California Regional Water Quality Control Board
San Francisco Bay Region

Linda S. Adams
y Secretary

1515 Clay Street, Suite 1400, Oakland, California 94612
(510) 622-2300 • Fax (510) 622-2460
http://www.waterboards.ca.gov/sanfranciscobay

Arnold Schwarzenegger
Governor

Date: AUG 2 2 2007
File No. 2199.9462 (CSF)

To: MAILING LIST

Subject: **ORDER FOR WASTE DISCHARGE REQUIREMENTS**
DUBLIN SAN RAMON SERVICES DISTRICT LAND TREATMENT UNIT
PLEASANTON, ALAMEDA COUNTY

Attached is Board Order No. R2-2007-0053, Waste Discharge Requirements for the subject site. The Order was adopted during its August 8, 2007 Board meeting. If you have any questions regarding the Order, please contact Cecilio Felix at (510) 622-2343, or by email at cfelix@waterboards.ca.gov.

Sincerely,

Cecilio S. Felix
Associate Engineering Geologist

attached: Mailing List

MAILING LIST

Levi Fuller
Dublin San Ramon Services District
7399 Johnson Drive
Pleasanton, CA 94588

Daniel Gallagher
DSRSD
7399 Johnson Drive
Pleasanton, CA 94588

Monica Oakley
Oakley Water Strategies
2100 Lakeshore Ave., Suite C
Oakland, CA 94606

Robert D. Whitley
Whitley Burchett & Associates
1777 Oakland Blvd., Suite 200
Walnut Creek, CA 94596

Mathew Katen
Zone 7 Water Agency
100 North Canyons Parkway
Livermore, CA 94551-9486

Lori Braunesreither
Contra Costa County Health Services Dept.
2120 Diamond Blvd., Suite 200
Concord, CA 94520

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. R2-2007-0053

WASTE DISCHARGE REQUIREMENTS

DUBLIN SAN RAMON SERVICES DISTRICT
DEDICATED LAND DISPOSAL SITE
CLASS II LAND TREATMENT UNIT
PLEASANTON, ALAMEDA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board), finds that:

DISCHARGER AND LOCATION

1. **Owner, operator, and discharger named:** The Dedicated Land Disposal (DLD) site is owned and operated by the Dublin San Ramon Services District (DSRSD). DSRSD is hereinafter referred to as the Discharger.

2. **Site location and description:** The DSRSD wastewater treatment plant is located southeast of the intersection of Interstate 580 and 680 in the city of Pleasanton (see Figure 1). The facility consists of 3 areas: a 30 acre main plant; six facultative sludge lagoons (FSLs) covering 27 acres; and a 55 acre dedicated land disposal (DLD) area utilized to dispose biosolids. The main wastewater treatment plant and the FSLs are separately regulated under NPDES permit CA0037613. The DLD site meets the classification of a Class II land treatment unit for non-municipal, non-hazardous waste materials. The DLD site was formed by injecting treated biosolids directly into the ground surface and incorporation of the biosolids into the soil for disposal. The DLD site terrain is flat and is surrounded by a berm averaging approximately eight feet high. Areas surrounding the site are predominantly commercial and residential.

PURPOSE OF ORDER

3. Waste Discharge Requirements: This order establishes Waste Discharge Requirements (WDRs) for the DLD biosolids land treatment unit, which include general provisions and tasks necessary to establish design criteria for the biosolids containment and to establish monitoring programs in order to minimize impacts to water quality. It is expected that the operations of the DLD biosolids land treatment unit will remain integral with the operation of the DSRSD wastewater treatment plant. No Board Order has been previously adopted for the DLD site.

4. Land treatment unit defined: A land treatment unit is a waste management unit at which liquid and solid waste is discharged to, or incorporated into, soil for degradation, transformation, or immobilization within the treatment zone. Such units are considered disposal units if the waste will remain after closure.

SITE DESCRIPTION

5. Waste placement: The DLD site is an unlined land treatment unit. The DLD site has received biosolids from one or more FSLs yearly since 1989. Biosolids are stabilized in the FSLs for a minimum of four years. During the summer months the biosolids are dredged and transported by pipeline to the DLD site. The biosolids are placed into furrows approximately 8-12 inches deep and immediately covered with soil in order to avoid odorous conditions. Approximately 1,375 dry tons of biosolids are placed into the DLD site per year.

6. Waste types and classification: The biosolids disposed at the DLD site are classified as 'designated waste' (non-municipal, non-hazardous waste) pursuant to the criteria set forth in Title 27 Section 20210. No other waste materials are disposed at the DLD site. The DLD site meets the requirements for a Land Treatment Unit (LTU) as specified in Title 27, Section 20250(b)(5).

7. Waste containment and minimization: Water quality impacts are minimized by the following methods and conditions:

   - placement of biosolids during the dry summer months to provide greatest potential net evaporation and to minimize infiltration;
   - directed conveyance of runoff by surface grading;
   - containment of surface water accumulations during the winter within peripheral berms;

- removal of surface water by collection and conveyance to the wastewater treatment plant for treatment prior to discharge under an NPDES permit;
- peripheral drainage ditches which divert surface water runoff from surrounding areas away from the DLD site; and,
- native underlying soils with low permeability, ranging from 1×10^{-7} to 1×10^{-8} cm/sec (Hydrogeologic Study for Dublin San Ramon Services District Facultative Sludge Lagoon and Dedicated Land Disposal Area, Kaldveer Associates, 1992).

Due to the grading, collection and treatment of surface water, and installation of peripheral berms and drains, and based on the lack of indications of seepage during the history of site operations, no seepage is expected to occur in the future provided that existing site controls are maintained. The seepage monitoring requirement specified in Part B, Section 1.D in Attachment A of this order is included as a precautionary measure.

SITE INVESTIGATIONS

8. Stratigraphy: The general area within the Livermore Valley is underlain by up to 400 feet of Quaternary alluvium consisting of sand, silt, clay, and gravel deposits from outwash plains and extensive lake deposits. A remnant of an extensive lake existed in the area of the DLD site until the early 1900's, when the area was drained. The uppermost layer, immediately underlying the DLD site, consists of a surficial deposit of low permeability silty clay up to 70 feet thick. At 50 to 70 feet below ground surface is Quaternary alluvium consisting of thick silty clay layers and thin sand and gravel layers. The alluvium is underlain by the 4,000 foot thick Livermore Formation, which consists of semi-consolidated deposits of clayey gravel and clayey sand.

9. Surface water: Alamo Creek is the nearest surface water body to the DLD site. The creek flows southward through the Livermore Valley toward the San Ramon Valley. The creek is channelized into flood control canals, as are many of the surface water systems in the vicinity. Stormwater from the DLD is prevented from entering storm drains or Alamo Creek or any of its tributary areas by peripheral containment berms and a stormwater collection and removal system. Stormwater at the DLD is routed to the DSRSD wastewater treatment plant for treatment prior to discharge under NPDES permit. The site is not located within the limits of a 100-year flood event.

10. Groundwater: The site is located over the Livermore Valley Groundwater Basin. Site investigations indicate that groundwater beneath the site is found at depths as shallow as 7 to 19 feet below ground surface within thin and discontinuous sand lenses which are confined by a thick clay aquiclude. The aquiclude, directly underlies the site and is

nearly continuous across the western half of Livermore Valley. The aquiclude, which is relatively impermeable (measured hydraulic conductivity of approximately 1 x 10^{-8} cm/sec) has been identified as the 'upper' of four aquicludes occurring within the upper alluvium and underlying Livermore Valley Formation. Potable groundwater occurs primarily at depths greater than 50 feet below ground surface within the aquifers of the upper alluvial deposits and the underlying Livermore Formation.

11. Geologic structure and stability: The region surrounding the DLD site is seismically active. Within the area are the Calaveras fault, located approximately 0.9 miles to the west; the Pleasanton fault, located approximately 0.7 miles to the northeast; the Verona fault, about 4 miles to the southeast; the Hayward fault, 8 miles to the southwest; the Greenville fault, located 11 miles to the east; and the San Andreas fault, 25 miles to the southwest of the site. Although a significant earthquake is statistically projected to occur within the near future, seismic risks to the DLD site are minimal due to the flat relief and low thickness of the biosolids layer above the native soils.

12. Potential for contamination: Although groundwater has not been monitored at the DLD site, groundwater beneath the FSLs immediately adjacent to the DLD site has been monitored in six monitoring wells since 1985. Samples collected from the wells and analyzed indicate that groundwater quality has not been impacted beneath the six FSLs. It is unlikely that the DLD site, which contains no free-standing water, has impacted water quality. In order to ensure that the DLD site presents no potential threat to water quality, a network of new groundwater monitoring wells are required as specified in the Provisions of this Order.

13. Groundwater Monitoring: Currently, groundwater is only monitored at the FSLs located in the area immediately north of the DLD site, as described in Finding 12. Additional groundwater monitoring wells are required to be installed in the area of the DLD site as specified in Provisions 3 and 4 of this Order. At a minimum, at the site perimeter and at multiple depths, and monitored on a yearly basis for general water quality parameters, and for a more extensive list of compounds every 5 years.

BENEFICIAL USES OF GROUNDWATER

14. Board Resolution No. 89-39: Board Resolution 89-39, "Sources of Drinking Water," defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for areas containing high TDS (greater than 3000 mg/l TDS), high background contaminant levels, or those areas with a low-yield. Some groundwater underlying and adjacent to the site qualifies as a potential source of drinking water,

although there is no current use of the site's shallow groundwater, nor any anticipated plans for its use.

15. Basin Plan: The Board adopted a revised Water Quality Plan for the San Francisco Bay Basin (Basin Plan) on January 21, 2004. This updated and consolidated plan represents the Board's master water quality control planning document. The revised Basin Plan was approved by the State Water Resource Control Board and the Office of the Administrative Law on July 22, 2004, and October 4, 2004, respectively, and approved by the U.S. Environmental Protection Agency, Region IX on January 5, 2005. A summary of regulatory provisions is contained in 23 CCR. The Basin Plan defines beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater.

16. Designated beneficial uses of groundwater: The beneficial uses of groundwater beneath the DLD site include:

    a. Municipal and domestic supply
    b. Agricultural supply
    c. Industrial process and service supply

CALIFORNIA ENVIRONMENTAL QUALITY ACT

17. Potential environmental impacts: An Initial Study/Mitigated Negative Declaration, prepared in compliance with the California Environmental Quality Act (CEQA, Public Resources Code Section 2100 et. seq.), was certified on August 19, 1999. The document evaluates the potential environmental impacts associated with DLD site activity which may occur unless appropriate mitigation measures are taken. Potential environmental impacts may be associated with:

    - stormwater runoff
    - construction activities
    - failure of site controls due to seismic events
    - handling or associated hazardous materials
    - odors

18. Mitigation measures: The Board has considered the DSRSD Initial Study/Mitigated Negative Declaration and the mitigated measures described therein. The mitigation measures recommended at the DLD site for preventing environmental impacts included:

    - geotechnical investigation
    - establishment of facility designs and operating criteria

- periodic site inspections and audits
- erosion controls
- construction activity controls
- implementation of a Storm Water Pollution Prevention Plan (SWPPP)
- implementation of methods and controls to address odors
- materials storage, handling, and disposal procedures

The Board finds that the mitigation measures described in the Initial Study/Mitigated Negative Declaration and by the Specifications and Provisions of this WDR will prevent environmental impacts from occurring at the DLD site.

19. Public notice: The Board has notified the Discharger and interested agencies and persons of its intent to adopt revised, updated Waste Discharge Requirements for the Discharger and has provided them with an opportunity for a public hearing and an opportunity to submit their written views and recommendations.

20. Public meeting: The Board, in a public meeting heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED that the Discharger, its agents, successors and assigns shall meet the applicable provisions contained in Title 27, Division 2, Subdivision 1 of the California Code of Regulations and Division 7 of the California Water Code and shall comply with the following:

A. PROHIBITIONS

1. The relocation of wastes to or from any waste management unit shall not create a condition of pollution or nuisance as defined in Section 13050 (l) and (m) of the California Water Code. Wastes shall not be relocated to any location where they can be discharged into waters of the State.

2. The discharge of waste other than biosolids associated with the DSRSD wastewater treatment plant is prohibited.

3. The discharge of solid or liquid waste or leachate to groundwater is prohibited.

4. The discharge of solid or liquid waste or leachate to surface waters or surface water drainage courses is prohibited unless specifically authorized under an NPDES permit.

5. The discharge of biosolids to the DLD site when the soil is saturated and/or during periods of significant surface water accumulation is prohibited.

6. Ponding and infiltration of leachate and stormwater runoff at the DLD site shall be minimized or prevented by operation of a surface water drainage system. The stormwater residence time at the DLD site shall be minimized by: 1) maintaining a grade sufficient to promote runoff; 2) operation of a stormwater collection and removal system; and, 3) treatment of stormwater prior to discharge under an NPDES permit, or off-hauling and disposal at a certified waste disposal facility.

7. Water used for maintenance of the DLD site shall be limited to the minimum amount necessary for dust control and perimeter landscaping. Recycled water is appropriate for this use.

8. Biosolids disposed in the DLD site shall be covered within 24 hours after application or if it poses an odor and/or vector nuisance. Injection of biosolids is considered covered unless improper application results in ponding or spillage during application, in which case the biosolids must be covered if it threatens to cause an odor and/or vector nuisance conditions.

9. Discing at the DLD site shall not result in odor and/or vector nuisance conditions.

10. The creation of any new DLD facilities beyond the existing perimeter of the site is prohibited without prior Board approval.

11. The Discharger shall not excavate within or reconfigure any existing waste management unit used for biosolids disposal without prior Board approval, except for maintenance and construction associated with existing facilities operations.

12. The Discharger, or any future owner or operator of the DLD site, shall not cause the following conditions to exist in waters of the State at any place outside the waste management facility:

    a. Surface Waters

    - Floating, suspended, or deposited macroscopic particulate matter or foam.
    - Bottom deposits or aquatic growths.
    - Alteration of temperature, turbidity, or apparent color beyond natural background levels.
    - Visible, floating, suspended or deposited oil or other products of petroleum origin.
    - Toxic or other deleterious substances to be present in concentrations or quantities which may cause deleterious effects on aquatic biota, wildlife or

waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentrations.

b. Groundwater

- Further degradation of groundwater quality.
- Substantial worsening of any existing groundwater impacts.

13. The pH of the zone of incorporation (the upper 5 feet above native soils) of the land treatment unit shall be maintained at or above 5.0.

B. SPECIFICATIONS

1. All reports pursuant to this order shall be prepared under the supervision of a California registered professional civil engineer, professional geologist or certified engineering geologist.

2. The DLD site shall be protected from any washout or erosion of wastes or cover material and from inundation that could occur as a result of a 100-year, 24-hour precipitation event, or as the result of flooding with a return frequency of 100 years.

3. Surface drainage from sources beyond the area of the DLD site shall not contact or percolate through biosolids.

4. The existing containment, drainage, and monitoring systems at the DLD site, shall be maintained as long as stormwater is present and poses a threat to water quality.

5. The Discharger shall assure that the structures which control surface drainage are constructed and maintained to withstand conditions generated during the maximum probable earthquake.

6. The Discharger shall analyze the samples from any groundwater monitoring wells as outlined in the Discharge Monitoring Program (Attachment A).

7. The Discharger shall install any reasonable additional groundwater and leachate monitoring devices required to fulfill the terms of any future Discharge Monitoring Program issued by the Executive Officer.

8. The Discharger shall maintain all devices or designed features installed in accordance with this Order, such that they continue to operate as intended without interruption.

