

PROPOSAL
for
HARKINS SLOUGH FACILITY 2022 RECOVERY WELLS

Bids due by October 5, 2022 at 10:00 AM

TO: Brian Lockwood, General Manager
Pajaro Valley Water Management Agency (or "PV Water")

The undersigned, hereinafter called the Bidder, declares that the only person or parties interested in the Proposal are those named herein; that this Proposal is in all respects fair and without fraud; that it is made without collusion with any official or employee of the Pajaro Valley Water Management Agency and that the Proposal is made without any connection or collusion with any person making another proposal on this Contract.

The Bidder further declares that he has carefully examined the Contract Documents for the construction of the proposed Work; that the Contractor has satisfied himself as to the quantities of materials, equipment and conditions of Work involved, including the fact that the description of the materials and Work as included herein is brief and is intended only to indicate the general nature of such items and to identify the said quantities with the detailed requirements of the Contract Documents; that this Proposal is made according to the provisions and under the terms of the Contract Documents, which documents are hereto attached and are hereby made a part of this Proposal.

The Bidder agrees that if this Proposal is accepted, he will, within ten (10) working days after notification of award, execute the Contract with the Pajaro Valley Water Management Agency with the form of Contract attached hereto. The Bidder will deliver to the Pajaro Valley Water Management Agency the insurance certificates, performance and payment bonds herein required within ten (10) working days after the bidder has received the Notice of Award. The Bidder will to the extent of the Proposal, furnish all labor, tools, equipment, and other means of construction to do the Work and to furnish all materials necessary to complete the Work in the manner, in the time, and according to the methods as specified in the Contract Documents and as may be required by the Hydrogeologist there under.

Upon receipt by the Pajaro Valley Water Management Agency of the satisfactorily executed Contract, insurance certificates, performance and payment bonds, a written Notice-to-Proceed will be sent to the Contractor.

The Bidder further agrees to commence Work within ten (10) calendar days after the Notice to Proceed. All Work shall be completed within the specified number of calendar days from the date of the Notice to Proceed. All work must be completed by January 13, 2023.

In the event the Bidder is awarded a Contract and should fail to perform the Work herein specified, within the time specified for completion, liquidated damages shall be paid to the Pajaro Valley Water Management Agency in the amount of five hundred dollars (\$500.00) for each calendar day beyond the time herein provided for the completion of such Work. Sundays and legal holidays will be excluded in determining the number of days in default.

All items of Work shall be considered complete, in place and no additional compensation shall be granted. All the Work required to provide a complete and operational system shall be considered to be included in the listed tasks and no compensation shall be granted for additional items. Compensation for any item of Work required by these Contract Documents but not specifically described in any Bid Item shall be included in the Bid Item most clearly related to said item of Work.

The bidder shall complete the bid schedule in clearly legible figures, the unit price and an item total for the item in the respective spaces provided for this purpose. In the case of unit basis items, the amount set forth under the "TOTAL" column shall be in the extension of the unit price bid on the basis of the estimated quantity for the item.

In case of a discrepancy between the unit price and total set forth for the item, the unit price shall prevail and the total for the item, and therefore the "TOTAL BASE BID AMOUNT", shall be adjusted accordingly, and the bid award shall be made on the basis of the corrected total base bid amount.

This is a unit price contract. Each unit price bid by the Contractor shall be considered as binding unless the actual quantity installed for that item of Work varies from the quantity shown in the bidding schedule by more than twenty-five percent (25%) in which case the unit price bid for that specific item of Work only may be negotiated as provided herein.

BIDS ARE REQUIRED FOR THE ENTIRE WORK. THE AMOUNT OF THE BID FOR COMPARISON PURPOSES WILL BE THE "TOTAL BASE BID AMOUNT" (OR ADJUSTED "TOTAL BASE BID AMOUNT" IN THE CASE OF ANY ADJUSTMENTS AS PROVIDED FOR HEREIN).

The Pajaro Valley Water Management Agency reserves the right to: (1) reject any or all bids; (2) waive minor irregularities in the bid documents or minor variances from the bid specification; and (3) correct arithmetic errors on Bid Schedule.

All bids must be submitted in ink on the bid forms. Erasures are not acceptable. Changes must be lined out and corrections inserted adjacent and initialed by the bidder's authorized representative. Bid modifications, corrections or additions received beyond the bid deadline shall not be considered. Telephone or facsimile bids shall not be accepted. Signatures must be original signatures and be notarized where required.

**BID SHEET
HARKINS SLOUGH FACILITY 2022 RECOVERY WELLS
DRILLING AND WELL CONSTRUCTION SERVICES**

| Item | Title | Unit | Estimated Quantity | Unit Price | Total |
|--|---|-------------|--------------------|------------|-------|
| 1 | Mobilization | Lump Sum | 1 | \$ | \$ |
| 2 | Well Permits | Lump Sum | 3 | \$ | \$ |
| 3a | Borehole Drilling | Linear Feet | 480 | \$ | \$ |
| 3b | Additional Borehole Drilling | Linear Feet | XXXX | \$ | XXXX |
| 4a | Geophysical Logging | Lump Sum | 3 | \$ | \$ |
| 4b | Additional Geophysical Logging | Lump Sum | 1 | \$ | XXXX |
| 5a | 8-inch Diameter SDR 21 PVC Blank Well Casing, Installed | Linear Feet | 390 | \$ | \$ |
| 5b | 8-inch Diameter SDR 21 PVC Well Screen, Installed | Linear Feet | 90 | \$ | \$ |
| 6 | Gravel Pack | Linear Feet | 165 | \$ | \$ |
| 7a | Cement Seal | Linear Feet | 300 | \$ | \$ |
| 7b | Bentonite Seal | Linear Feet | 15 | \$ | \$ |
| 8a | Well Development, Zone-Pumping | Hourly | 36 | \$ | \$ |
| 8b | Well Development, Pumping | Hourly | 24 | \$ | \$ |
| 8c | Pump Rental for Testing | Daily | 9 | \$ | \$ |
| 9 | Chlorination | Lump Sum | 3 | \$ | \$ |
| 10 | Cleanup | Lump Sum | 1 | \$ | \$ |
| 11 | Standby Time | Hourly | XXXX | \$ | \$ |
| Total Base Bid (in words & numbers) | | | | | |

Proposal is assumed to be valid for 60 days unless otherwise noted. Upon award, this bid form shall become a part of the final contract.

The undersigned has had the opportunity to examine the location of the proposed work and/or is familiar with the specifications and the local conditions in the place where the work is to be performed. The undersigned has checked carefully all the above figures and understands that PV Water shall not be responsible for any errors or omissions on the part of the undersigned in making up this bid.

