicity objective requires that groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, or animals. This Order contains groundwater limitations that prohibit groundwater degradation caused by the treatment and disposal of treated groundwater at the facility.

Anti-degradation and CEQA Considerations

The permitted discharge is consistent with the anti-degradation provisions of 40 CFR 131.12 and State Water Resources Control Board Resolution No. 68-16. BPTC for discharges of treated groundwater polluted by volatile organic compounds is to remove all pollutants to below applicable detection limits. All VOCs are required to be removed to a level below corresponding analytical quantitation limits. Some resulting degradation of the receiving water could occur if constituents were present below the quantitation limit, but such degradation would not be quantifiable. Due to the relatively low EC and TDS values of the receiving water, during periods of unusually limited dilution, some degradation of the receiving water may occur from these pollutants, however, the discharge will not cause an exceedance of water quality objectives or cause a significant impact on the beneficial uses of groundwater and surface water. The continued remediation of polluted groundwater and the use of the treated groundwater for irrigation benefit the people of the state.

The action to adopt an NPDES permit is exempt from the provisions of California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.), in accordance with Section 13389 of the California Water Code.

MSS: 12/30/05