9. The Board shall be notified immediately of any failure occurring in the DLD site. Any failure that threatens the integrity of containment features or the DLD site shall be promptly corrected after approval of the method and schedule by the Executive Officer.

10. The unsaturated native soils extending to a depth of 5 feet beneath the initial surface of the DLD shall be considered a treatment zone, as defined in Section 20250 of Title 27.

11. The Discharger shall maintain the DLD site so as maintain soil pH within the treatment zone at or above 5.0. As provided in Provision 5 and 6 of this Order, the Discharger shall maintain the DLD site and monitor the soil within the treatment zone and the groundwater beneath the treatment zone to verify that complete degradation, transformation, or immobilization of biosolids is taking place.

12. The Constituents of Concern (COCs), required under Section 20395 of Title 27, shall include all parameters listed in Tables 1 of Part B of the Discharge Monitoring Program.

13. The Discharger shall maintain the DLD site so as to prevent a statistically significant increase in water quality parameters at points of compliance as provided in Section 20420 of Title 27.

14. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy.

15. The maximum depth of biosolids accumulated within the DLD site shall not exceed five feet from the initial ground surface.

16. The Discharger shall comply with all applicable provisions of Title 27 that are not specifically referred to in this Order.

C. PROVISIONS

1. The Discharger shall comply immediately, or as prescribed by the time schedule below, with all Prohibitions, Specifications and Provisions of this Order. All required submittals must be acceptable to the Executive Officer. The Discharger must also comply with all conditions of these WDRs. Violations may result in enforcement actions, including Board orders or court orders requiring corrective action or imposing civil monetary liability, or in modification or revocation of these waste discharge requirements by the Board. [CWC Section 13261, 13263, 13265, 13267, 13268, 13300, 13301, 13304, 13340, 13350].

2. All technical and monitoring reports required pursuant to this Order are being requested pursuant to Section 13267 of the California Water Code. Failure to submit reports in accordance with schedules established by this Order or failure to submit a report of sufficient technical quality acceptable to the Executive Officer may subject the Discharger to enforcement action pursuant to Section 13268 of the California Water Code.

POINT OF COMPLIANCE WELLS

3. **WORKPLAN FOR INSTALLATION OF DLD POINT OF COMPLIANCE (POC) WELLS**

COMPLIANCE DATE: **October 1, 2007**

The Discharger shall submit a workplan, acceptable to the Executive Officer, for installing a network of groundwater monitoring wells (Point of Compliance wells) at the DLD site necessary to monitor water quality. The workplan shall specify the locations, construction details, monitoring parameters, and a schedule for implementation.

4. **REPORT DOCUMENTING INSTALLATION OF POINT OF COMPLIANCE WELLS**

COMPLIANCE DATE: **December 1, 2007**

The Discharger shall submit a technical report, acceptable to the Executive Officer, which documents the installation of the POC wells. The technical report shall describe any variation between the proposed POC well network as installed and as proposed in Provision C.3 .

LAND TREATMENT UNIT MONITORING

5. ANNUAL MONITORING REPORT

COMPLIANCE DATE: **February 28 of each year**

The Discharger shall submit an Annual Monitoring Report, acceptable to the Executive Officer, by February 28 of each year in accordance with the attached Discharge Monitoring Program (Attachment A). The annual report to the Board shall cover the previous calendar year as described in Part A of the Monitoring Program. In addition to the requirements outlined in Attachment A, this report shall also include the following: location and operational condition of all groundwater monitoring wells; and a site map delineating groundwater levels for each monitoring event.

6. SEMI-ANNUAL MONITORING REPORT

COMPLIANCE DATE: **July 31 and February 28 of each year**

The Discharger shall submit semi-annual monitoring reports, no later than July 31 and February 28 of each year in accordance with the attached Discharge Monitoring Program (Attachment A). The February 28 semi-annual report may be combined with the annual report.

LAND TREATMENT UNIT MAINTENANCE

7. ANNUAL MAINTENANCE REPORT

COMPLIANCE DATE: **February 28 of each year**

The Discharger shall submit a technical report to the Board, acceptable to the Executive Officer, detailing the repair and maintenance activities that need to be completed prior to the commencement of the next rainy season (starting October 15 of each year). The report shall describe measures necessary to maintain containment and drainage systems, sufficient surface grading, the five-foot height requirement of waste material, and other conditions specified in the Prohibitions and Specifications. The report shall also include a description and schedule for repair and maintenance activities, and a cost analysis detailing the anticipated expense for all repairs, maintenance and monitoring during the next 12 months. Repair and maintenance estimates shall be based on rainy season inspections conducted throughout the winter as required in the Discharge Monitoring Program.

8. **NEW WELL INSTALLATION REPORT**

COMPLIANCE DATE: **45 days following completion of well installation activities**

The Discharger shall submit a technical report, acceptable to the Executive Officer, that provides well construction details, geologic boring logs, and well development logs for all wells installed in additional to the wells to those wells addressed in Provisions C.3 and C.4, as part of the Discharge Monitoring Program (Attachment A).

9. **CHANGE IN SITE CONDITIONS**

NOTIFICATION DUE DATE: **Immediately upon occurrence**
REPORTING DUE DATE: **30 days after initial notification**

The Discharger shall immediately notify the Board of any change in site conditions that could impair the integrity of the DLD site's containment systems and shall immediately make repairs. Within 30 days, the Discharger shall prepare and submit a technical report, acceptable to the Executive Officer, documenting the corrective measures taken.

10. **REPORT OF RELEASE**

NOTIFICATION DUE DATE: **Within 24 hours of detection**
REPORTING DUE DATE: **Within 5 days of detection**

The Discharger shall notify the Board within 24 hours of detection of any measurably significant increase (as defined in section 20164 of Title 27) in the value of contaminants below the treatment zone. Within 5 days of detection, the Discharger shall cease further discharge and complete removal or remedial actions as appropriate and submit a technical report, acceptable to the Executive Officer, which proposes modifications to the operating practices at the DLD site to maximize the success of degradation, immobilization, or transformation processes in the DLD site and/or its treatment zone.

11. **FINANCIAL ASSURANCE DOCUMENT**

COMPLIANCE DATE: **December 1, 2007**

The Discharger shall submit a technical report, acceptable to the Executive Officer, which provides assurances of financial responsibility for initiating and completing corrective action for all known and reasonably foreseeable releases

from the facility. The Discharger shall also maintain an irrevocable fund or other means to ensure annual and long-term maintenance of the DLD site.

12. The Discharger shall maintain records of the volume of biosolids discharged at the DLD site and the manner and location of discharge. Such records shall be maintained at its facility and summarized in the semi-annual reports. The records shall be available for review by representatives of the Board at all times [CWC Section 13263].

13. The Discharger shall maintain a copy of these WDRs and these WDRs shall be available to operating personnel at all times [CWC Section 13263].

14. The Discharger shall permit the Board or its authorized representative, upon presentation of credentials:

    a. Immediate entry upon the premises on which wastes are located or in which any required records are kept.
    b. Access to copy any records required under the terms and conditions of this order.
    c. Inspection of any treatment equipment, monitoring equipment, or monitoring methods required by this order or by any other California State Agency.
    d. Sampling of any discharge or groundwater governed by this order.

15. In the event of any change in control/operator or ownership of land or parcel of land, or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Board's office. The Discharger must notify the Executive Officer, in writing at least 30 days in advance of any proposed transfer of this Order's responsibility and coverage to a new discharger. The notice must include a written agreement between the existing and new discharger containing a specific date for the transfer of this order's responsibility and coverage between the current discharger and the new discharger. This agreement shall include an acknowledgment that the existing discharger is liable for violations up to the transfer date and that the new discharger is liable from the transfer date on. [CWC Sections 13267 and 13263]. The request must contain the requesting entity's full legal name, the address and telephone number of the persons responsible for contact with the Board and statement. Failure to submit the request shall be considered a discharge without requirements, a violation of the California Water Code.

16. This Order is subject to Board review and updating, as necessary, to comply with changing State and Federal laws, regulations, policies, or guidelines; changes in the Board's Basin Plan; or changes in the discharge characteristics [CWC Section 13263]. The Executive Officer may specify minor changes to the Discharge Monitoring Plan as necessary.

17. Where the Discharger becomes aware that it failed to submit any relevant facts in a Report of Waste Discharge or submitted incorrect information in a Report of Waste Discharge or in any report to the Board, it shall promptly submit such facts or information [CWC Sections 13260 and 13267].

18. This Order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, do not protect the Discharger from its liability under Federal, State or local laws, nor do they create a vested right for the Discharger to continue the waste discharge [CWC Section 13263(g)].

19. Provisions of these WDRs are severable. If any provision of these requirements is found invalid, the remainder of these WDRs shall not be affected.

20. The Discharger shall, at all times, properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with conditions of this Order. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this order [CWC Section 13263(f)].

21. Except for a discharge which is in compliance with these WDRs, any person who, without regard to intent or negligence, causes or permits any hazardous substance or sewage to be discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, shall, as soon as (a) that person has knowledge of the discharge, (b) notification is possible, and (c) notification can be provided without substantially impeding cleanup or other emergency measures, immediately notify the Office of Emergency Services of the discharge in accordance with the spill reporting provision of the state toxic disaster contingency plan adopted pursuant to Article 3.7 (commencing with Section 8574.7) of Chapter 7 of Division 1 of Title 2 of the Government Code, and immediately notify the State Board or the Board of the discharge. This provision does not require reporting of any discharge of less than a reportable quantity as provided for under subdivisions (f) and (g) of Section

13271 of the Water Code unless the Discharger is in violation of a prohibition in the applicable water Quality Control Plan [CWC Section 13271(a)].

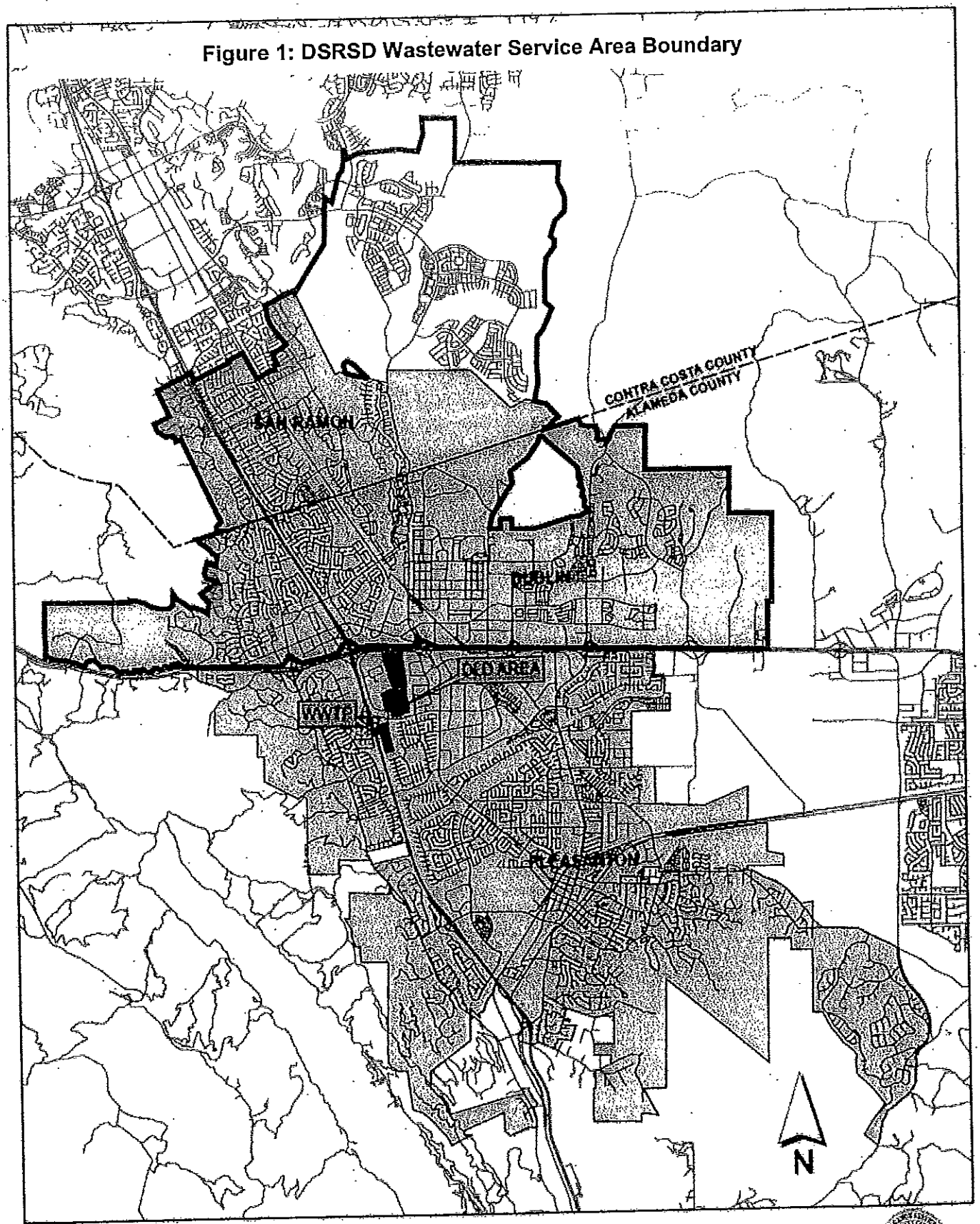
22. The Discharger shall report any noncompliance that may endanger public health or the environment. Any such information shall be provided orally to the Executive Officer within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected; the anticipated time it is expected to continue and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance. The Executive Officer, or an authorized representative, may waive the written report on a case-by-case basis if the oral report has been received within 24 hours [CWC Sections 13263 and 13267].

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, complete, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on August 8, 2007.

Bruce H. Wolfe
Executive Officer

Figures: Figure 1 - Location Map
Attachment: Attachment A - Discharge Monitoring Program

Figure 1: DSRSD Wastewater Service Area Boundary



ATTACHMENT A

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

DISCHARGE MONITORING PROGRAM

FOR

DUBLIN SAN RAMON SERVICES DISTRICT
WASTEWATER TREATMENT PLANT
LAND TREATMENT UNIT
PLEASANTON, ALAMEDA COUNTY

ORDER NO. R2-2007-0053

CONSISTS OF

PART A

AND

PART B

PART A

A. GENERAL

Reporting responsibilities of waste discharges are specified in Sections 13225(a), 13267(b), 13383, and 13387(b) of the California Water Code and this Board's Resolution No. 73-16. This Discharge Monitoring Program is issued in accordance with Title 27 of the California Code of Regulations.

The principal purposes of a discharge monitoring program are: (1) to document compliance with waste discharge requirements and prohibitions established by the Board, (2) to facilitate self-policing by the waste dischargers in the prevention and abatement of pollution arising from waste discharge, (3) to develop or assist in the development of standards of performance, and toxicity standards, (4) to assist the dischargers in complying with the requirements of Title 27.

B. SAMPLING AND ANALYTICAL METHODS

Sample collection, storage, and analyses shall be performed according to the most recent version of EPA Standard Methods and in accordance with an approved sampling and analysis plan.

Water and waste analysis shall be performed by a laboratory approved for these analyses by the State of California. The director of the laboratory whose name appears on the certification shall supervise all analytical work in his/her laboratory and all reports of such work submitted to the Board shall be signed by a duly authorized representative of the laboratory.

All monitoring instruments and equipment shall be properly calibrated and maintained to ensure accuracy of measurements.