Bidder: _____ Tax I.D. Number: _____

Business Address: _____

Contractor's License No.: _____ Telephone: () _____

By: _____ Dated: _____

ADDENDA
FOR
HARKINS SLOUGH FACILITY 2022 RECOVERY WELLS

The Bidder has examined all addenda (if any) during the bid period and acknowledges receipt of the following:

ADDENDUM NO. _____

DATE RECEIVED: _____

ADDENDUM NO. _____

DATE RECEIVED: _____

ADDENDUM NO. _____

DATE RECEIVED: _____

ADDENDUM NO. _____

DATE RECEIVED: _____

ADDENDUM NO. _____

DATE RECEIVED: _____

DESIGNATION OF SUBCONTRACTORS

In compliance with the provisions of Section 4100-4113 of the Public Contracts Code of the State of California, and any amendments thereof, the undersigned bidder has set forth below the name and location of the place of business of each subcontractor who will perform work or labor or render service to the undersigned in or about the construction of the work, and each subcontractor who, under subcontract will specially fabricate and install a portion of the work or improvement according to detailed drawings contained in the plans and specifications, for such work to be performed under the project documents to which the attached bid is responsive, and the portion of the work which will be done by each subcontractor and for each subcontract in excess of one-half of one percent of the undersigned's total aggregate bid. Bids submitted without this form will be considered non-responsive. If the bidder does not intend to use any subcontractors, write "none" in the first row provided in the "Name of Subcontractor" column.

| NAME OF SUBCONTRACTOR | LOCATION ADDRESS AND TELEPHONE | DIVISION OF WORK |
|--------------------------|-----------------------------------|------------------------|
| 1. | | |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |
| 6. | | |
| 7. | | |
| 8. | | |

NOTE: The Contractor shall not, without the consent of the Pajaro Valley Water Management Agency:

- (a) Sublet or subcontract in excess of fifty (50) percent of his total bid proposal.
- (b) Substitute any persons or subcontractors in place of the subcontractors designated on the original bid.
- (c) Permit any subcontract to be assigned or transferred or allow it to be performed by anyone other than the original subcontractor listed in the bid.
- (d) Sublet or subcontract any portion of the work in excess of one-half of one percent (0.5%) of his bid for which his original bid did not designate a subcontractor.

The Contractor's attention is invited to other provisions of Public Contracts Code related to the imposition of penalties for a failure to observe its provisions by using unauthorized subcontractors or by making unauthorized substitutions.

This completed proposal includes all sheets numbered "P-1 through P-14" at the bottom which include the following required and properly executed attachments:

Contained within this Proposal:

- a. Bid Schedule (P-3)
- b. Acknowledgment of Addenda (P-4)
- c. Designation of Subcontractors (P-5)
- d. Notarized Signature (P-6)

Attached to this Proposal:

- e. Affidavit of Non-Collusion with notarized signature (P-7)
- f. Certificates of Non-Discrimination and Intent (P-8)
- g. Bidder's Bond with notarized signatures (P-9)
- h. Bidder's Information Sheet (P-10)
- i. Certification of Bidder's Experience and Qualifications (P-11 through P-14)

IN WITNESS WHEREOF, the Proposal has been duly executed by the bidder named herein on the date affixed hereto.

BIDDER: _____

By: _____

Authorized Signature

Title

Print Name: _____

Address: _____

Attest: _____

Notary Public, State of California

Date: _____

NON-COLLUSION AFFIDAVIT
TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

State of California)
) ss.
County of _____)

_____, being first duly sworn, deposes and says that
he or she is _____
(sole owner, a partner, president, secretary, etc.)

_____ of _____,
the party making the foregoing bid; that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that the bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder, or to secure any advantage against the public body awarding the Contract or anyone interested in the proposed Contract; that all statements contained in the bid are true; and, further, that the bidder has not, directly, or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

Signature of Representative of Bidder

Subscribed and sworn to before me, a Notary Public in and for the State of California, County of _____, this ____ day of _____ 20__.

Signature of Notary Public (Seal)

My commission expires _____, 20__.

CERTIFICATION OF NON-DISCRIMINATION

We are in compliance with the Equal Employment Opportunity Requirement of Executive Order 11246, Title VII of the Civil Rights Act of 1964, the California Fair Employment Practices Act, and any other Federal, State, or local laws relating to equal employment opportunity.

We will not discriminate against any employee or applicant for employment based on race, religion, color, national origin, ancestry, or sex. This pertains to the areas of recruitment, hiring, training, upgrading, transfer, compensation and termination.

CERTIFICATION OF INTENT

We will maintain or develop and implement, during the course of the work concerned, an Affirmative Action Program of hiring and employment conducted without regard to race, religion, color, national origin, ancestry or sex of the applicants. With this certification we shall submit any and all information, which may be required by the County in connection with this program.

Date

Authorized Signature of Bidder

Title

PROPOSAL GUARANTEE

**"BID BOND"
FOR
HARKINS SLOUGH FACILITY 2022 RECOVERY WELLS**

KNOW ALL PERSONS BY THESE PRESENTS that

_____, as BIDDER, and _____, as SURETY, are held and firmly bound unto Pajaro Valley Water Management Agency, as Owner, in the penal sum of _____ dollars (\$_____) which is ten percent of the total amount bid by BIDDER to Owner for the above stated project. For the payment of which sum, BIDDER and SURETY agree to be bound, jointly and severally, firmly by these presents.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH THAT, WHEREAS, Bidder has submitted a Bid for the above-described work, if Bidder shall not withdraw said Bid within the time period specified after the Bid Deadline, as defined in the Bid Documents, or within 60 days after the Bid Deadline if no time period be specified, and, if selected as the apparent lowest responsible bidder, Bidder shall, within the time period specified in the Bid Documents, do the following:

- (1) Enter into a written agreement, in the prescribed form, in accordance with the Bid.
- (2) File two bonds with Owner: one to guarantee faithful performance and the other to guarantee payment for labor and materials, as required by the Bidding Documents.
- (3) Furnish certificates of insurance and all other items as required by the Bid Documents.

In the event of the withdrawal of said Bid within the time period specified, or within 60 days if no time period be specified, or the disqualification of said Bid due to failure of Bidder to enter into such agreement and furnish such bonds, certificates of insurance, and all other items as required by the Bid Documents, if Bidder shall pay to Owner an amount equal to the difference, not to exceed the amount hereof, between the amount specified in said Bid and such larger amount for which Owner procures the required work covered by said Bid, if the latter be in excess of the former, then this obligation shall be null and void, otherwise to remain in full force and effect.

In the event suit is brought upon this bond by Owner, Surety shall pay reasonable attorneys' fees and costs incurred by Owner in such suit.

