CITY OF MORGAN HILL

DEVELOPMENT SERVICES CENTER
PUBLIC WORKS DEPARTMENT
17575 PEAK AVENUE
MORGAN HILL, CA 95037-5301
ENGINEERING: 408-778-6480
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ADDENDUM NO. 2

DATE: **August 11, 2025**

TO: **ALL PLAN HOLDERS OF THE:**
EAGLE VIEW WELL #1 DEVELOPMENT PROJECT
DAVID GITTLESON – CITY OF MORGAN HILL

SUBJECT: **REVISED TECHNICAL SPECIFICATION SECTION 02672**

TECHNICAL SPECIFICATIONS:

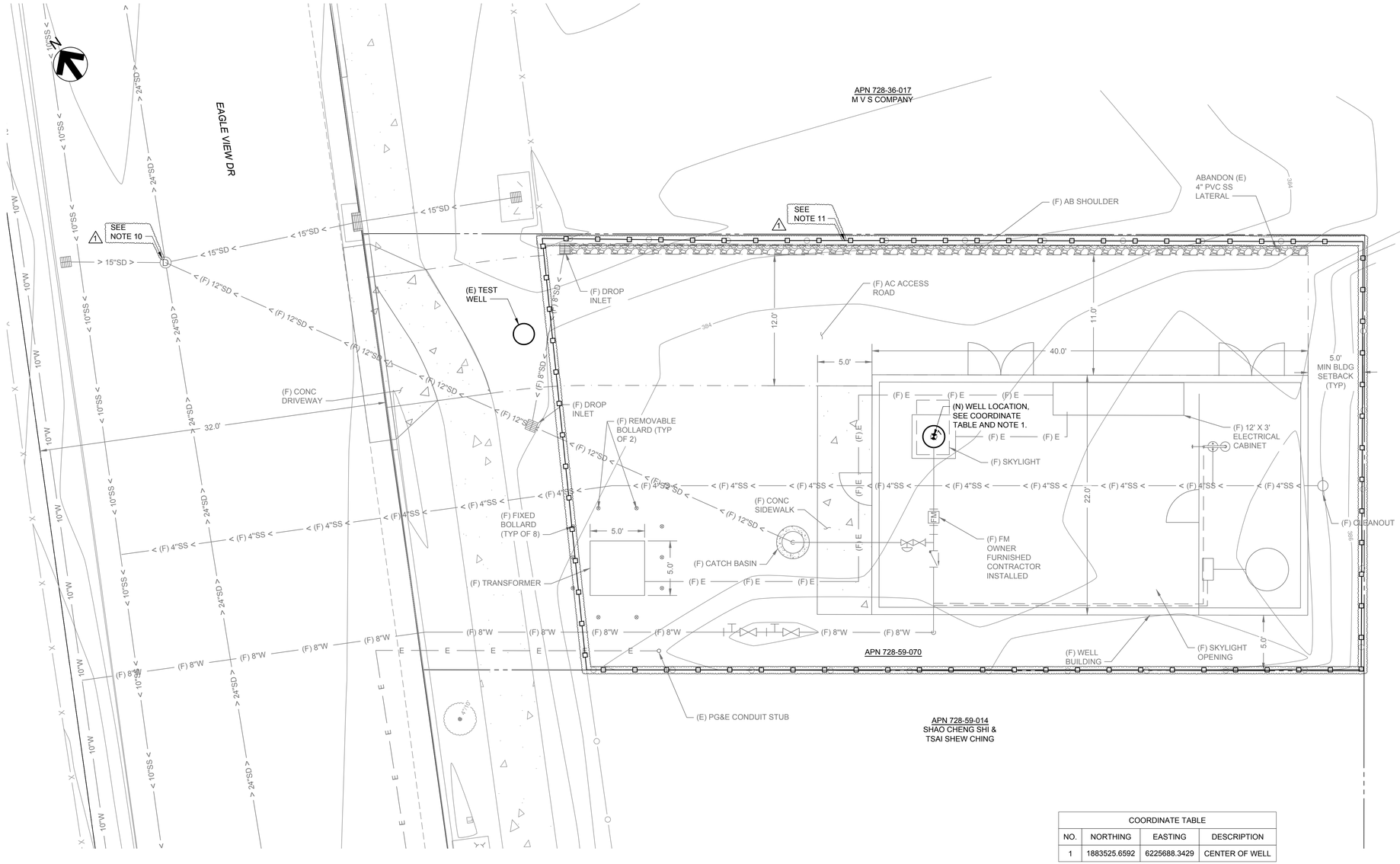
1. **REPLACE Technical Specification Section 02672, dated May 2025 with Revised Technical Specification Section 02672, dated August 2025.**
2. **REPLACE Plan Sheet 5 of 7, dated 6/27/25 with revised plan sheet 5 of 7, dated 8/11/25.**
3. **The bid Opening date remains the same, August 13, 2025 at 2:00 P.M.**