C. DEFINITION OF TERMS

1. A grab sample is a discrete sample collected at any time.

2. Receiving waters refers to any surface that actually or potentially receives surface or groundwaters that pass over, through, or under waste materials or contaminated soils. In this case the groundwater beneath and adjacent to the treatment unit areas and surface waters outside the containment structures are considered receiving waters.

3. Standard observations refer to:

a. Receiving Waters

1) Floating and suspended materials of waste origin: presence or absence, source, and size of affected area.
2) Discoloration and turbidity: description of color, source, and size of affected area.
3) Evidence of odors, presence or absence, characterization, source, and distance of travel from source.
4) Evidence of beneficial use: presence of water associated wildlife.
5) Flow rate
6) Weather conditions: wind direction and estimated velocity, total precipitation during the previous five days and on the day of observation.

b. Perimeter of the land treatment unit.

1) Evidence of liquid leaving or entering the waste management unit, estimated size of affected area and flow rate. (Show affected area on map)
2) Evidence of odors, presence or absence, characterization, source, and distance of travel from source.
3) Evidence of erosion of containment structures.

c. The land treatment unit.

1) Evidence of undrained water at any point on the land treatment unit.
2) Evidence of odors, presence or absence, characterization, source, and distance of travel from source.
3) Evidence of ground movement and/or unstable conditions.
4) Adequacy of access road
5) Standard Analysis and measurements are listed on Table A (attached)

D. SAMPLING, ANALYSIS, AND OBSERVATIONS

The Discharger is required to perform sampling, analyses, and observations in the following media:

1. Storm drain discharges per Title 27, Section 20415
2. Groundwater per Title 27, Section 20415

and per the general requirements specified in Section 20415(e) of Title 27.

E. RECORDS TO BE MAINTAINED

Written reports shall be maintained by the Discharger or laboratory, and shall be retained for a minimum of five years. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge or when requested by the Board. Such records shall show the following for each sample:

1. Identity of sample and sample station number.

2. Date and time of sampling.

3. Date and time that analyses are started and completed, and name of the personnel performing the analyses.

4. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used.

5. Calculation of results.

6. Results of analyses, and detection limits for each analysis.

F. REPORTS TO BE FILED WITH THE BOARD

1. Monitoring Reports

Written monitoring reports shall be filed by February 28 and July 31 of each year. In addition an annual report shall be filed by February 28 of each year. The semi-annual report may be combined with the annual report. The reports shall be comprised of the following:

a. Letter of Transmittal

A letter transmitting the essential points in each report should accompany each report. Such a letter shall include a discussion of any requirement violations found during the last reporting period, and actions taken or planned for correcting the violations. If the Discharger has previously submitted a detailed time schedule for correcting requirement violations, a reference to the correspondence transmitting such schedule will be satisfactory. If no violations have occurred in the last reporting period this shall be stated in the letter of transmittal. Monitoring reports and the letter transmitting the monitoring reports shall be signed by a principal executive officer at the level of vice president or his duly authorized representative, if snch representative is responsible for the overall operation of the facility from which the discharge originates. The letter

shall contain a statement by the official, under penalty of perjury, that to the best of the signer's knowledge the report is true, complete, and correct.

b. Each monitoring report shall include a compliance evaluation summary. The summary shall contain:

1) A graphic description of the direction of groundwater flow under/around the land treatment unit, based upon the past and present water level elevations and pertinent visual observations.

2) The method and time of water level measurement, the type of pump used for purging, pump placement in the well; method of purging, pumping rate, equipment and methods used to monitor field pH, temperature, and conductivity during purging, calibration of the field equipment, results of the pH, temperature conductivity and turbidity testing, well recovery time, and method of disposing of the purge water.

3) Type of pump used, pump placement for sampling, a detailed description of the sampling procedure; number and description of equipment, field and travel blanks; number and description of duplicate samples; type of sample containers and preservatives used, the date and time of sampling, the name and qualifications of the person actually taking the samples, and any other observations.

4) A written discussion of the groundwater analyses indicating any change in the quality or characteristics of the groundwater.

c. A comprehensive discussion of the compliance record and status, as well as any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the Waste Discharge Requirements and 27CCR.

d. A map or aerial photograph shall accompany each report showing observation and monitoring station locations.

e. Laboratory statements with the results of analyses specified in Part B must be included in each report. The director of the laboratory whose name appears on the laboratory certification shall supervise all analytical work in his/her laboratory and all reports of such work submitted to the Board shall be signed by a duly authorized representative of the laboratory.

1) The methods of analyses and detection limits must be appropriate for the expected concentrations. Specific methods of analyses must be identified. If methods other than EPA approved methods or Standard Methods are used, the exact methodology must be

submitted for review and approved by the Executive Officer prior to use.

2) In addition to the results of the analyses, laboratory quality assurance/quality control (QA/QC) information must be included in the monitoring report. The laboratory QA/QC information should include the method, equipment and analytical detection limits; the recovery rates; an explanation for any recovery rate that is outside laboratory control limits; the results of equipment and method blanks; the results of spiked and surrogate samples; the frequency of quality control analysis; and the name and qualifications of the person(s) performing the analyses.

f. An evaluation of the effectiveness of the stormwater drainage facilities, which includes an evaluation of stormwater buildup within the land treatment unit, collection area, and removal systems.

g. A summary and certification of completion of all standard observations for the land treatment unit and the perimeter of the land treatment unit, and, if applicable, the receiving waters.

h. The Annual Monitoring Report shall be submitted to the Board covering the previous year. The Report shall include, but is not limited to, the following:

i. A graphical presentation of the analytical data [Board-approved alternate procedure per 27CCR, Section 20415(e)(14)] for monitoring locations that have shown detectable concentrations during two consecutive monitoring events, or greater than ten percent detection frequency for any organic compound. Graphical representation must be provided for monitoring locations with metals and general chemistry analytical parameters that have an increasing trend for three consecutive monitoring events;

ii. A tabular summary of all the monitoring data obtained during the previous year;

iii. A comprehensive discussion of the compliance record, and the corrective actions taken or planed which may be needed to bring the Discharger into full compliance with the waste discharge requirements;

iv. A written summary of the groundwater analyses indicating any change in the quality of the groundwater; and

v. An evaluation of the effectiveness of the surface water drainage facilities, which includes an evaluation of surface water buildup within the land treatment units, a summary of estimated surface water volumes removed from the units, and a discussion of the surface water disposal methods utilized.

i. Tabular and graphical summaries of the monitoring data obtained during the previous year; the annual report should be accompanied by a compact disc, MS-EXCEL format, tabulating the year's data.

2. **Contingency Reporting**

A report shall be made by telephone of any release of biosolids or related materials from the land treatment area immediately after it is discovered. A written report shall be filed with the Board within five days thereafter. This report shall contain the following information:

a) a map showing the location(s) of discharge if any;
b) approximate volume and flow rate;
c) nature of effects; i.e. all pertinent observations and analyses; and
d) corrective measures underway, proposed, or as specified in the Waste Discharge Requirements.

3. **Well Logs**

A boring log and a monitoring well construction log shall be submitted for each new sampling well established for this monitoring program, as well as a report of inspection or certification that each well has been constructed in accordance with the construction standards of the Department of Water Resources. These logs and reports shall be submitted within 45 days after well installation.

G. WATER QUALITY PROTECTION STANDARDS

1. Constituents of Concern: The Constituents of Concern (COC) for groundwater are those listed in Table 1 of Part B of this Discharge Monitoring Program.

2. Concentration Limits: Concentration Limits (CLs) for each COC are shown in Table 2 of Part B. The CLs are the higher of either the PQL or the background value, and are therefore protective of human health and the environment.

3. Monitoring Points: Monitoring Points for the DLD are identified in Table 1 of this Discharge Monitoring Program. Until new Point of Compliance wells are installed at the land treatment unit, the wells listed in Table 1 will be utilized for evaluating the potential for water quality impacts.

4. Point of Compliance: The Point of Compliance for this facility is the vertical surface that extends from the outside edge of the lateral containment structures through the uppermost aquifer underlying the unit.

Part B

1. DESCRIPTION OF OBSERVATION STATIONS AND SCHEDULE OF OBSERVATIONS

A. GROUNDWATER:

Semi-Annual Reports: **due July 31 of each year**
due February 28 of each year

Annual Report: **due February 28 of each year**

Groundwater shall be sampled and analyzed as detailed in Table 1. Monitoring well locations are shown in Figure A-1. CLs for groundwater sampled at the monitoring wells are shown in Table 2.

B. FACILITIES MONITORING - **Observe semi-annually, report annually**

Semi-Annual Report: **due July 31 of each year**
Annual Report: **due February 28 of each year**

The Discharger shall inspect all facilities to ensure proper and safe operation and report semi-annually. The facilities to be monitored shall include, but not be limited to:

1. Surface water ponding
2. Perimeter diversion channels and run-on/run-off control features
3. Seepage: visible or noticeable liquid on the ground surface on the outside of the containment berms.

C. PHOTO DOCUMENTATION OF FACILITIES MONITORING - **Observe semi-annually, report annually**

Semi-Annual Report: **due July 31 of each year**
Annual Report: **due February 28 of each year**

The Discharger shall provide photo documentation of conditions at locations that include, but are not limited to the land treatment unit facilities listed in Part B above. Locations from which photographs are taken should be permanent stations such that they can be used in successive reports.

D. SEEPAGE MONITORING

Semi-Annual Report: **due July 31 of each year**
Annual Report: **due February 28 of each year**

Seepage is a visible flowing liquid on the ground surface at the perimeter of the DLD property line. Seepage monitoring stations include any point at which seepage is found occurring from the land treatment unit. In the event seepage is observed, seepage shall be sampled and analyzed as detailed in Table 3. The land treatment unit perimeter shall **be monitored semi-annually and the results reported semi-annually.**

Station	Description	Observations	Frequency
S-1 thru S-'n'	At any point(s) at which seepage is found occurring from the land treatment unit	Standard observations for the perimeter and standard analyses (Table 3, perform analyses once per seep)	Daily until remedial action is taken and seepage ceases

I, Bruce H. Wolfe, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedures set forth in this Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in this Board's Order No. R2-2007-0053.

2. Is effective on the date shown below.

3. May be reviewed or modified at any time subsequent to the effective date, upon written notice from the Executive Officer.

Bruce H. Wolfe
Executive Officer

Date Ordered: August 8, 2007

Attachment: Figure A-1 – Monitoring Well Location Map
Tables 1-3

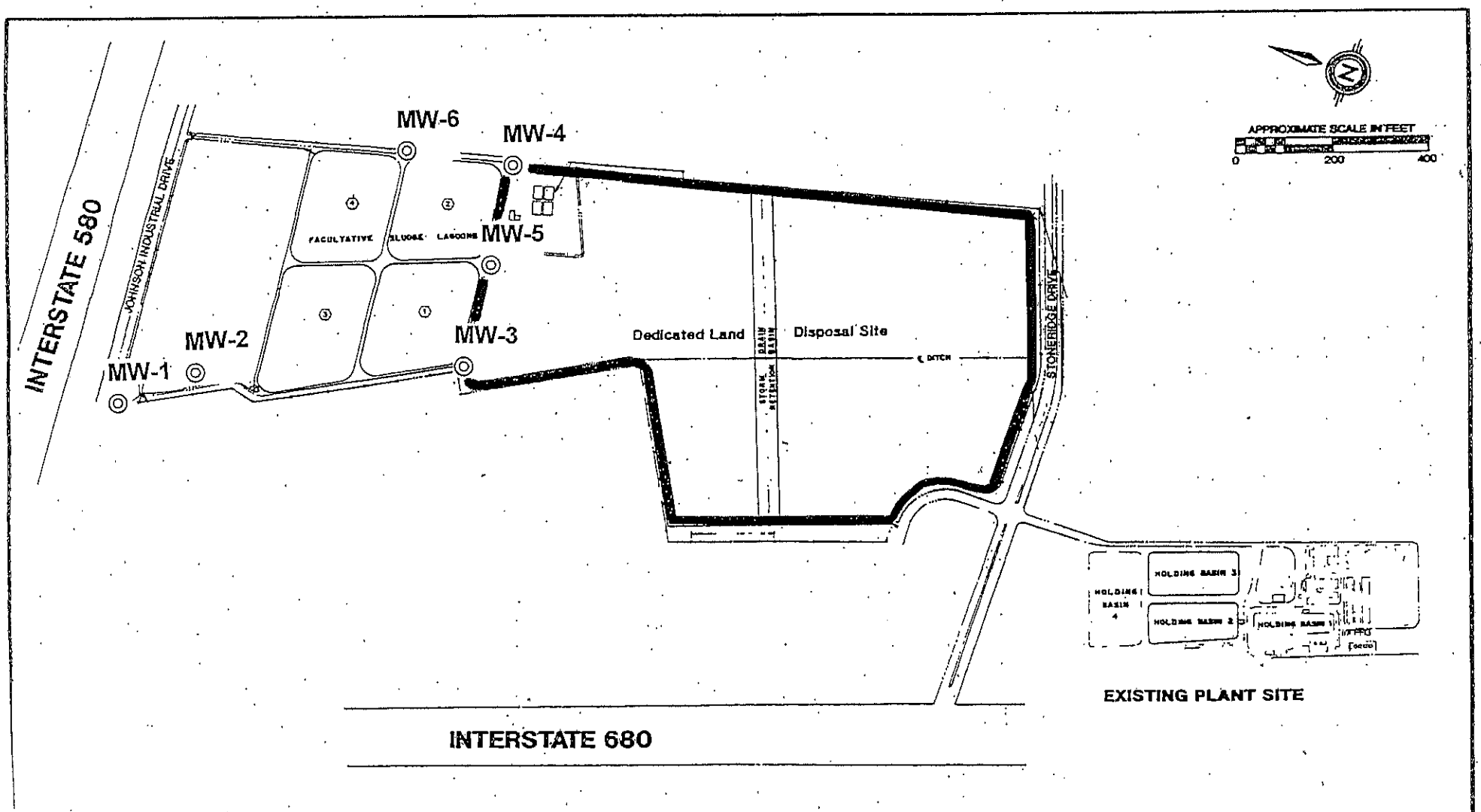


Figure A-1
MONITORING WELL LOCATION MAP
DUBLIN SAN RAMON SERVICES DISTRICT
DEDICATED LAND DISPOSAL SITE

Table 1 - Groundwater Monitoring Points, Parameters and Sampling Frequency
Dublin San Ramon Services District

Monitoring Wells	Parameters	Sampling Frequency
All Groundwater Monitoring Wells MW-1 MW-2 MW-3 MW-4 MW-5 MW-6 plus all wells installed pursuant to Provisions 3 and 4	**General Water Quality Parameters:** Temperature Specific Conductance pH Turbidity Total Dissolved Solids Chloride Nitrate as Nitrogen Ammonia (total and unionized)	Semi-annually
	Dissolved Metals Arsenic, Barium Cadmium, Copper, Chromium, Lead Mercury, Nickel, Vanadium, Zinc	Semi-annually
	Additional Metals: Antimony, Beryllium, Cobalt, Selenium, Silver, Thallium, Tin	Once every 5 years beginning in October 2007
	40 CFR 258 Appendix II constituents: Pesticides & PCBs: EPA Method 8080 Chlorophenoxy Herbicides: EPA Method 8151	Once every 5 years beginning in October 2007

Table 1 Notes:
EPA methods: Arsenic (7060 or 6010), Barium (6010), Chromium (6010), Copper (6010), Lead (7421 or 6010), Mercury (7470), Nickel (6010), Vanadium (6010), Zinc (6010), Antimony (6010), Beryllium (6010), Cobalt (6010), Selenium (7741 or 7740), Silver (6010), Thallium (7841), Tin (6010)

This subset of the 40 CFR 258 Appendix I metals is used as a surrogate for the entire suite of Appendix I metals

Table 2 - Concentration Limits for Groundwater
Dublin San Ramon Services District

Constituent of Concern	Practical Quantitation Limit	US EPA Test Method	Concentration Limits (ppb)
Metals[1]			
Arsenic	7	7060 or 6010	PQL/Background[2]
Barium	20	6010	PQL/Background[2]
Cadmium	5	6010	PQL/Background[2]
Chromium	10	6010	PQL/Background[2]
Copper	10	6010	PQL/Background[2]
Lead	5	7421 or 6010	PQL/Background[2]
Mercury	1	7470	PQL/Background[2]
Nickel	40	6010	PQL/Background[2]
Vanadium	10	6010	PQL/Background[2]
Zinc	20	6010	PQL/Background[2]
Antimony	5	6010	PQL/Background[2]
Beryllium	5	6010	PQL/Background[2]
Cobalt	10	6010	PQL/Background[2]
Selenium	10	7740 or 7741	PQL/Background[2]
Silver	20	6010	PQL/Background[2]
Thallium	5	7841	PQL/Background[2]
Tin	50	6010	PQL/Background[2]
Pesticides and PCBs	varies		PQLs
Chloropheynoxy Herbicides	varies		PQLs

Table 2 notes:
[1]PQLs may vary based on the results of the laboratory's annual MDL survey and any sample dilution required because of matrix interferences.