IN WITNESS WHEREOF the parties hereto have set their names, titles, hands, and seals this day of _____, 20____.

BIDDER _____

SURETY _____

Subscribed and sworn to this _____ day of _____, 20____.

NOTARY PUBLIC _____

**BIDDER INFORMATION SHEET
FOR
HARKINS SLOUGH FACILITY 2022 RECOVERY WELLS**

Legal Name of Firm: _____

Business Address: _____

Telephone Number: (_____) _____

Contractors License No. _____ Class _____

Type of Organization: () Individual () Partnership: () Corporation

Joint Venture Proposal? () Yes () No

For a partnership, name all co-partners below. For a corporation, name president, secretary, treasurer, manager and the state in which chartered. List business address for each person.

| NAME | TITLE | ADDRESS |
|-------|-------|---------|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

Corporate Seal: _____ Chartered in the State of: _____

**CERTIFICATION OF BIDDER'S
EXPERIENCE AND QUALIFICATIONS**

The undersigned Bidder certifies that it is, at the time of bidding, and shall be, throughout the period of the Contract, licensed under the provisions of the Business and Professions Code Section 7000 et seq., to do the type of work contemplated in the Contract Documents. Bidder further certifies that it is skilled and regularly engaged in the general class and type of work called for in the Contract Documents. In accordance with Public Contract Code Section 7028.15, any Bidder not so licensed shall be subject to all legal penalties imposed by law, including, but not limited to, any appropriate disciplinary action by the Contractor's State License Board.

The Bidder represents that it is competent, knowledgeable, and has special skills and expertise on the nature, extent, and inherent conditions of the work to be performed. Bidder further acknowledges that there are certain peculiar and inherent conditions existent in the construction of the particular facilities, which may create, during the construction program, unusual or peculiar unsafe conditions hazardous to persons and property. Bidder expressly acknowledges that it is aware of such peculiar risks and that it has the skill and experience to foresee and to adopt protective measures to adequately and safely perform the construction work with respect to such hazards.

The following statements as to the experience and financial qualifications of the bidder are to be submitted with the Contract Proposal, as a part thereof. The bidder guarantees the truthfulness and accuracy of the information.

1. The bidder has been engaged in the contracting business under the present business name for _____ years.
2. The bidder has experience in work of a nature similar to that covered in the Proposal that extends over a period of _____ years.
3. The bidder, as a Contractor, has never failed to satisfactorily complete a contract, except as follows: (name any and all exceptions and reasons therefore).

4. The following are the most recent projects on which the Bidder has performed work of similar nature, size, complexity, rates of progress, and the names, addresses and phone numbers of the contracting agencies. Failure to provide this information with the Bid may render the Bid non-responsive and may be the basis for rejection of the Bid. The City shall determine in its sole discretion what projects are of size and complexity similar to the Work. (Name at least three)

A. Project Name: _____
Location: _____ Owner: _____
Owner's Representative: _____
Telephone Number: _____
Nature of Bidder's participation: _____
Total project cost: _____ Value of Bidder's work: _____
Completion date: _____ Contract time allotted: _____
Completed on time? _____

B. Project Name: _____
Location: _____ Owner: _____
Owner's Representative: _____
Telephone Number: _____
Nature of Bidder's participation: _____
Total project cost: _____ Value of Bidder's work: _____
Completion date: _____ Contract time allotted: _____
Completed on time? _____

C. Project Name: _____
Location: _____ Owner: _____
Owner's Representative: _____
Telephone Number: _____
Nature of Bidder's participation: _____
Total project cost: _____ Value of Bidder's work: _____
Completion date: _____ Contract time allotted: _____
Completed on time? _____

D. Project Name: _____
Location: _____ Owner: _____
Owner's Representative: _____

Telephone Number: _____

Nature of Bidder's participation: _____

Total project cost: _____ Value of Bidder's work: _____

Completion date: _____ Contract time allotted: _____

Completed on time? _____

E. Project Name: _____

Location: _____ Owner: _____

Owner's Representative: _____

Telephone Number: _____

Nature of Bidder's participation: _____

Total project cost: _____ Value of Bidder's work: _____

Completion date: _____ Contract time allotted: _____

Completed on time? _____

- 5. Within the past 5 years, has your firm, or any firm with which any of your firm's owners, officers, directors or managing employees was associated, been disqualified, debarred, or otherwise prevented from bidding on, any project for any reason?

YES NO

If "Yes", provide the name of the firm, the name of the person who was associated with that firm (if applicable), the year of the incident, the name, address and telephone number of the owner and all relevant details about the incident.

- 6. Within the last 5 years, has your firm, or any firm with which any of your firm's owners, officers, director or managing employees was associated, been found guilty of violating any federal, state or local law, rule or regulation related to conduct of business as a contractor, or a false claims act?

YES NO

If "Yes", give the name of the firm, the name of the person associated with that firm (if applicable), the year of the incident, and provide all relevant details about the incident including, but not limited to, the law, rule or regulation which the firm was convicted of violating, and the outcome of any proceedings, including any fine, penalties or jail sentences that were imposed.

- 7. Within the last five years, has your firm or any firm with which any of your firm’s owners, officers, directors, or managing employees was associated been found by a public body not to be a responsible bidder?

YES NO

If “Yes”, provide the name of the firm, the name of the person associated with that firm (if applicable), and all details including, but not limited to, the year of the incident, the name of the awarding body, and the reasons given by that body for its actions.

- 8. Within the last five years, has your firm, or any firm with which any of your firm’s owners, officers, directors or managing employees was associated, been terminated for default or defaulted on a construction contract?

YES NO

If “Yes”, provide the name of the firm, the name of the person associated with that firm, the year of the default, the location of the project, the full name and address of the owner of the project, the full name and address of the general contractor, the value of the contract, and the reasons given for the default.

Add reference to banks as to the financial responsibility of bidder

Bank _____ Branch _____

Bank _____ Branch _____

Add reference to surety companies as to the financial responsibility and general reliability of bidder.

Surety _____ Phone _____

Surety _____ Phone _____

MEASUREMENT & PAYMENT

FOR

HARKINS SLOUGH FACILITY 2022 RECOVERY WELLS

GENERAL

- a. The total Bid Price shall cover all work necessary for the proper and successful completion of the Contract. All work not specifically set forth as a pay item in the Bidder's Bid Proposal, but necessary to meet the requirements of this Contract, shall be considered a subsidiary obligation of the Contractor, and all costs in connection therewith shall be included in the prices Bid.
- b. All estimated quantities stipulated in the Bid form are to be used only as a basis for estimating the probable cost of the work and/or for the purpose of comparing the Bids submitted for the work. Contractor agrees to make no claim for damages of anticipated profits or otherwise on account of any difference in the amounts of work actually performed.
- c. Damage by the Contractor to any features at the site shall be repaired and/or replaced in kind at no cost to the Agency.