[2]Concentration Limit is the higher of either the routine PQL or the background value.

Table 3 – Surface Water and Seepage Monitoring Points, Parameters and Sampling Frequency – Dublin San Ramon Services District Land Treatment Unit

Monitoring Location	Analyses	EPA Method (or equivalent)	Sampling Frequency
Seep locations	Dissolved Metals		Each occurrence; daily until remedial action is taken or seep ceases
	Arsenic	7060 or 6010	
	Barium	6010	
	Cadmium	6010	
	Copper	6010	
	Chromium	6010	
	Lead	7421 or 6010	
	Mercury	7470	
	Nickel	6010	
	Vanadium	6010	
	Zinc	6010	
	pH	9040	
	Ammonia (total and unionized)	350.1	
	Pesticides/PCB	8080	
	COD	410.1	
	96-hour Toxicity Bioassay using Mysid Shrimp	N/A	

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

GROUND-WATER RESOURCES
HYDROLOGY • DEVELOPMENT • MANAGEMENT

November 28, 2007
File No. 07-1-067

Mr. Terry Seward
San Francisco Bay Regional Water Quality Control Board
1515 Clay St. Suite 1400
Oakland, CA 94612

**SUBJECT: REPORT OF WELL INSTALLATION AND ABANDONMENT
DUBLIN SAN RAMON SERVICES DISTRICT DEDICATED LAND DISPOSAL SITE
PLEASANTON, ALAMEDA COUNTY, CA**

Dear Mr. Seward:

Luhdorff and Scalmanini, Consulting Engineers (LSCE) prepared this *Report of Well Installation and Abandonment* on behalf of the Dublin San Ramon Services District (DSRSD) for the Dedicated Land Disposal Site (DLD) in Alameda County, CA (**Attachment 1, Figure 1**).

This report was prepared to comply with *Provision 4* of the San Francisco Bay Regional Water Quality Control Board's (RWQCB) Revised Tentative Waste Discharge Requirements (WDRs) Order No. R2-2007-0053. This report documents the implementation of the *Workplan for Installation of Point Compliance Wells* (WBA, 2007) submitted by DSRSD on October 1, 2007. The *Workplan* was approved on October 9, 2007 (RWQCB, 2007).

The purpose of the well installation project is to (1) maintain compliance with the RWQCB, (2) improve upgradient and downgradient water level control, and (3) improve long-term groundwater quality monitoring efforts. Drilling commenced on Thursday November 1, 2007; the last surface completion pad was poured on Friday November 9, 2007. During this time, eight new monitoring wells were installed at four locations, i.e., the NW, NE, SE, and SW sites (**Figure 2**). The wells were installed in pairs, each pair consisting of an upper aquiclude well and an upper aquifer well approximately ten feet apart. During the first attempt to install an upper aquifer well at the NE location, the well casing failed. The failed well was abandoned and a replacement well was installed in a new borehole several feet away from the abandoned well. Zone 7 Water Agency well construction and abandonment permits for this project are provided in **Attachment 2**.

During the staking of the well locations, it became apparent that it was not practical to install any monitoring wells in the vicinity of the proposed well location site northwest of the dedicated land disposal area (DLD) due to underground utilities. Therefore, the northwest well site was moved several hundred feet north (see **Figure 2**).

Drilling and Monitoring Well Construction

Drilling and well installation services were provided by Spectrum Exploration and Wells, Inc. of Stockton, CA (California License # 512268). Borings at the NW, SE, and SW locations were advanced with a CME 75 drill rig. The presence of numerous underground utilities in the northeastern area necessitated the well to be located on sloping ground in a landscaped area at the foot of the facility road's

eastern shoulder. The standard CME 75 drill rig could not negotiate this site due the sloping grade, soft soil conditions, and the limited maneuvering space. Therefore, a CME 75 all terrain rig (a drill mounted on a vehicle specially designed to operate under difficult topographic conditions) was used at this site.

All boreholes were drilled using the hollow stem auger method with a diameter of 8 inches. The deeper of the boreholes drilled at each location were used as test holes: 18-inch lithologic samples were obtained every 5 feet with a 2-inch diameter split-spoon sampler advanced by an automatic drive hammer with a force equivalent to a 140-pound weight dropped a distance of 30 inches; blow counts were recorded every 6 inches for any 18-inch sample interval. Loose subsurface materials returned by the auger were also inspected. Drill cuttings were spread near the boreholes. On-site supervision of all field activities was provided by a Professional Geologist or a Geologist-in-Training under the direct supervision of a Professional Geologist.

Common features of the installed monitoring wells are summarized as follows:

- Flush-threaded 2-inch diameter Schedule 40 PVC ASTM F480-88A casing and screen (0.020-inch slot size)
- Threaded end cap
- Transition seal (Pel-Plug Bentonite Granules)
- Sand pack (RMC Pacific Resources Lapis-Lustre 2/12 mesh Natural Monterey Beach Sand; clean graded, kiln dried); surged during placement to minimize settling during well development
- Surface seal (neat cement)

The eight monitoring wells were paired to have two wells of varying depth at each location that target different geologic units present at the site. Four monitoring wells were completed (i.e., their screen sections were placed) in the interpreted Upper Aquiclude unit and four wells were completed in the interpreted Upper Aquifer unit (DWR, 1966).

As-built drawings of the monitoring wells are shown in **Figures 3, 4, 5,** and 6. These figures also detail the lithology encountered during drilling. Construction details for the new wells are summarized in **Table 1.** Field notes documenting drilling and well installations are provided in **Attachment 3.**

Southeast Location

The SE-Upper Aquifer and SE-Upper Aquiclude wells are located in the southeastern corner of the DLD site, to the side of the facility road and near the eastern fence (see **Figure 2**). The first borehole at this site was drilled to a total depth of 70 feet below ground surface (bgs) on November 1, 2007. The SE-Upper Aquifer well was constructed in this borehole on the same day (see **Figure 3**). Saturated sediment was first encountered at a depth of approximately 30 feet (bgs) and again between 40 and 50 feet (bgs). Heaving sands were encountered at depths between 55 and 60 feet (bgs). The Upper Aquifer well at this site was constructed with 20 feet of well screen (0.020 inch slot size) placed mostly in sand and clay between 45 to 65 feet (bgs). This well has a five-foot sump, a three-foot bentonite seal at the bottom of the hole, a three-foot bentonite transition seal above the sand pack, and a 40-foot neat cement sanitary seal above the transition seal.

The second borehole at this site was drilled to a total depth of 35 feet (bgs) on November 1, 2007. The SE-Upper Aquiclude well was constructed in this borehole on November 2, 2007. The Upper Aquiclude well at this site was constructed with 15 feet of well screen (0.020 inch slot size) placed in clay between 20 to 35 feet (bgs). This well has a 3-foot bentonite transition seal above the sand pack, and a 15-foot neat cement sanitary seal above the transition seal.

The wells were completed with 6-inch diameter locking steel housing units and 48-inch diameter concrete surface pads with a thickness of 6 inches on November 2, 2007; 3 crash posts were placed around this well cluster to protect the wellheads.

Southwest Location

The SW-Upper Aquifer and SW-Upper Aquiclude wells are located in the southwestern corner of the DLD site, on the facility road (see **Figure 2**). The first borehole at this site was drilled to a total depth of 75 feet below ground surface (bgs) on November 2 and 5, 2007. The SW-Upper Aquifer well was constructed in this borehole on November 5, 2007 (see **Figure 4**). Saturated sediment was first encountered at a depth of about 30 feet (bgs) and again at 55 and 70 feet (bgs). Heaving sands were encountered at depths between 55 feet and 75 feet (bgs). During construction the bottom foot of this borehole filled in with native material to 74 feet (bgs). The Upper Aquifer well at this site was constructed with 20 feet of well screen (0.020 inch slot size) placed mostly in sand and clayey sand between 54 to 74 feet (bgs). This well has a 3-foot bentonite transition seal above the sand pack, and a 47-foot neat cement sanitary seal above the transition seal.

The second borehole at this site was drilled to a total depth of 40 feet (bgs) on November 5, 2007. The SW-Aquiclude well was constructed in this borehole on the same day. The Aquiclude well at this site was constructed with 15 feet of well screen (0.020 inch slot size) placed in clay between 20 to 35 feet (bgs). This well has a 5-foot sump, a 4-foot bentonite seal at the bottom of the hole, a 3-foot bentonite transition seal above the sand pack, and a 15-foot neat cement sanitary seal above the transition seal. The wells were completed with 12-inch diameter heavy duty steel subsurface vaults on November 6, 2007.

Northwest Location

The NW-Upper Aquifer and NW-Upper Aquiclude wells are located northwest of the DLD area near the west entry to the Livermore-Amador Valley Water Management Agency's (LAVWMA) facility (see **Figure 2**). The first borehole at this site was drilled to a total depth of 75 feet (bgs) on November 6, 2007. The NW-Upper Aquifer well was constructed in this borehole on the same day (see **Figure 5**). Saturated sediment was first encountered at a depth of about 30 feet (bgs) and again at 50 to 75 feet (bgs). Heaving sands were encountered at a depth of 65 feet (bgs). During construction the bottom foot of this borehole filled in with native material to 74 feet (bgs). The Upper Aquifer well at this site was constructed with 20 feet of well screen (0.020 inch slot size) placed mostly in sand and clayey sand between 49 to 69 feet (bgs). This well has a 5-foot sump (sediment trap), a 4-foot bentonite seal at the bottom of the hole, a 4-foot bentonite transition seal above the sand pack, and a 43-foot neat cement sanitary seal above the transition seal.

The second borehole at this site was drilled to a total depth of 40 feet (bgs) on November 6, 2007. The NW-Upper Aquiclude well was constructed in this borehole on the same day. The Upper Aquiclude well at this site was constructed with 15 feet of well screen (0.020 inch slot size) placed in clay between 20 to 35 feet (bgs). This well has a 5-foot sump, a 4-foot bentonite seal, a 4-foot bentonite transition seal above the sand pack, and an 11-foot neat cement sanitary seal above the transition seal. The wells were completed with 6-inch diameter locking steel housing units and 48-inch diameter concrete surface pads with a thickness of 6 inches on November 7, 2007; 4 crash posts were placed around this well cluster to protect the wellheads.

Northeast Location

The NE-Upper Aquifer and NE-Upper Aquiclude wells are located in the northeastern part of the DLD site, at the foot of the facility road's eastern shoulder (see **Figure 2**). The first borehole at this site was drilled to a total depth of 75 feet (bgs) on November 7-8, 2007 and the first (subsequently abandoned) NE-Upper Aquifer well was constructed in this borehole. Saturated sediment was encountered at a depth of about 25 feet (bgs). As opposed to the other drilling locations, no significant sand strata were

encountered in the depth interval corresponding to the Upper Aquifer unit. During the placement of the sanitary seal, cement grout entered the well casing. It could not be determined whether the grout had entered through the well screen or through defective casing material. The well was destroyed using Zone 7 Water Agency protocol (see **Attachment 2**) on November 9, 2007. The top ten feet of PVC well casing were removed and the well was filled with neat cement using the tremie method until the cement mushroomed at the ground surface.

A new NE-Upper Aquifer well was drilled and constructed on November 9, 2007 to a depth of 76 feet (bgs) (see **Figure 6**). The Upper Aquifer well at this site was constructed with 20 feet of well screen (0.020 inch slot size) placed between 50 to 70 feet (bgs) in mostly silty clay. This well has a 5-foot sump, a 4-foot bentonite seal at the bottom of the hole, a 4-foot bentonite transition seal above the sand pack, and a 43-foot neat cement sanitary seal above the transition seal.

The second borehole at this site was drilled to a total depth of 35 feet (bgs) on November 8, 2007. The NE-Upper Aquiclude well was constructed in this borehole on the same day. The Upper Aquiclude well at this site was constructed with 15 feet of well screen (0.020 inch slot size) placed in clay between 20 to 35 feet (bgs). This well has a 3-foot bentonite transition seal above the sand pack and a 14-foot neat cement sanitary seal above the transition seal.

Both wells were completed with 6-inch diameter locking steel housing units and concrete surface pads on November 9, 2007. The soft soil conditions and sloping grade at this location prompted construction of concrete surface pads (3-ft x 3-ft x 6-in) with steel reinforcement (horizontally and vertically) to add extra strength to the wellhead. Crash posts were not installed, as these wells are not at risk to be damaged by facility traffic.

Well Development

Del-Tech Geotechnical Support Services of Oakdale, CA, has been retained to develop the new monitoring wells. The work is scheduled to be performed between December 3 and 6, 2007, and will be completed prior to initial groundwater sampling and testing under Order R2-2007-0053. The development of these wells will consist of

- initial bailing
- pumping using an inertial pump (Waterra)
- pumping using an electric submersible pump (Grundfos)
- swabbing
- surging, and
- potentially the application of a non-hazardous phosphate-free dispersant (Baroid Aqua-Clear® PFD).

The tentative termination criterion for the well development is a turbidity of 5 NTU. However, this criterion may be adjusted depending on the progress made during the well development and their individual well yields. A well development report will be prepared after conclusion of well development and submitted to the RWQCB without delay.

Please call if you have any comments or questions regarding this well installation report.

Sincerely,

LUHDORFF AND SCALMANINI
CONSULTING ENGINEERS

Till Angermann
Project Hydrogeologist

Barbara Dalgish, G.I.T.
Staff Hydrogeologist

BD/tea/te

Cc: Mr. Dan Gallagher and Mr. Levi Fuller - *Dublin San Ramon Services District*, 7399 Johnson Dr., Pleasanton, CA 94588
Mr. Alex Fortin - *Whitley Burchett & Associates*, 1777 Oakland Blvd., Suite 200, Walnut Creek, CA 94596
Mr. Wyman Hong - *Zone 7 Water Agency*, 100 North Canyons Parkway, Livermore, CA 94551

References

Department of Water Resources. **1966.** *Bulletin No. 118-2 Livermore and Sunol Valleys Evaluation of Groundwater Resources*. August 1966.

Whitley, Burchett & Associates. **2007.** *Workplan for Installation of Point Compliance Wells*. Technical Memorandum dated September 28, 2007.

California Regional Water Quality Control Board – San Francisco Bay Region. **2007.** *Approval of Workplan*. Letter dated October 9, 2007.

Attachments

Attachment 1	Figures and Table of Well Construction Details
Figure 1	Location Map, Dublin San Ramon Services District FSL/DLD Site, Pleasanton, CA
Figure 2	Monitoring Well Locations, Dublin San Ramon Services District FSL/DLD Site
Figure 3	SE-Upper Aquifer and SE-Upper Aquiclude Well Profiles and Lithology, Dublin San Ramon Services District FSL/DLD Site
Figure 4	SW-Upper Aquifer and SW-Upper Aquiclude Well Profiles and Lithology, Dublin San Ramon Services District FSL/DLD Site
Figure 5	NW-Upper Aquifer and NW-Upper Aquiclude Well Profiles and Lithology, Dublin San Ramon Services District FSL/DLD Site
Figure 6	NE-Upper Aquifer and NE-Upper Aquiclude Well Profiles and Lithology, Dublin San Ramon Services District FSL/DLD Site
Table 1	Well Construction Details, Dublin San Ramon Services District FSL/DLD Site
Attachment 2	Zone 7 Water Agency Drilling Permits
Attachment 3	Field Notes

Attachment 1

Figures and Table of Well Construction Details

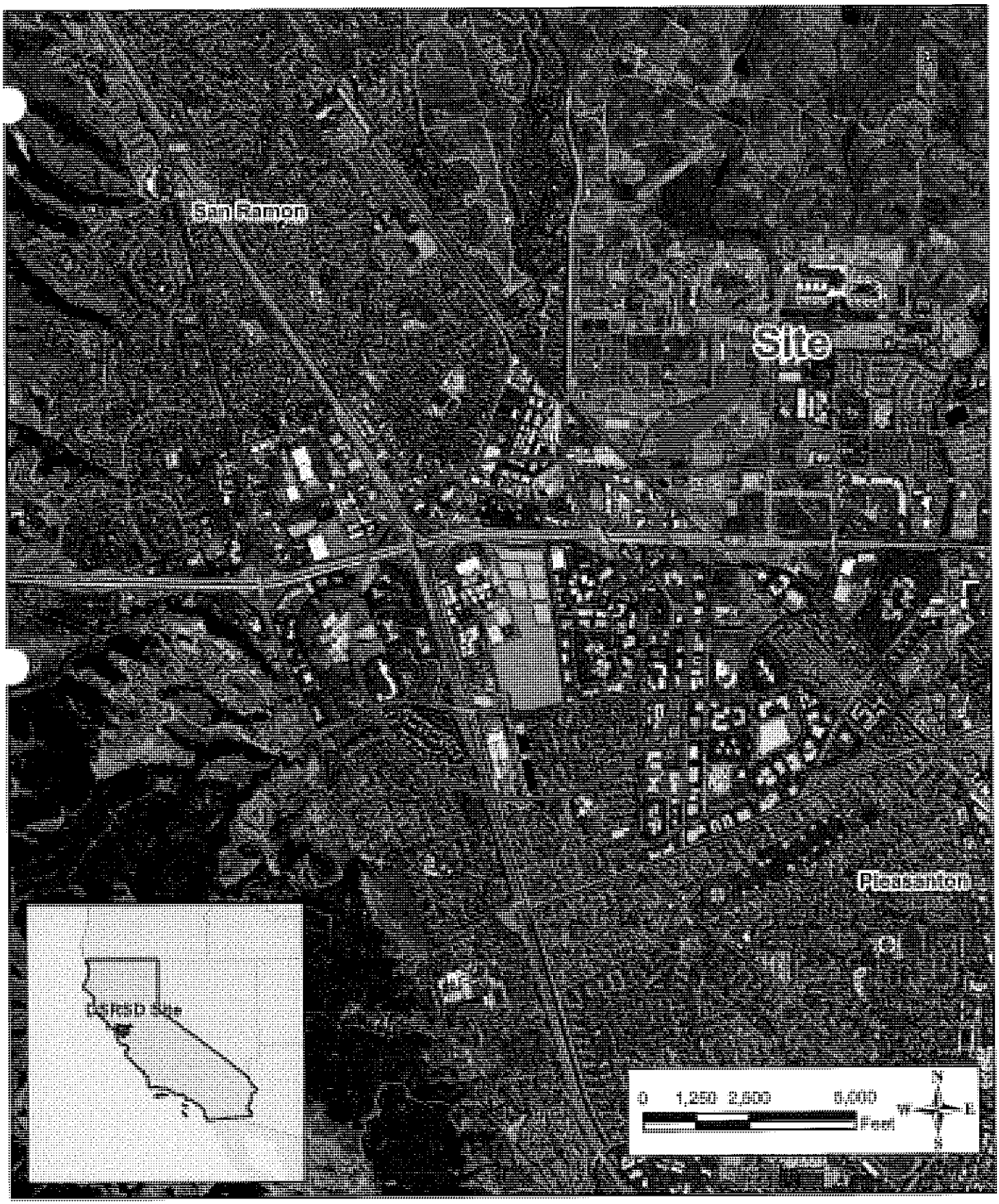


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Figure 1
Location Map
Dublin San Ramon Services District FSL/DLD Site
Pleasanton, CA

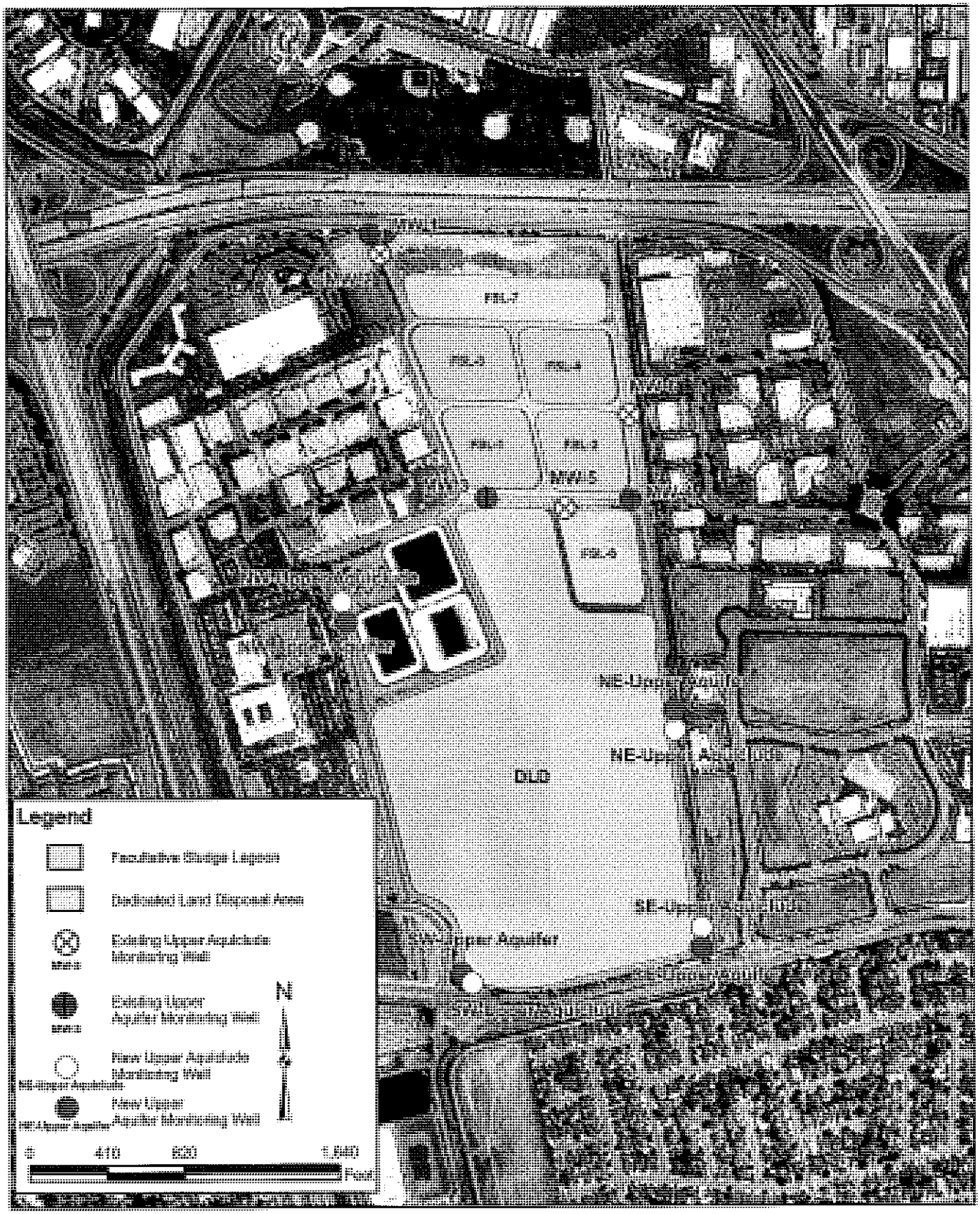

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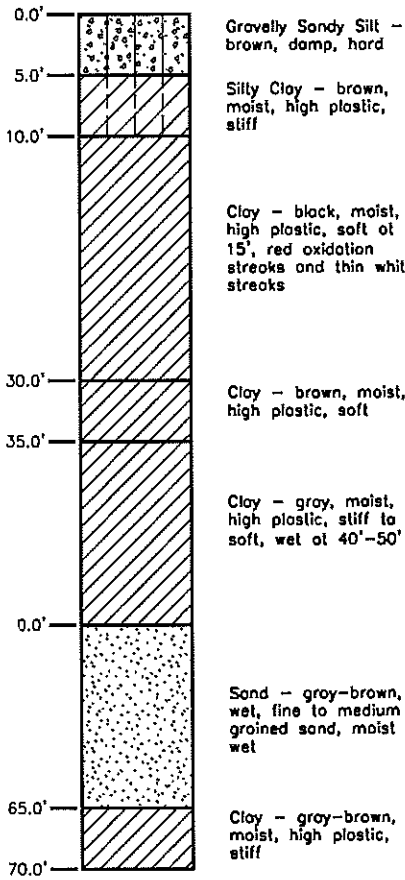
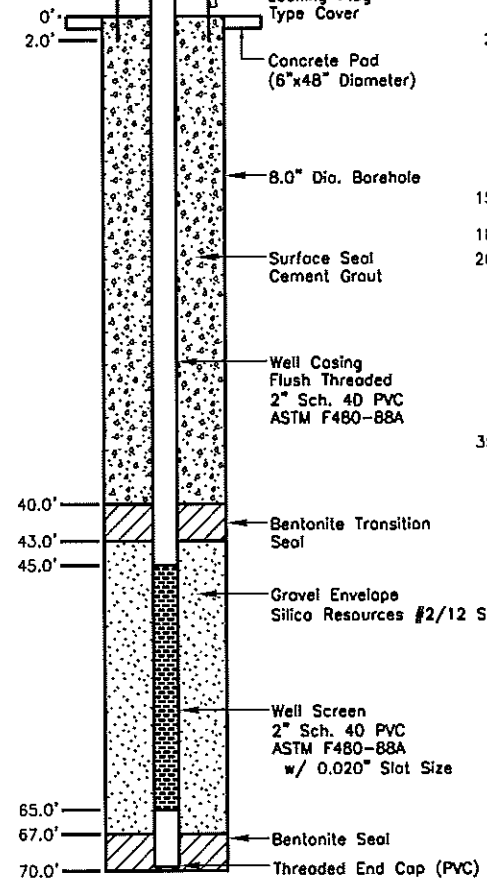
Figure 2
Monitoring Well Locations
Dublin San Ramon Services District FSL/DLD Site

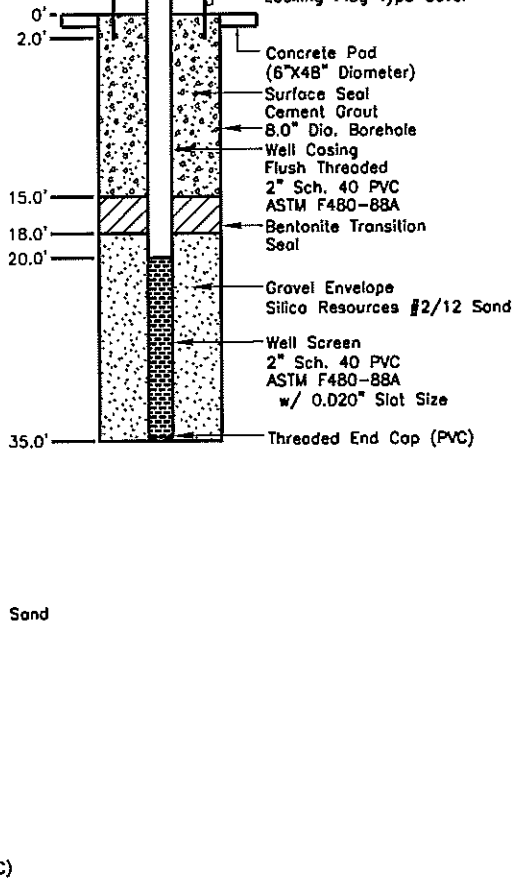
SE LOCATION TEST HOLE LITHOLOGY



MONITORING WELL SE-UPPER AQUIFER AS-BUILT WELL PROFILE



MONITORING WELL SE-UPPER AQUICLUDE AS-BUILT WELL PROFILE



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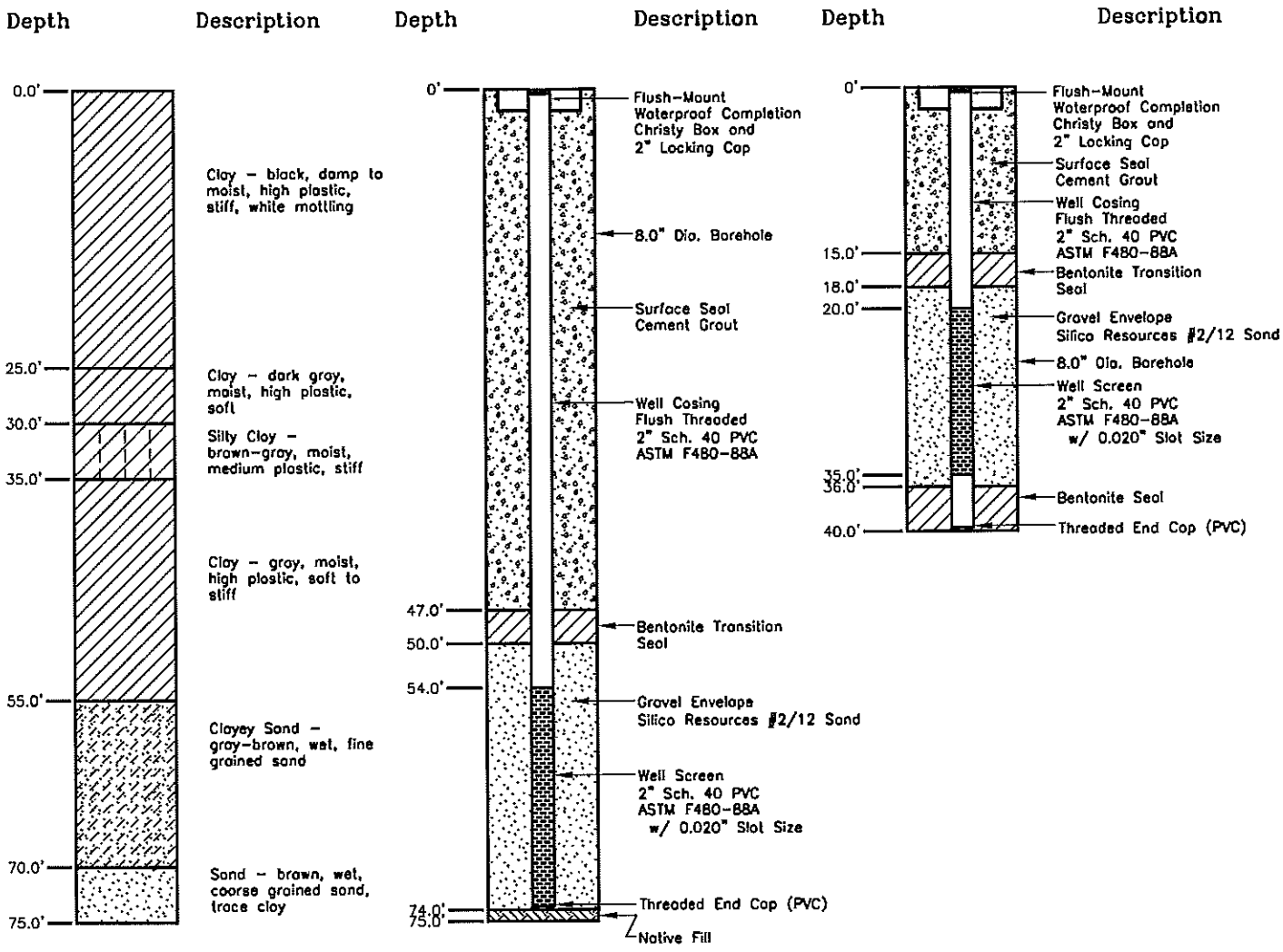
LUHDORFF & SCALMANINI CONSULTING ENGINEERS