**HARKINS SLOUGH FACILITY 2022 RECOVERY WELLS
DRILLING AND WELL CONSTRUCTION PROJECT**

SECTION 100 - GENERAL CONDITIONS AND SPECIAL PROVISIONS

- Section 101 - Purpose
- Section 102 - Location and Site Conditions
- Section 103 - Hydrogeologic Conditions
- Section 104 - Qualifications of the Contractor
- Section 105 - Overview of Work
- Section 106 - Cuttings and Fluids
- Section 107 - Construction Schedule
- Section 108 - Lost Holes

SECTION 101 - PURPOSE

The purpose of the project is to construct three (3) additional extraction “recovery” wells at locations surrounding PV Water’s Harkins Slough Facility Recharge Basin. The recharge facility diverts water from Harkins Slough into a basin and allows the water to percolate into the subsurface and then is recovered by on-site wells. The purposes of the 2022 recovery wells are to provide zone specific monitoring data for sediments beneath the locally-recognized “brown clay” and subsequent conversion to recovery wells to increase project recovery yield.

The 2022 recovery wells are hereto referred to as Well Nos. 14, 15 and 16. PV Water desires to retain a qualified Contractor that will perform the work expeditiously and complete all required tasks by January 13, 2023.

SECTION 102 - LOCATION AND SITE CONDITIONS

The Harkins Slough Facility Recharge Basin is located west of San Andreas Road north of Dairy Road in Watsonville. The site location is shown on Plate 1 – Site Location Map.

As is evident on Plate 2 – Well Location Map, there is ample space at the property for the staging of drilling operations. Water is available at the site for use by the Contractor during the project. The water supply consists of a connection to an existing well, with an instantaneous flow rate of 35 gpm or more.

SECTION 103 – HYDROGEOLOGIC CONDITIONS

The site is located within the Pajaro Valley Groundwater Basin. The intent is to construct wells in the perched aquifer screened between the locally-recognized “brown clay” and underlying regional “blue clay” that overlies the regional aquifer system. The materials to be encountered are assigned as terrace deposits and consist of semi-consolidated sand with varying amounts of fines. Wells will be drilled to an elevation of approximately sea level. Depending on the location, the wells will be between approximately 130 and 160 feet in total depth. Driller’s logs and electric logs for the existing wells are available upon request. It is anticipated that the static water level in the completed wells will be approximately an elevation of 60 feet, or between 70 or 100 feet below ground surface.

SECTION 104 - QUALIFICATIONS OF THE CONTRACTOR

Bidders shall hold a valid Class C-57 California Contractor's License, and any other licenses or certifications, State, local, or otherwise, necessary to complete the work as specified.

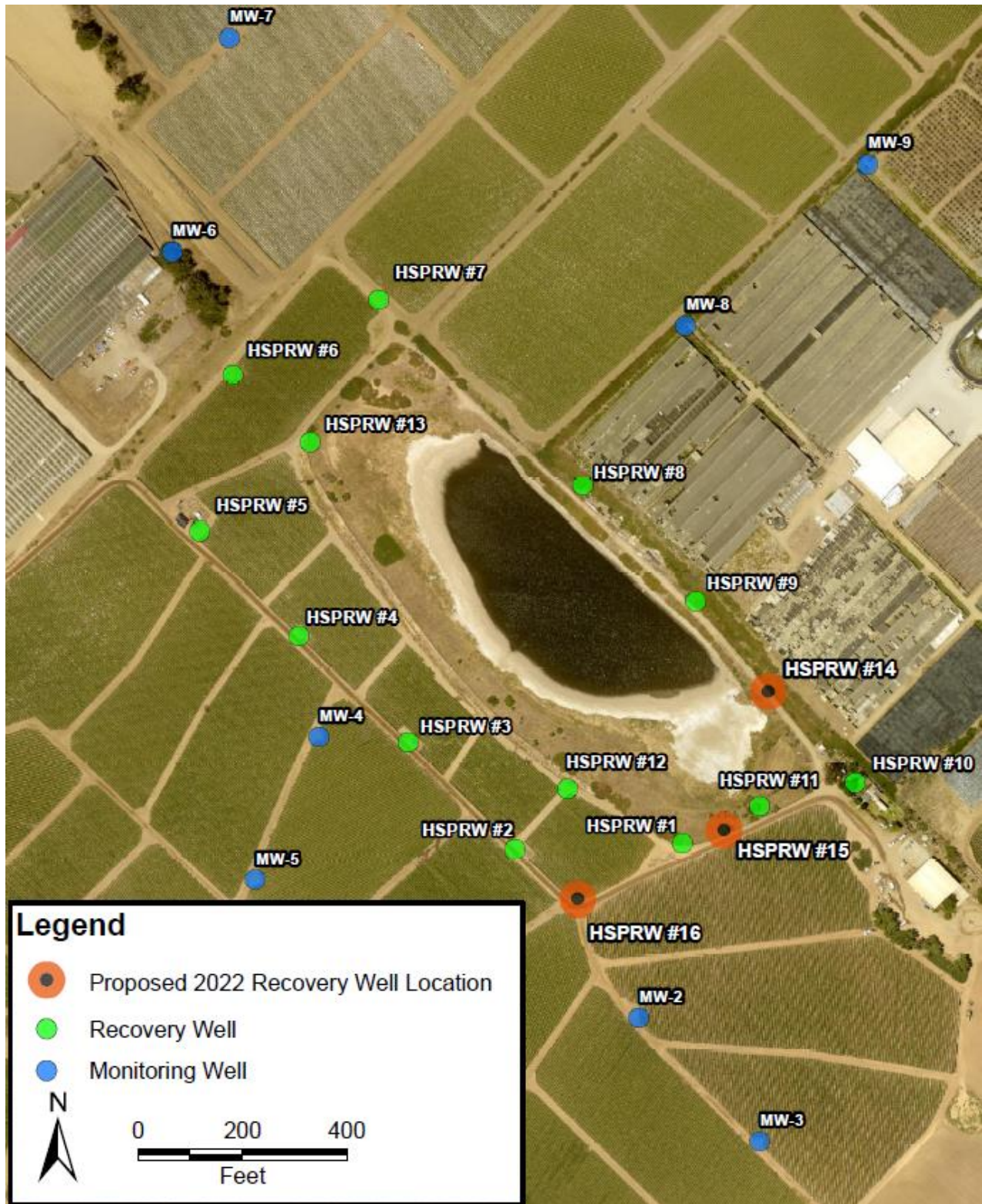
The wells shall be drilled by either the direct or reverse rotary drilling method with drilling equipment of sufficient capacity to drill and complete the wells as specified to a depth between approximately 130 and 160 feet. The Contractor’s equipment shall include a self-contained fluid system capable of removing solids (including fine sand) from the fluid prior to recirculation downhole. The Contractor shall also mobilize to the site equipment with the capacity to perform development operations as described in these specifications.