Figure 3
SE-Upper Aquifer and SE-Upper Aquiclude Well Profiles and Lithology
Dublin San Ramon Services District FSL/DLD Site

SW LOCATION TEST HOLE LITHOLOGY

MONITORING WELL SW-UPPER AQUIFER AS-BUILT WELL PROFILE

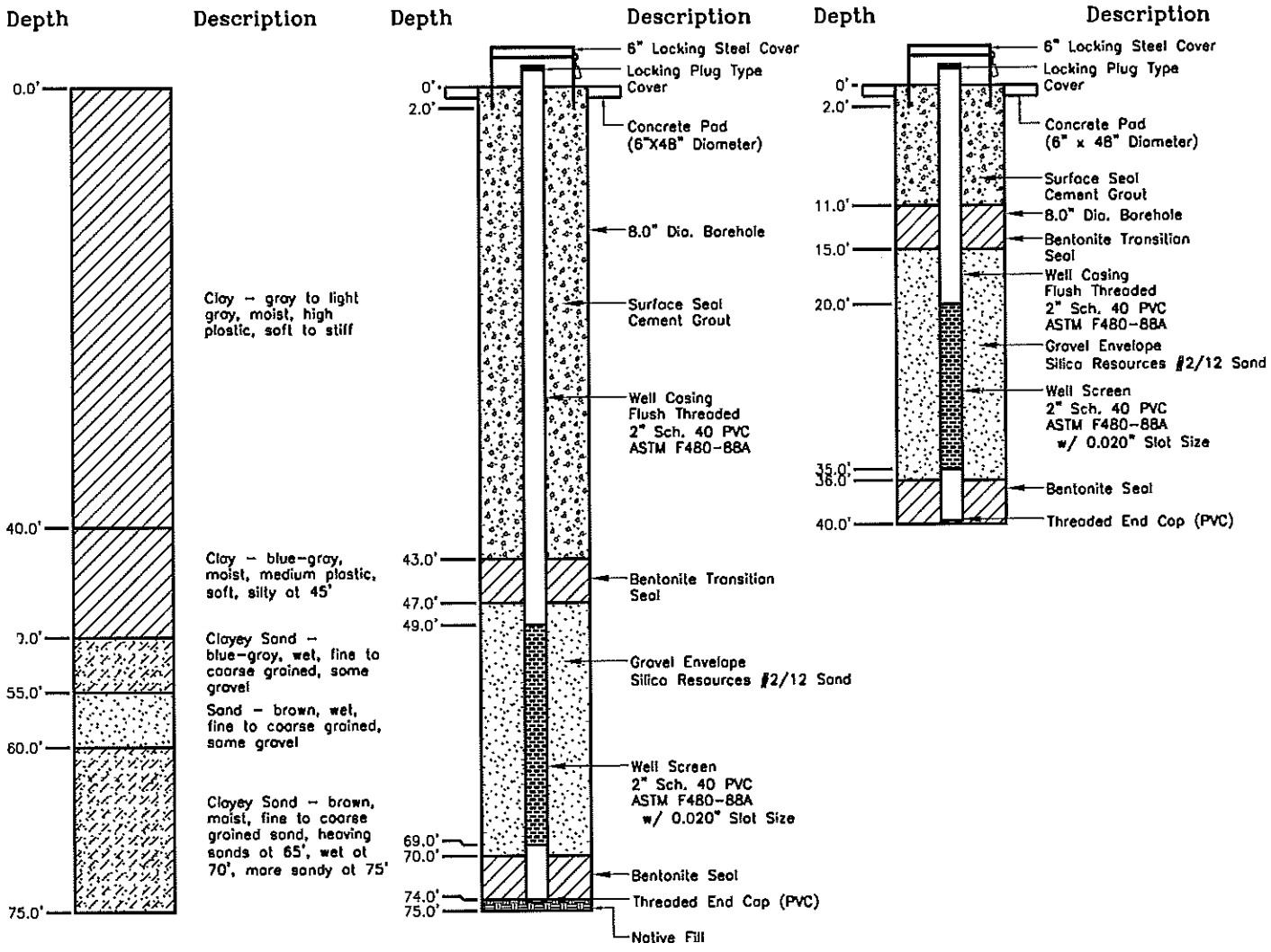
MONITORING WELL SW-UPPER AQUICLUDE AS-BUILT WELL PROFILE



CAD FILE: G:/Projects/Dublin San Ramon/07-1-067/SW-70.dwg CFG FILE: LSCE2500.PCP_MRG DATE: 11-21-07 9:26am

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

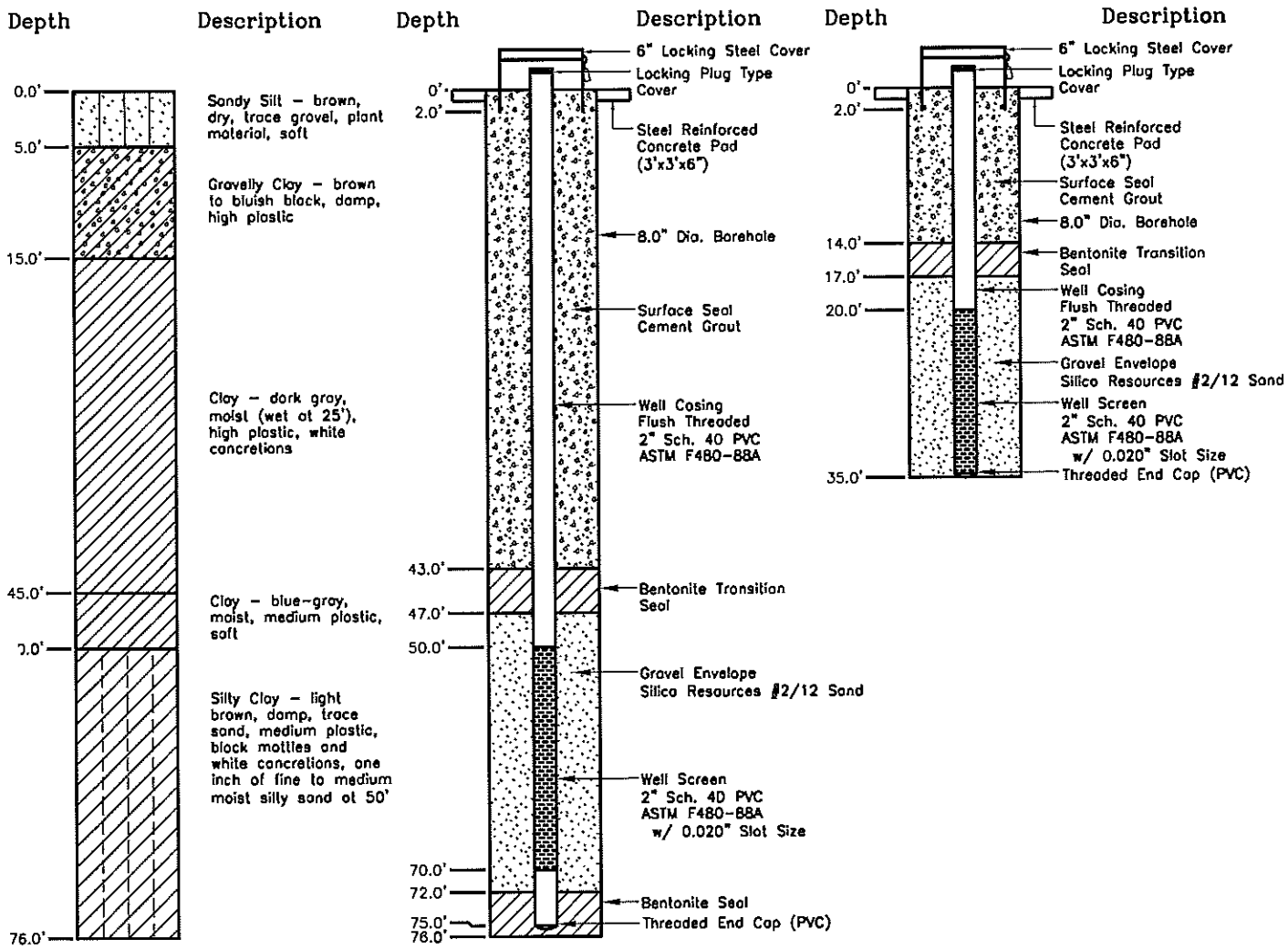
Figure 4
SW-Upper Aquifer and SW-Upper Aquiclude Well Profiles and Lithology
Dublin San Ramon Services District FSL/DLD Site



CAD FILE: G:/Projects/Dublin San Ramon/07-1-067/NW-75.dwg CFG FILE: LSCE2500.PCP_MRG DATE: 11-21-07 8:31am

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

Figure 5
NW-Upper Aquifer and NW-Upper Aquiclude Well Profiles and Lithology
Dublin San Ramon Services District FSL/DLD Site



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LUHDORFF & SCALMANINI CONSULTING ENGINEERS

Figure 6
NE-Upper Aquifer and NE-Upper Aquiclude Well Profiles and Lithology
Dublin San Ramon Services District FSL/DLD Site

Table 1
Well Construction Details
Dublin San Ramon Services District FSL/DLD Site

Location	Construction Completion	Zone of Completion	Driller	Drilling Oversight	Depth of Borehole (feet, bgs)	Depth of Completed Well (feet, bgs)	Casing Material	Casing Diameter (inches)	Screened Interval (feet, bgs)	Slot Size (inches)	Sand Pack (feet, bgs)	Bentonite Seals (feet, bgs)	Surface Seal (feet, bgs)	TOC Elevation (feet, msl)	Ground Surface Elevation (feet, msl)	Screened Interval Elevation (feet, msl)	
SE-70	11/2/2007	U. Aquifer	Spectrum	LSCE	70	70	Sch. 40 PVC	2	45-65	0.020	43-67	40-43 & 67-70	0-40	tbd	tbd	tbd	tbd
SE-35	11/2/2007	U. Aquiclude	Spectrum	LSCE	35	35	Sch. 40 PVC	2	20-35	0.020	18-35	15-18	0-15	tbd	tbd	tbd	tbd
SW-75	11/6/2007	U. Aquifer	Spectrum	LSCE	75*	75	Sch. 40 PVC	2	54-74	0.020	50-74	47-50	0-47	tbd	tbd	tbd	tbd
SW-40	11/6/2007	U. Aquiclude	Spectrum	LSCE	40	40	Sch. 40 PVC	2	20-35	0.020	18-36	15-18 & 36-40	0-15	tbd	tbd	tbd	tbd
NW-75	11/7/2007	U. Aquifer	Spectrum	LSCE	75*	74	Sch. 40 PVC	2	49-69	0.020	47-70	43-47 & 70-74	0-43	tbd	tbd	tbd	tbd
NW-40	11/7/2007	U. Aquiclude	Spectrum	LSCE	40	40	Sch. 40 PVC	2	20-35	0.020	15-36	11-15 & 36-40	0-11	tbd	tbd	tbd	tbd
NE-76	11/9/2007	U. Aquifer	Spectrum	LSCE	76	75	Sch. 40 PVC	2	50-70	0.020	47-72	43-47 & 72-76	0-43	tbd	tbd	tbd	tbd
NE-35	11/9/2007	U. Aquiclude	Spectrum	LSCE	35	35	Sch. 40 PVC	2	20-35	0.020	17-35	14-17	0-14	tbd	tbd	tbd	tbd

Notes:

bgs = below ground surface; msl = mean sea level; TOC = top of casing; tbd = to be determined; U. Aquifer = Upper Aquifer; U. Aquiclude = Upper Aquiclude

Spectrum = Spectrum Exploration and Wells

LSCE = Luhdorff and Scalmanini, Consulting Engineers of Woodland, CA

* Filled in during construction to 74'

Attachment 2

Zone 7 Water Agency Drilling Permits

ZONE 7 WATER AGENCY

100 NORTH CANYONS PARKWAY, LIVERMORE, CALIFORNIA 94551 VOICE (925) 454-5000 FAX (925) 454-5728

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT Dublin San Ramon Services Dist. Dedicated Land Disposal Facility Johnson Dr & Stoneridge Blvd, Pleasanton

California Coordinates Source _____ Accuracy _____ ft.
CCN _____ ft. CCE _____ ft.
APN See attch maps

CLIENT
Name DSRSD - Levi Fuller
Address 7399 Johnson Dr. Phone 925-875-2300
City Pleasanton Zip 94588

APPLICANT
Name Luhdorff & Scalmanini
Tom Elson Fax 530-661-6806
Address 900 First St. Phone 530-661-0109
City Woodland Zip 95695

TYPE OF PROJECT:

Well Construction	✓	Geotechnical Investigation	☐
Well Destruction	☐	Contamination Investigation	☐
Cathodic Protection	☐	Other _____	☐

PROPOSED WELL USE:

Domestic	☐	Irrigation	☐
Municipal	☐	Remediation	☐
Industrial	☐	Groundwater Monitoring	✓
Dewatering	☐	Other _____	☐

DRILLING METHOD:

Mud Rotary	☐	Air Rotary	☐	Hollow Stem Auger	✓
Cable Tool	☐	Direct Push	☐	Other _____	☐

DRILLING COMPANY Spectrum Exploration
DRILLER'S LICENSE NO. 512268

WELL SPECIFICATIONS:
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 75 ft.
Surface Seal Depth 18 to 45 ft. Number 8

SOIL BORINGS:
Number of Borings _____ Maximum
Hole Diameter _____ in. Depth _____ ft.

ESTIMATED STARTING DATE Nov 29
ESTIMATED COMPLETION DATE 6 work days

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE [signature] Date Oct 22, 2007

Thomas Elson

ATTACH SITE PLAN OR SKETCH

PERMIT NUMBER 27191
WELL NUMBER 3S/1E-6N5, 6N6, 7D1 - 7D4, 3S/1W-12A9 & 12A10
APN

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER SUPPLY WELLS
1. Minimum surface seal diameter is four inches greater than the well casing diameter.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.
3. Grout placed by tremie.
4. An access port at least 0.5 inches in diameter is required on the wellhead for water level measurements.
5. A sample port is required on the discharge pipe near the wellhead.

(C.) GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal diameter is four inches greater than the well or piezometer casing diameter.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.
3. Grout placed by tremie.

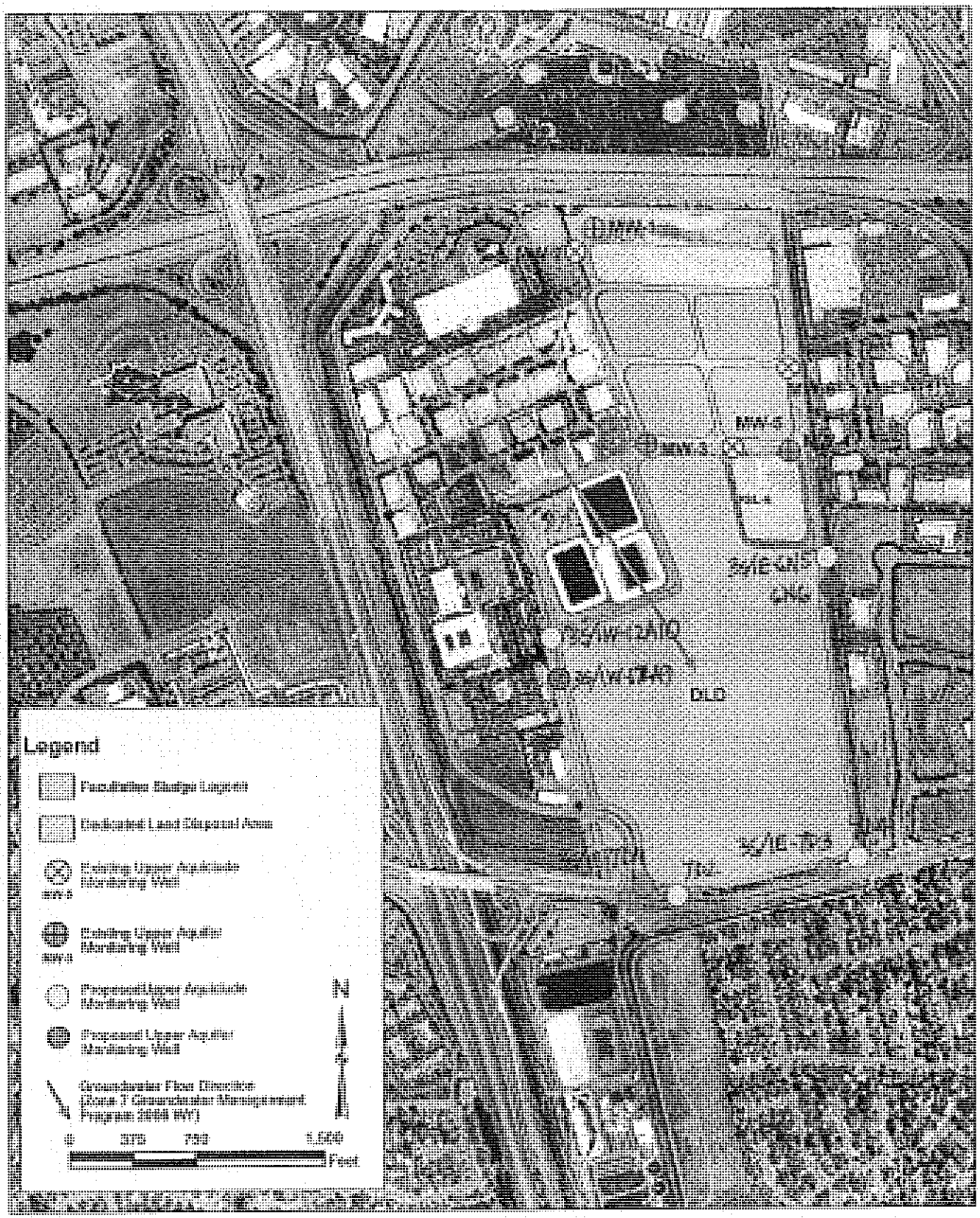
D. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

E. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

F. WELL DESTRUCTION. See attached.

G. SPECIAL CONDITIONS. Submit to Zone 7 within 60 days after completion of permitted work the well installation report including all soil and water laboratory analysis results.

Approved [signature] Wyman Hong Date 10/31/07



FILE: ents and Settings\tnguyen.LSCEDOMAIN\My Documents\Projects\Gis Dev\dxf Basemap_fig1_1_location for proposed MW.mxd

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

Figure 1
Target Locations for Proposed Monitoring Wells
Dublin San Ramon Services District DLD Site

PERMIT: 27191

ZONE 7 WATER AGENCY

100 NORTH CANYONS PARKWAY, LIVERMORE, CALIFORNIA 94551 VOICE (925) 454-5000 FAX (925) 245-9306
E-MAIL whong@zone7water.com

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

LOCATION OF PROJECT DUBLIN SAN RAMON SERVICES DIST. DEDICATED LAND DISPOSAL FACILITY
JOHNSON DR. & STONERIDGE BLVD, PLEASANTON

PERMIT NUMBER 27201
WELL NUMBER 3S/1E 6N6
APN

California Coordinates Source ft. Accuracy± ft.
CCN ft. CCE ft.
APN SEE ATTACHED MAP

CLIENT
Name DSRSD - LEVI FULLER
Address 7399 JOHNSON DR. Phone 925-875-2300
City PLEASANTON Zip 94588

APPLICANT
Name LSCE - TILL ANGERMANN
Email TANGERMANN@LSCE.COM Fax 530-661-6806
Address 500 FIRST ST. Phone 530-661-0109
City WOODLAND, CA Zip 95695

TYPE OF PROJECT:

Well Construction	☐	Geotechnical Investigation	☐
Well Destruction	☒	Contamination Investigation	☐
Cathodic Protection	☐	Other	☐

PROPOSED WELL USE:

Domestic	☐	Irrigation	☐
Municipal	☐	Remediation	☐
Industrial	☐	Groundwater Monitoring	☐
Dewatering	☐	Other NONE	☒

DRILLING METHOD:

Mud Rotary	☐	Air Rotary	☐	Hollow Stem Auger	☐
Cable Tool	☐	Direct Push	☐	Other TREMIE	☒

DRILLING COMPANY SPECTRUM EXPLORATION
DRILLER'S LICENSE NO. 512268

WELL SPECIFICATIONS:
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth ft.
Surface Seal Depth ft. Number ONE

SOIL BORINGS:
Number of Borings Maximum
Hole Diameter in. Depth ft.

ESTIMATED STARTING DATE 11-9-2007
ESTIMATED COMPLETION DATE 11-9-2007

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Till Angermann Date 11-9-2007

ATTACH SITE PLAN OR SKETCH

PERMIT CONDITIONS
(Circled Permit Requirements Apply)

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER SUPPLY WELLS
1. Minimum surface seal diameter is four inches greater than the well casing diameter.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.
3. Grout placed by tremie.
4. An access port at least 0.5 inches in diameter is required on the wellhead for water level measurements.
5. A sample port is required on the discharge pipe near the wellhead.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal diameter is four inches greater than the well or piezometer casing diameter.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.
3. Grout placed by tremie.

D. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

E. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

(F.) WELL DESTRUCTION. See attached.

G. SPECIAL CONDITIONS. Submit to Zone 7 within 60 days after completion of permitted work the well installation report **including all soil and water laboratory analysis results**.

Approved Wyman Hong Date 11/9/07
Wyman Hong

November 13, 2007

Zone 7
Water Resources Engineering
Groundwater Protection Ordinance

Dublin San Ramon Services District
Johnson Drive & Stoneridge Drive
Pleasanton
Well 3S/1E-6N6
Permit 27201

Destruction Requirements:

1. Clean out all bridged or poorly compacted materials to the bottom of the well.

2. Sound the well as deeply as practicable and record for your report.

3. Pressure grout the casing to two feet below the finished grade or original ground, whichever is the lower elevation.

4. Remove the casing, seal, and gravel pack to two feet below the finished grade or original ground, whichever is the lower elevation (optional).

5. After the seal has set, backfill the remaining hole with compacted material (optional).

P:\WRE\Wyman\Pressure Grout.wpd

Attachment 3

Field Notes

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

CLIENT DSRSD JOB NO. 07-1-067
PROJECT MW INSTALLATION EL. DATUM — COORDINATES
DETAIL — N — E —
DATE NOV. 6, 2007 LOCATION NW SITE (LAVWMA)

FORMATION NOMENCLATURE	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	DEPTH	TIME LOG	TOOL LOG	DRILLERS LOG	COMMENTS OR TEST DATA	DRILLING FLUID PROPERTIES
							BLOW COUNT	
	0							
	5	CLAY, HI-PLASTIC, GRAY MOIST, SOFT		7:45			2-3-4	
	10	(DARK GRAY)		8:10			3-3-3	
	15			8:17			1-2-3	
	20	BROWN-GRAY; STIFF		8:25			3-4-7	
	25	SOFT, (LIGHT GRAY)		8:33		WET POCKETS	2-2-5	
	30	(LIGHTER GRAY) MOIST		8:50		▽ INITIAL WET DRILL BIT FREE WATER IN HOLE	1-2-3 (WET SAMPLE)	
	35	MOIST		9:00		WET	2-3-4	
	40	MOIST (HINT OF BLUE)		9:07		WET	2-3-6	
	45	SILTY CLAY, MED-PLAST MOIST, BLUE-GRAY, SOFT		9:17		SPONGY CONSISTENCY	1-4-5	
	50	CLAYEY SAND (FINE TO COARSE), WET, BLUE-GRAY, SOME GR.		9:29			4-12-13	
	55	SAND (FINE-COARSE) WET, SOME GRAVEL		9:38		CLAY ON BOTTOM 4 in.	0-3-5	
	60	CLAYEY SAND, BROWN, MOIST; MEDIUM SIZED		9:50		CLAY ON TOP 3 in	12-22-32	
	65					3-FOOT HEAVE // NO SAMPLE		
	70	CLYEY SAND, BROWN, WET, FINE-COARSE		10:12			7-12-21	
	75	SAND, FINE-MEDIUM, WET, BROWN		10:29			3-15-39	

8" DIAM. HOLLOW STEM AUGER SAMPLING KIT 2" DIAM. SPLIT SPOON 2 x 6" BLOW COUNT

LOG OF DRILL HOLE BY [signature] PAGE 1 OF 1

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

CLIENT DSRSD JOB NO. 07-1-067
PROJECT _____ EL. DATUM ~324 ft COORDINATES
DETAIL Install 2 MW's N _____ E _____
DATE 11/7/07 - 11/8/07 LOCATION NE MW site (Recreation, CA)

FORMATION NOMENCLATURE	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	DEPTH	TIME LOG	TOOL LOG	DRILLERS LOG	COMMENTS OR TEST DATA	DRILLING FLUID PROPERTIES
							Blow Count	
		Brown sandy silt trace gravel, dry, plant material soft	0	2:00	Limited access Rig (CME 75) / SPT split-spoon Sampler 2" diam 3x5' Blow Count / 8" diam Hollow Stem Auger			
		Brown to bluish black gravelly clay, damp, high plastic	5	2:25			3-5-4	
		" "	10	2:34		poor recovery	2-2-2	
		Dark gray high plastic moist clay w/ white concretions	15	2:43			1-2-3	
		Dark gray high plastic moist clay, softer	20	2:54			0-2-3	
		wet at top of sample but moist color on outside below sheath	25	3:01		0	3-4	
		moist silty clay, lighter gray, hard, high plastic, wet at top	30	3:13			1-3-4	
		gray moist to damp, high plastic hard clay wet on outside	35	3:27		lots of water on outside of sample	2-2-5	
		" "	40	3:38			3-5-7	
		wet on outside " " blue-gray soft clay	45	3:49			1-4-6	
		wet on outside light brown fine-med silty sand top 2 inches moist silty clay & cotton	50	4:00			5-4-7	
		wet on outside silty clay damp med plastic trace sand black mottles + white concretions	55	4:16			4-7-10	
		" "	60	4:29			3-6-11	
		" "	65	4:43			2-4-7	
		" " but no white concretions	70	7:42		pipes are wet @ 10ft bgs	6-10-14	
		" " but with white concretions	75	7:59			4-5-7	
		end into 74ft						

LOG OF DRILL HOLE BY Bob Dalgish PAGE 1 OF _____

CLIENT Dublin San Ramon JOB NO. 07-1-069

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

PROJECT Services District EL. DATUM —

DETAIL Install New MW's around DLD

DATE 11/1/07 LOCATION SE site

COORDINATES N — E —

Legend: silt, clay, sand, gravel

FORMATION NOMENCLATURE	GRAPHIC LOG	LITHOLOGIC DESCRIPTION (Depth feet)	DEPTH (sample)	TIME LOG	TOOL LOG	DRILLERS LOG	COMMENTS OR TEST DATA (Blow Count)	DRILLING FLUID PROPERTIES
		0 gravelly sandy silt brown hard	0	8:54		Hand Augered		
		5 silty clay, hi-plastic moist, stiff		9:30		sample taken	5-10-6	
		10 clay, high plastic black, roots, red oxidation lines moist		9:35		sample taken	3-2-4	
		15 " " soft		9:41		sample taken	1-1-3	
		20 " "		9:46		sample taken	1-2-4	hole is steaming a little
		25 " " w/thin streaks of white		9:52		sample taken	1-1-2	
		30 clay, brown, hi-plastic moist (wet on outside)		10:00		sample taken	1-4-5	
		35 clay, gray, hi-plastic moist, stiff to soft		10:10		sample taken	2-3-5	
		40 same but wet		10:20		sample taken	1-3-5	
		45		10:30		"	2-3-5	
		50 fine-medium sand, grey-br wet		10:42		"	5-7-12	
		55 moist		10:53		sand heaving up to 17 ft (bgs) clean out hole redd with	0-4-12	
12:20		60 still heaving up no sample						
12:40		65 clay, hi plastic, grey-br moist, stiff		11:30		(sample sandy on top)	6-7-13	
		70 same		11:45		(sample sandy on top)	6-12-22	

LOG OF DRILL HOLE BY MARIS DALGLISH & JILL ANGERMAN PAGE 1 OF 1

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

CLIENT: DSRSD JOB NO.: 07-1-067
PROJECT: MW INSTALLATION EL. DATUM: —
DETAIL: — COORDINATES: N — E —
DATE: 11-2-2007 LOCATION: CU SITE

FORMATION NOMENCLATURE	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	DEPTH	TIME LOG	TOOL LOG	DRILLERS LOG	COMMENTS OR TEST DATA (BLOW COUNT)	DRILLING FLUID PROPERTIES
			0		8" DIAM HOLLOW STEM AUGER			
		CLAY, hi-plastic, black damp, stiff	5	10:50			3-4-5	
		damp to moist, soft white mottling	10	10:55			0-2-3	
		moist (wet on outside) (white mottling)	15	11:00			1-1-2	
		moist	20	11:06	SAMPLING VIA SPLIT-SPOON 2"-DIAM 3x6" BLOW CT.		0-1-2	
		CLAY, hi-plastic, soft dark gray, moist	25	11:12		▽ 28' initial DTW at 11:25 when hole is at 30'	2-4-5	
		SILTY CLAY, med-plastic, stiff, brown-gray, moist	30	11:20			4-5-7	
		CLAY, hi-plastic, soft, gray, moist	35	11:30			2-3-4	
		soft to stiff	40	11:37			0-3-4	
			45	11:45			2-3-4	
			50	11:52			3-4-5	
		CLAYEY SAND, fine, gray-brown, wet	55	12:01		heaving sand	7-13-22	
			60			adding water to provide head		
			65	12:32		sand heave & [illegible]		
		coarse sand wet (clayey)	70			drill continuously & add water upon drill pipe removal	4-5-8 very hard to retrieve drill pipe	