The Contractor shall have an existing safety program, and is responsible for site safety throughout field operations. Contractor personnel are expected to be in compliance with the safety program at all times during the project. This includes the use of PPE (Personal Protective Equipment) at all times. The Contractor shall also conduct daily safety briefings at the site prior to the commencement of work each day.

PLATE 1
SITE LOCATION MAP



PLATE 2
WELL LOCATION MAP



SECTION 105 - OVERVIEW OF WORK

Work includes the furnishing of all materials, labor, equipment, fuel, tools, transportation, and services for drilling, construction, development, testing, and completion of the water supply wells as described in these specifications.

While the final drilling depths and design of the wells may change based on the conditions encountered during the execution of the project, the general work required shall include the following tasks:

1. Attend a pre-construction meeting
2. Acquire well permits from the County of Santa Cruz Environmental Health Department (EHD).
3. Mobilize equipment to and from the site.
4. Drill three 16-inch diameter well bores to a depth of approximately 160 feet, and perform a geophysical log of the well bores.
5. Install the well casing in each well bore. Casing shall consist of 8-inch diameter, SDR 21 PVC, with the following tentative completion depth schedule: 0 to 110 feet – blank; 110 to 140 feet – screen; 140 to 160 feet – blank cellar. The well screen shall be 5 feet and/or 10 feet sections and have 0.040-inch horizontal machine cut slots. Casing shall be flush threaded, and centered within the borehole using centralizers.
6. Install gravel pack in each well. Gravel pack shall be RMC Pacific Materials, 8 x 16 gradation.
7. Install a sanitary surface seal, per Santa Cruz EHD standards, to a tentative depth of 100 feet in each well. Include a provision to avoid the heat of hydration to prevent warping of the well casing.
8. Create 5 feet thick buffer of bentonite pellets, to a tentative depth of 105 feet, between the cement seal and the filter pack.
9. Develop the wells through airlifting, zone-pumping, and pumping.
10. Perform baseline testing.

Clean up and restore site to pre-construction conditions.

SECTION 106 – CUTTINGS AND FLUIDS

The Contractor shall provide temporary tanks for the containment of drilling fluids and initial development water. Drilling fluids displaced from the borehole either through the thinning of the mud or by displacement during well construction, and the initial, turbid water removed from the well during development, shall be discharged onsite at the designated area. The Contractor is responsible for piping to the designated area. Clear development water and development water can be discharged to the basin. The Contractor shall also provide piping/hoses for the onsite disposal of clear development water and test pump water. Drill cuttings may be disposed of onsite at a location to be identified by the owner. It will be the Contractor's responsibility to transport the cuttings to the disposal location.

SECTION 107 - CONSTRUCTION SCHEDULE

The Contractor is expected to mobilize to the site within two weeks after the contract is fully executed. All work shall be complete, and the Contractor shall clean up and demobilize from the site within **forty-five (45) working days** from the Notice-to-Proceed effective date.

There will be no restrictions on the schedule with respect to work hours or work days, although it is expected that the Contractor shall conduct operations on a daylight hours basis, approximately. Once drilling begins, work shall proceed on a consecutive-day basis continuously, and without interruption until airlift development is complete.

SECTION 108 - LOST HOLES

The following provides clarification between what shall be considered a hole abandoned for cause, and a defective hole:

1. **Holes Abandoned for Cause:** If the Owner's Technical Representative (OTR) determines that for reasons beyond the control of the Contractor it is necessary to stop drilling, or the hole is lost before the objective or desired depth is reached and further attempts to save or complete the hole are not practical, the hole will be ordered abandoned for cause. The Contractor shall fill and plug the borehole. The Contractor will be reimbursed for the footage drilled and other operations and for moving to an alternative location.
2. **Defective Holes:** If the OTR determines that the hole is lost due to negligence, incompetence, or malpractice on the part of the Contractor or his personnel, or to the use of defective or unsuitable equipment, he will immediately notify the Contractor in writing of his decision and order the hole abandoned. If a hole does not meet the requirements set forth herein, or if the Contractor fails to drill a hole to the depth specified by the OTR within the scope of the Contract, the hole will be declared abandoned. Any hole that cannot be corrected to the required tolerance for alignment will be declared abandoned. The Contractor, at his own expense, shall fill and plug the hole(s). The Contractor shall drill a new hole at an alternate site in the immediate area approved by the OTR. The Contractor will not be paid for any footage drilled or for other operations performed in any hole abandoned because of defects.

**HARKINS SLOUGH FACILITY 2022 RECOVERY WELLS
DRILLING AND WELL CONSTRUCTION PROJECT**

SECTION 200. TECHNICAL SPECIFICATIONS

- Section 201 - Mobilization
- Section 202 - Well Permits
- Section 203 - Borehole Drilling
- Section 204 - Geophysical Logging
- Section 205 - Well Casings and Screens
- Section 206 - Gravel Pack
- Section 207 - Sanitary Seal
- Section 208 - Well Development and Testing
- Section 209 - Chlorination
- Section 210 - Site Cleanup
- Section 211 - Standby Time

SECTION 201 – MOBILIZATION (BID ITEM NO. 1).

Mobilization shall consist of all preparatory work and materials necessary for construction operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; control of water; site leveling; and all other facilities necessary for work on the project and for all other work and operations which must be performed, or cost incurred prior to beginning work on the various Contract items on the project site.

The Contractor shall provide a complete drilling unit, all tools, accessories, power, fuel, materials, supplies, lighting, tanks, piping, and other equipment and experienced personnel necessary to conduct efficient drilling operations. The drilling unit shall be in good condition and of such capacity as to drill the hole and complete a well as required by these Specifications to a depth of approximately 160 feet.

Payment for mobilization shall be made at the lump sum price bid for ***"Mobilization", Bid Item No. 1.***

SECTION 202 – WELL PERMITS (BID ITEM NO. 2).

The Contractor is responsible for obtaining well permits from the Santa Cruz County Health Department, Environmental Health Division (EHD), prior to mobilization to the site. The Contractor is also responsible for compliance with all permit conditions, including preparation and submittal of permit compliance documentation (including DWR Well Completion Reports).