TD = 75' (11/5/07)
no sample retrieved via split spoon / HEAVING SANDS

LOG OF DRILL HOLE BY: [signature]

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

INSPECTOR'S DAILY REPORT

Client:	DSRSD	Date:	11/1/07
Project No.:	07-1-067	Location:	SE Site, Pleasanton
Project Name:	MW INSTALLATION	Day:	M T W T F S S
Contractor:	Spectrum	Weather:	foggy
Item(s) of Work:	Install MW's	Time: Arrived:	8:15 Left: 10:00

Equipment **Labor**

No.	Description	Name	Title
1	pallet Quikrete Concrete Mix (80lb bags)		
1	pallet Sand - Lapis Lustre RMC Pacific Materials #2/12		
1	pallet Quikrete commercial grade Portland Cement		
	Risers: 3 boxes 2"x5' = 15	2"x5' in boxes	(threaded)
	6 boxes 2"x10' = 30	2"x10' in boxes	
	1 spare 2"x5' not in a box		
	Screens: 2 boxes 2"x10' = 15	2"x10' 5/40 slot=0020	TLS 2-202
	2 spare 2"x10' not in a box		
	1 box (2"x5' = 5 2"x10'		

75 ft
300 ft
5 ft
380 ft blanks

150 ft
20 ft
50 ft
220 ft screen

TIME 8 steel pipes for ballards 10=4.0" OD=4.5" 7ft COMMENTS

8	threaded end caps w/points (for bottom of well)
2+6	buckets Pel-Plug Bentonite Pellets 1/4 TR 30 (COATED)
1+5	buckets Baroid Bentonite Pellets 1/4 inch diameter (50 lbs each)
4	steel manholes
4	cardboard sonotubes round HL) 44 & 12
1	CME 75 - Tony
1	support truck w/bed of supplies - Mac
1	support truck - pickup - Bill

Signature BARB

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

INSPECTOR'S DAILY REPORT

Client:	DSRSD	Date:	NOV. 1, 2007
Project No.:	07-1-067	Location:	DSRSD DLD's
Project Name:	MW INSTALLATION	Day:	M T W (T) F S S
Contractor:	SPECTRUM	Weather:	fussy, clear up at 11:00
Item(s) of Work:	MW installation	Time: Arrived:	7:00 Left: 16:50

Equipment

No.	Description

Labor

Name	Title

TIME	COMMENTS
7:30	meet Shawn at LAVWMA mark for USA MW location
8:10	Spectrum arrives, inspect NE site set up at SE site & starts drilling
9:30	meet Chris Davenport mark NE location & look/check MW locations
12:00	SE location mm easy
12:10	DTW (in PVC easy) 37.1' (5.5' stick up)
12:11	Rel-Pliny
13:05	Spectrum delivers 4 48" SONOTUBES / 4 steel 6"-dia monuments
13:15	sand at 43' bgs, start augering → goes down 2 feet after ~20 augers
	Total bags used 6.5
13:45	move over to agriclude well (remove drill pipe & put tremmie in)
14:45	hit ¾" white PVC line running NS parallel to trees
	call Shawn & start grouting 70' - well annular seal
15:15	done grouting, set monument ~90 GAL neat cement (16 bags)
15:35	Shawn arrives, confirms we hit an abandoned irr. line ok's to continue
16:00	at 25', pull stem out → dry no water/cuttings on drill bit
16:05	cuttings on drill bit @ 30'
16:10	35' stop for today and decide what to do in the morning (DTW 26.1' (bgs)
16:30	Back at NE site

Signature [signature]

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

INSPECTOR'S DAILY REPORT

Client:	DSRSD	Date:	NOV. 2, 2007
Project No.:	07-1-067	Location:	DSRSD DLD's
Project Name:	MW INSTALLATION	Day:	M T W T (F) S S
Contractor:	SPECTRUM	Weather:	hazy in the morning, clear later
Item(s) of Work:	MW INSTALLATION	Time: Arrived:	7:00 Left: 13:30

Equipment **Labor**

No.	Description	Name	Title
	SAME AS FIRST DAY OF	WORK NOV. 1, 2007	THURSDAY

TIME	COMMENTS
7:05	DTW = 13.5' (bgs) ; run casing (SE location aquiclude)
8:15	sand pack at 18' ; start surging (sand dropped one foot)
	6 bags total (sand)
8:45	transition seal (uncoated) bentonite pellets
	~55 GAL neat cement (8x47lbs bags Portland Cement)
9:30	check out location between FSL-6 & DLD's ; meet SHAWN: says
	there are a lot of lines underground (sewer lines go under DLD's, too)
9:45	nash posts, surface pads
10:45	SW-location SET UP
13:00	at 70', heaving sand ; stop here & go to 75 / clean hole before setting well
	DTW ~25 ft (bgs)

Signature Till Bjerrum [signature]

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

INSPECTOR'S DAILY REPORT

Client:	DSRSD	Date:	NOV. 5, 2007
Project No.:	07-1-067	Location:	DLD's
Project Name:	MW INSTALLATION	Day:	(M) T W T F S S
Contractor:	SPECTRUM	Weather:	SUNNY
Item(s) of Work:	MW INSTALLATION	Time: Arrived:	7:50 Left:

Equipment **Labor**

No.	Description	Name	Title
	SAME CREW / EQUIPMENT		

TIME	COMMENTS
7:50	TAKE PICTURES OF MW ENTRANCE AREA FOR
	ALTERNATIVE SITE MW-2/MW-1
8:10	DTW (FROM PVC CASING) SE (AQUICLUDE) : 15.23'
8:15	SPECTRUM ARRIVES SE (AQUIFER) : 16.28'
8:20	DTW SW (at 70' depth) 17' (bgs)
	~5' HEAVE IN DRILL PIPE / CLEAN OUT & GO TO
8:45	TARGET DEPTH OF 75', COULD BARELY RETRIEVE
	DRILL BIT; BRINGS UP COARSE SAND - NO BLOW COUNT -
	SAMPLE TAKEN AT 75; HOLE FILLS IN QUICKLY
9:05	RUN CASING
9:20	GRAVEL PACKING (7×80 lbs bags)
10:00	SURGE → 1FT DROP → TOP OFF / TRANSITION SEAL
11:00	MIX CEMENT GROUT
11:45	CEMENT SURFACES (~125 GAL)
12:15	START DRILLING AQUICLUDE WELL
12:30	20' first free water (tip of drill bit wet & sounder)
	25' DRY
12:45	30' DRY
13:00 to 13:15	35' tip of bit wet again / hear water entering the drill pipe DTW=32' (bgs)

Signature [signature]

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

INSPECTOR'S DAILY REPORT

Client:	DSRSD	Date:	NOV. 5 2007
Project No.:	07-1-067	Location:	DLD's
Project Name:	MW INSTALLATION	Day:	(M) T W T F S S
Contractor:	SPECTRUM	Weather:	SUNNY
Item(s) of Work:	MW INSTALLATION	Time: Arrived:	7:50 Left: 15:15

Equipment		**Labor**	
No.	Description	Name	Title

TIME	COMMENTS
13:23	SW LOCATION AQUICLUDE WELL REACH TARGET DEPTH 40'
13:30	RUN CASING ; BOTTOM SEAL
	SAND PACK
14:30	TRANSITION SEAL
14:45	START GROUT MIXING & GROUT TO SURFACE
15:15	LEAVE SITE

Signature [signature]

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

INSPECTOR'S DAILY REPORT

Client: DSRSD
Project No.: 07-1-067
Project Name: NW INSTALLATION
Contractor: SPECTRUM
Item(s) of Work: NW INSTALLATION

Date: NOV. 6, 2007
Location: ~~DSRSD~~ LAVWMA
Day: M (T) W T F S S
Weather: FOGGY
Time: Arrived: 7:03 Left: 12:00

Equipment **Labor**

No.	Description	Name	Title
	SAME CREW / EQUIPMENT		

TIME	COMMENTS
7:03	ARRIVE, GET WATER FOR TRUCK; SET BOXES (SW), SET UP AT NW SITE (LAVWMA) & START DRILLING
10:00	HEAVING SANDS AT 65'; ADD HEAD WHEN AT 70'
	START RUNNING CASING AFTER REACHING 75'
	BARB ARRIVES - SHOW HER NE SITE & NEW WELLS
12:00	LEAVE SITE

Signature

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

INSPECTOR'S DAILY REPORT

Client: DSRSD
Project No.:
Project Name:
Contractor: Spectrum
Item(s) of Work: Install MW

Date: 11/6/07
Location: NW site
Day: M (T) W T F S S
Weather: clear
Time: Arrived: 10:20 Left:

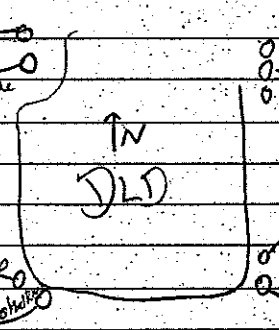
Equipment

No.	Description

Labor

Name	Title

TIME	COMMENTS
13:26	Mixing grout (# Bags grout = 17 bags)
	Call Shawn re: deodorizing removal tomorrow AM
14:10	drilled to 40 ft (2 ft water in hole while augers are still in)
	hole plug bott 2 ft (38-40 ft)
	Sand pack 21 ft (15-36 ft) = 7 bags (Bill met a Spectrum employee at 8580 for 4 bags of sand)
16:20	start surging well until 15:30 went down about a foot add more sand to 15'
	hole plug to 11 ft (2 bags)
	grout to surface. (6 bags)
NW 40'	DTW = 15.39 ft
NW 75'	DTW = NM - steel casing not stable
	North side of Top of Casing
16:32	DTW = 16.12 ft
16:40	DTW = 10.67 ft



NW site
shallow well is North & deeper well is South

16:47 DTW = 16.25 ft
16:50 DTW = 14.78 ft

Signature

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

INSPECTOR'S DAILY REPORT

Client: DSRSD
Project No.:
Project Name:
Contractor: Spectrum
Item(s) of Work: Install MW's

Date: 11/7/07
Location: NW site & NE site (Pleasanton, CA)
Day: M T (W) T F S S
Weather: clear
Time: Arrived: 8:00am Left: 5:10pm

Equipment / **Labor**

No.	Description	Name	Title
	Same Crew/ Equip	Tony + Mac + Bill	
	Limited Access Rig (75) on an 18-wheeler	Chad + Kevin (Bill	stays)

TIME	COMMENTS
8 am	start mixing concrete for surface pads + bollards @ NW site
9 am	done, clean equipment + wait for limited access rig for NE site
10:45	call + meet Shawn to take down/away deodorizer hose + cable
12:30	Chad + Kevin arrive @ DSRSD, transfer supplies from Mac's truck, arrive
	at NE site to assess
1:00	tree is down + cleared
	Dan Gallagher = Operations Manager. Till spoke with him & alerted him
	about breaking irrigation line and was OK'ed
	will not hold Spectrum liable
	office: 925-875-2345
	cell: 925-570-8759
3:30	call Shawn & ask him to completely shut off
	& make sure no sprinkler going on tonight
	clean cut & plug it immediately
1:15	Blake came out & gave us the OK & shut off the valves for the sprinklers
	(from box ~150 ft South of well site)
1:45	set up rig (no broken sprinklers ☺) - cut down dead tree + one adjacent, rig backed down into site
2:00	start drilling - hard time starting hole straight - many times start over
5:00	stop drilling after taking core @ 65 ft - leave augers in hole

Signature [signature]

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LUHDORFF & SCALMANINI CONSULTING ENGINEERS

INSPECTOR'S DAILY REPORT

Client: DSRSD
Project No.:
Project Name:
Contractor: Spectrum
Item(s) of Work:

Date: 11/8/07
Location: NE site
Day: M T W (T) F S S
Weather: cloudy
Time: Arrived: 6:45 Left: 6:00pm

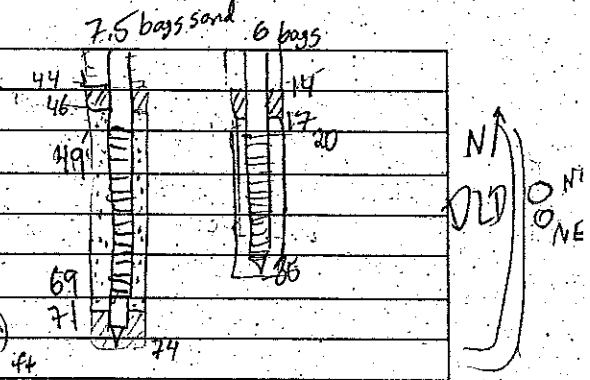
Equipment

No.	Description
	Limited Access w/ 18-wheeler
	Mac's Truck
	Bill's Truck

Labor

Name	Title

TIME	COMMENTS
7:20	Bill, Kevin, + Chad arrive @ site
7:30	Start drilling from 65 ft to 75 ft
	Install well casing but bottom of hole is clogged- possible ring of clay between bit & inner pipe - remove well casing + remove plug by putting inner frame down hole + pushing (7½ bags sand)
11:00	start surging NE-74, sand went down ~1 ft
12:30	move over to shallow well site & start drilling (hit + broke an electrical wire - red outside ~ 2-3 ft bgs - called Shawn Quinn + he said to keep going)
1:45	DTW in NE75 = 14.16 ft bgs
2:42	start surging NE-35, sand went down ~1 ft
3:27	DTW in NE35 = 17.09 ft bgs
4:15	while pumping grout into NE75 the well cap shot off & water started coming out of well - tagged seal @ 47 ft bgs, bailing water out of well - grout & muddy water coming out - well has been compromised - must abandon + drill a new one



Signature

LUHDORFF & SCALMANINI CONSULTING ENGINEERS

INSPECTOR'S DAILY REPORT

Client: DSRSD
Project No.:
Project Name:
Contractor: Spectrum
Item(s) of Work: Install MW's

Date: 11/9/07
Location: NE Site (Pleasanton, CA)
Day: M T W T (F) S S
Weather: mostly clear
Time: Arrived: 7:30 Left: 6:30pm

Equipment

No.	Description
	same as yesterday

Labor

Name	Title

TIME	COMMENTS
7:30	arrive @ LAVWMA gate (FE gate locked) meet Chad, Kevin, + Bill
	Scott will find out about well abandonment process for Zone 7 @ 8:30am → remove top portion of PVC + pump grout into well & up to grd surface
8:00	move rig over to drill a new NE-75 hole using a wood cork/plug in auger so no inner pipes
10:00	DTW = 15.32 ft bgs in NE-35
10:15	down to 76 ft
	NE-76 - Bent. Pellets 72-76 & 47-43 (4 buckets)
	- Sand 47-72 (8 bags)
12:48	start surging dropped 1 ft after 10 min dropped 6" after another 10 min
	dropped 1" after 5 min dropped 1/16" after 5 min (repeated total of 30 min)
3:30	pulled up all the augers, did NE-75 is abandoned - grout mushroomed @ surface -
	start grouting NE-35 & NE-76
3:56	NE-76 DTW = 12.56 ft bgs
6:30	done w/ setting concrete pads (w/ 8 pieces of 2' rebar in each 3'x3' pad) & clean up

Signature Bob Daly