Payment for the Well Permit shall be made at the lump sum price for ***"Well Permits" - Bid Item No. 2.***

SECTION 203 - BOREHOLE DRILLING (BID ITEM NO. 3).

At each well location, the Contractor shall drill a 16-inch diameter bore to a depth of approximately 160 feet below ground surface, or approximately sea level. The stability of the near surface materials is the responsibility of the Contractor. The Contractor may opt to use a shallow temporary conductor for convenience. The borehole shall be drilled by either the direct or reverse rotary drilling method. The drilling fluid shall be a polymer system such as, but not limited to, EZ-MUD, HEC, Drispack, Duel-Vis, Poly-Bore, AquaPak, or Wyo-Ben G-150, etc. **A clay-based bentonite system will not be allowed. Drilling with clear water only will not be allowed.** The properties specified below must be maintained to the satisfaction of the OTR. The drilling fluid shall possess such characteristics as are required to adequately maintain the walls of the hole to prevent caving of the wall as drilling progresses and to permit recovery of representative samples of cuttings. The drilling fluid shall possess such characteristics that it can be readily removed from the hole during the placement of the gravel pack and during development of the well.

The Contractor's fluid system shall be capable of removing solids and conditioning the fluids prior to re-circulation down the hole. No surface pits are allowed. The Contractor must provide a description of the drilling method and fluids to be used concurrently with the submittal of his bid. The contractor must meet drilling fluid requirements at all times during drilling. The proposed drilling fluid program must include information regarding the types of fluid to be used, intended drilling fluid weights, viscosities, sand and solids contents, water loss control, and the name of the drilling fluid supplier.

The drill rig must be provided at all times with the following Standard API drilling fluid devices to measure the following properties:

- A. Drilling fluid weight;
- B. Drilling fluid viscosity; and,
- C. Drilling fluid sand content.
- D. Water Loss

The drilling fluid shall have the following properties in accordance with API Code RP-13B (or recent modification) "Recommended Standard Procedure for Testing Drilling Fluids." In the event the Contractor cannot attain these properties, the drilling fluid shall be modified or replaced.

The following properties for polymer based fluid systems shall be maintained.

- Weight - a maximum of 9.0 pounds per gallon during all aspects of drilling.
- Marsh Funnel Viscosity – a minimum of 32 seconds during all aspects of drilling.
- Sand Content - a maximum of one percent by volume during all aspects of drilling (special note: this testing procedure shall include the addition of sodium hypochlorite to the test sample in order to destroy the polymer).
- Water Loss – less than 20 cc.

For reverse-rotary drilling, in the absence of mechanical separation such as shakers and desanders, the contractor must possess and maintain at all times during the process, sufficient

surface volume to effectively separate cuttings and keep sand and solids contents below the specified limits. Excavation of on-site pits for drilling fluids will not be allowed. If drilling fluid conditions as outlined above are exceeded, the Contractor will be required to immediately suspend further drilling until corrected. Contractor is advised that cuttings from shaker or those removed from pit will need to be moved to the disposal area at the north end of the basin. The Contractor may choose to utilize "low-boy" bins for temporary storage of cuttings.

During drilling operations, the Contractor must record and provide the following information for the well:

- A log of drilling bit types and depths at which drill bit changes are made.
- A log of the cuttings, providing the depths and descriptions of the earth materials encountered. The Contractor shall collect cutting samples at 10-foot intervals during the drilling of the borehole. Samples shall be placed in "zip-lock" plastic bags and labeled with well name, sample depth interval, and date.

All measurements for depths shall be referenced to existing ground surface at the well site. All drilling records shall be delivered to the OTR upon completion of the well.

Payment for the borehole drilling shall be made at the unit price bid per linear foot for ***"Borehole Drilling" - Bid Item No. 3.***

After review of the cuttings samples and the geophysical log of the borehole, the OTR may opt to require additional borehole drilling. As part of the Contractor's bid, a linear foot cost for additional borehole drilling shall be provided (***"Additional Borehole Drilling" - Bid Item No. 3a.***)

SECTION 204 - GEOPHYSICAL LOGGING (BID ITEM NO. 4).

The Contractor shall furnish a geophysical logs of the boreholes, and shall assist with the geophysical logging as necessary. The geophysical log shall include: spontaneous potential; 16- and 64-inch resistivity surveys; and a natural gamma survey. Four field and six final copies of the geophysical log shall be provided. In addition, the geophysical log shall be provided digital format.

If the logging probe fails to descend to the desired depth, the Contractor, at his own expense, shall condition the hole to permit the logging probe to descend to the bottom of the hole.

Payment for the geophysical logs shall be made at the lump sum price for ***"Geophysical Logging" - Bid Item No. 4.*** Should additional borehole drilling be required, the Contractor shall provide a geophysical log of the additional borehole. The additional geophysical log shall include the same measurements as recorded on the first geophysical log. A lump sum cost for an additional geophysical log shall be provided on the project bid sheet for ***"Additional Geophysical Logging" - Bid Item No. 4a.***

SECTION 205 - WELL CASINGS AND SCREENS (BID ITEM NOS. 5a and 5b)

The Contractor shall furnish all materials and work necessary to manufacture, deliver, and install the blank well casing, the well screen, and the cellar pipe with end cap, as listed in the table below

and shown on Plate 3. The casing shall consist of 8-inch diameter, Schedule SDR 21 pipe with flush threaded ends. The casing schedule, for the three wells, is shown in the table below:

| Quantity (Linear Feet) | Item | Bid Item No. |
|---------------------------|--|--------------------|
| 330 | 8-INCH-DIAMETER, SDR 21 PVC BLANK CASING. | 5a |
| 90 | 8-INCH-DIAMETER, SDR 21 PVC WELL SCREEN, 0.040-INCH HORIZONTAL, MACHINE CUT SLOTS. | 5b |
| 60 | 8-INCH-DIAMETER, SDR 21 PVC BLANK CASING CELLAR. | 5a |

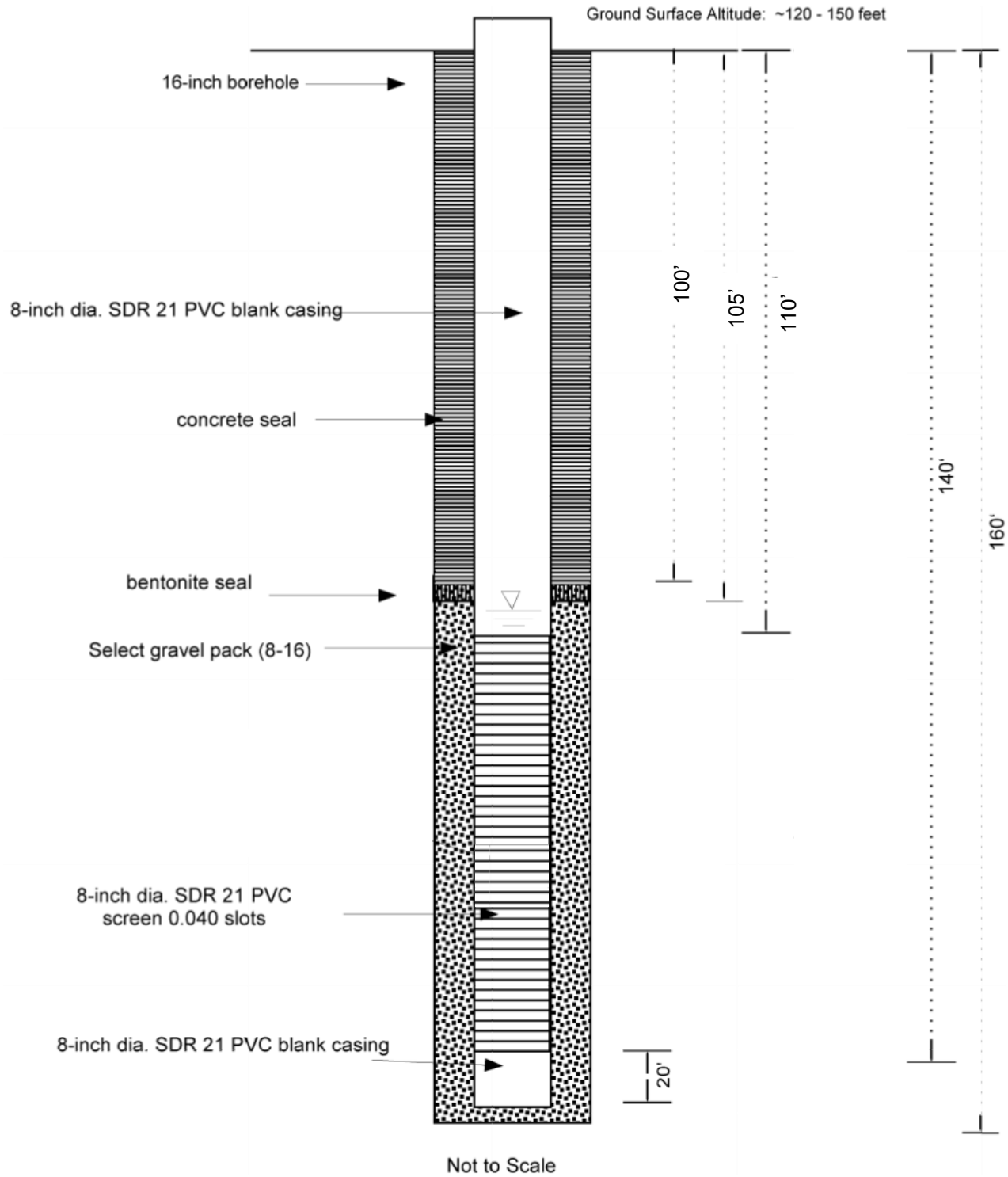
The casing and screen shall be plumb and shall be centered in the hole. **Non-metallic** casing centralizers shall be attached to the casing at intervals of not more than 60 feet. The casing shall be suspended in tension from the surface by means of an appropriate hanger or clamp. The bottom of the casing shall be at a sufficient distance above the bottom of the reamed hole to ensure that none of the casing will be supported from the bottom of the hole.

If, for any reason, the casing cannot be landed in the correct position or at a depth acceptable to the OTR, or any portion of the casing should collapse prior to well completion, the Contractor shall remove the casing from the borehole, perform a wiper run, and reinstall the casing to the desired depth. Should it not be possible to install the casing in the borehole after the wiper run, the Contractor shall construct another well immediately adjacent to the original location and complete this well in accordance with the specifications at no additional cost. The abandoned hole shall be sealed in accordance with directions from the OTR and in accordance with any laws pertaining to proper well abandonment. All work required to be repeated and all additional materials, labor, and equipment required, shall be furnished at the expense of the Contractor and no claim for additional compensation shall be made or be allowed, except as specifically provided herein.

Payment for the well casing and screens, and installation of the well casing and screens, shall be made at the unit price bid per linear foot for ***“8-Inch-Diameter SDR 21 PVC Blank Well Casing - Bid Item No. 5a, and 8-Inch-Diameter SDR 21 PVC Well Screen - Bid Item No. 5b”***.

PLATE 3

WELL SCHEMATIC



SECTION 206 - GRAVEL PACK (BID ITEM NO. 6).

Gravel pack shall be installed in the annulus between the approximate depths of 105 and 160 feet. All gravel or coarse-grained sand for packing shall be hard, water worn, and washed clean of silt, fine sand, clay, and foreign matter. Gravel pack shall be provided by Pacific Materials RMC, or an approved equal. An approximate 8 x 16 gradation shall be used. The gravel pack material proposed for use by the Contractor shall be subject to the approval of the OTR prior to delivery to the site. The gravel pack material, if stockpiled at the well site, shall be in bags, supersacks, or otherwise protected and kept free of all foreign matter.

Prior to placement of the gravel pack in the well, the drilling fluid shall be thinned and balanced. Gravel shall be installed in the annular space between the reamed hole and the well screen through a construction tremie pipe. During placement of the gravel, disinfectant (e.g., sodium hypochlorite) shall be added to the gravel at a uniform rate and in accordance with DWR Bulletin 74-81. Fluids displaced from the well casing and annulus during gravel packing operations shall be discharged to the designated disposal area. The final depth to the top of the gravel pack shall be verified by measurement with a sounding line, or other method acceptable to the OTR.

Payment for the gravel pack shall be made at the unit price bid per linear-foot for "**Gravel Pack**" - **Bid Item No. 6.**

SECTION 207 - SANITARY SEAL (BID ITEM NOS. 7a and 7b).

A sanitary seal (i.e., cement grout) annular seal for each well shall be provided between the ground surface and a tentative depth of 100 feet, followed by a five (5) feet thick transition (i.e., bentonite pellets) seal to a tentative depth of 105 feet. Cement grout shall be composed of not more than 3 cubic feet of sand and 1 cubic foot (one sack) of Portland cement to 5 to 7 gallons (0.67 to 0.90 cubic feet) of clean water. This is typically considered to be a 10-sack Portland cement sand slurry mix when ordered from batching plants. Bentonite, to make the mix more fluid, reduce shrinkage, and slow the curing process to reduce heat, shall be used to a total of 5 percent (5%) of the volume of the cement. With the use of 5 percent bentonite, water content can be increased to 8.2 gallons per sack of cement.

Cement grout and bentonite pellets shall be placed in the annular space between the well casing and the conductor casing from bottom to top by means of a tremie pipe. Cement grout material shall be placed by the positive displacement pumping method. Grout shall be placed from bottom to top in one continuous operation. Fluids displaced from the annulus during sealing operations shall be contained onsite in temporary tanks.

Sealing materials and sealing operations shall be in compliance with DWR Standards and Santa Cruz County EHD permit conditions.

Payment for the cement grout shall be made at the unit price bid for "**Cement Grout**" - **Bid Item Nos. 7a and 7b.**

SECTION 208 - WELL DEVELOPMENT AND TESTING (BID ITEM NOS. 8a, 8b, and 8c)

This item shall consist of bailing, air-lifting, and zone-pumping to remove drilling fluids and cuttings and develop the gravel pack and aquifer to maximize the yield and efficiency of each well. For bidding purposes, the Contractor shall assume 12 hours of swabbing and airlift pumping. Upon completion of development, baseline testing will be performed by the OTR on each well.

Initial development work shall consist of line swabbing with a bailer or swab to stabilize and settle the gravel pack and provide for initial wall cake removal. The bailer or swab shall be no less than 6 inches in diameter and shall be free of rough or uneven edges that may damage the well screen. The bailer shall be inspected by the OTR prior to use. Equipment utilized during swabbing operations shall be of a horsepower necessary to raise the bailer at a velocity of 3 feet per second. Prior to swabbing, a chlorine solution will be added to each well as necessary to "break" the drilling fluid polymer. Chlorine dosage will be in accordance with manufacturer's recommendations. The entire well screen shall be swabbed with the bailer for a period of 1 hour. Swabbing shall proceed from top to bottom and the well shall be cleaned to the bottom upon completion. After initial bailing, fluid in well shall be removed by air-lifting from bottom until fluid is clean.

After bailing, each well will be developed by zone pumping while swabbing. This procedure will be conducted utilizing a development tool similar to the one shown in Figure 15.16 of Groundwater and Wells (Driscoll, 2nd Edition, page 515). The tool will consist of a 5-foot length of perforated pipe with minimum 7-inch diameter flexible rubber wipers on both ends. This isolation tool shall be attached to a submersible pump (with check valve removed) capable of discharging 100 gpm from a depth 150 feet. The pump and isolation tool assembly shall be placed to the required depth on a string of 2 to 3-inch diameter pipe. At the top of the string, a discharge head shall be configured to divert water mixture through a flexible hose to a discharge tank. The entire assembly shall be suspended in the derrick in such a manner that allows the assembly to swab a minimum of 20 feet of screen while simultaneously pumping.

The above-described equipment shall be installed into the well to the top of the uppermost screen. The screen will swabbed in 20-foot sections while simultaneously pumping. Each 20-foot screen section will be worked until successive swabbing produces little change in color and discharge is relatively clear. During development of upper screens, discharge rate can be reduced and water can be added to maintain suction. Development will continue for approximately one-hour for each 20-foot interval of saturated screen. This period may be extended or shortened by the OTR based on condition of discharge water. Upon completion of a screen section, additional pipe will be added, and the procedure repeated until all screen sections have been completed in a pass from the top of the screen to the bottom.

After reaching bottom, the development tools shall be utilized to inject Johnson NW-220 or approved equal, incrementally into the screen sections. The total amount of NW-220 introduced to the well shall be equal to the quantity necessary to achieve a NW-220 concentration of one gallon per 500 gallons of water in the screened sections. The NW-220 solution shall be swabbed into each progressively shallower screen section as piping is removed. Each 20-foot screen section shall be swabbed for a period of up to 15 minutes to assure distribution. Upon reaching the uppermost screen section, the development tools would be left in the well for a minimum period of 8 hours. After this period, the pumping/swabbing development procedure described in the preceding paragraphs shall be repeated to bottom (second pass). Development tools would then

be removed from well. It is estimated that total mechanical development time will be approximately 16 hours.

Discharge Water. All piping and discharge lines shall be provided by the Contractor. Development water from the well shall be directed to a designated area of the basin.

Final development shall be by pumping. The Contractor shall install a temporary submersible pump and generator for pumping development and testing. The pump shall be placed at a depth of approximately 150 feet. A temporary PVC sounding tube shall be installed with the pump. The pump shall be capable of a production rate of up to 200 gpm from a setting of 150 feet. Pumping development shall be performed as directed by the OTR. For bidding purposes, the Contractor shall assume 8 hours of pump development per well.

Upon completion of pumping development, the OTR will perform baseline testing of the well. The Contractor shall furnish all materials and equipment necessary to perform the test (including a totalizing flow meter and a Rossum sand testing device), and shall assist with the test set up as directed by the OTR.

Payment for well development and testing shall be made at the bid prices for: "**Well Development, Zone Pumping**" - Bid Item No. 8a; "**Well Development, Pumping**" - Bid Item No. 8b; and "**Testing Pump Rental – Bid Item No. 8c**". Payment for additional development and testing shall be made at the unit bid prices provided for these items.

SECTION 209 – CHLORINATION (BID ITEM NO. 9).

Upon removal of the test pump, the Contractor shall disinfect the well using a chlorine solution. The amount of chlorine added shall be sufficient to achieve a residual chlorine concentration of 100 ppm. Chlorination shall be performed in accordance with AWWA standards.

Payment for the chlorination shall be made at the lump sum price for "**Chlorination**" - Bid Item No. 9.

SECTION 210 - SITE CLEANUP (BID ITEM NO. 10)

The Contractor shall keep the premises free from accumulations of waste materials, rubbish, and other debris resulting from the work. At completion of the work the Contractor shall remove all waste materials, rubbish and debris from and about the well site as well as all tools, construction equipment, fuel tanks, machinery and surplus materials. The Contractor shall restore the pre-existing grade of the well sites and the general construction area. The OTR will be the sole judge who determines when cleanup efforts can be considered to be sufficient and complete.

Payment for site cleanup shall be made at the lump sum price for "**Site Cleanup**" - Bid Item No. 10.

SECTION 211 - STANDBY TIME (BID ITEM NO. 11)

During the progress of drilling operations, it may be necessary for the OTR to perform work that will require the drilling crew and equipment to stand idle. In such event, the OTR shall request the Contractor in writing to cease operations and shall state the anticipated extent or duration thereof. The Contractor shall promptly furnish such assistance, and cease operations.

Payment for standby time will be paid on an hourly rate for ***“Standby Time, Bid Item 11”***, in accordance with the actual hours approved by the OTR. In no case shall standby time be approved for Contractor equipment failures or delays caused by waiting for Contractor's equipment or materials deliveries.