ADDENDUM ACKNOWLEDGMENT

Bidder acknowledges receipt of this addendum, which shall be attached to the proposal.

Contractor's Representative _____ Date _____

THIS DOCUMENT AND THE ATTACHMENTS SHALL BECOME PART OF THE PROJECTS SPECIFICATION



SITE PLAN
SCALE: 1" = 5'

COORDINATE TABLE			
NO.	NORTHING	EASTING	DESCRIPTION
1	1883525.6592	6225688.3429	CENTER OF WELL

NOTES

1. CONTRACTOR TO DRILL NEW PRODUCTION WELL PER DET 1/C201.
2. CONTRACTOR SHALL PROTECT ALL EXISTING UTILITIES AND ALL OTHER IMPROVEMENTS NOT DESIGNATED FOR REMOVAL AND SHALL RESTORE DAMAGED IMPROVEMENTS TO A CONDITION EQUAL TO OR BETTER THAN THEY WERE PRIOR TO DAMAGE. SEE SPECIFICATIONS.
3. SUBMIT TRAFFIC CONTROL PLAN PER CITY OF MORGAN HILL STANDARD GENERAL NOTE, DWG NO. G-II.
4. THE NEAREST FIRE HYDRANT TO BE USED FOR WATER SUPPLY IS APPROXIMATELY 235 FT SOUTH ON EAGLE VIEW DRIVE.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION, LABOR, TOOLS AND EQUIPMENT, TRAFFIC CONTROL, SCHEDULING AND TRANSPORTATION TO BRING OWNER SUPPLIED WATER TO THE SITE.
6. CONTRACTOR SHALL SUBMIT A WATER POLLUTION CONTROL PROGRAM FOR OWNER APPROVAL.
7. CONTRACTOR SHALL OBTAIN A SANTA CLARA VALLEY WATER DISTRICT WELL CONSTRUCTION PERMIT AND CONFORM TO ALL SANTA CLARA VALLEY WATER DISTRICT WELL PERMIT REQUIREMENTS.
8. THE PROJECT IS DIVIDED INTO TWO PHASES. THE SCOPE OF PHASE I INCLUDES CONSTRUCTING A WELL AS DEPICTED HERE AND THIS PLAN SET. PHASE II (NOT IN THIS CONTRACT) WILL INCLUDE EQUIPPING THE WELL AND CONSTRUCTING ALL REMAINING IMPROVEMENTS TO RESULT IN A COMPLETED AND OPERABLE WELL FACILITY. PHASE II WILL BEGIN AFTER COMPLETION OF PHASE I.
9. CONTRACTOR SHALL OBTAIN PERMITS FROM VALLEY WATER AND STATE WATER RESOURCES CONTROL BOARD FOR DISPOSING WATER AND TAILINGS FROM WELL CONSTRUCTION. REFER TO SPECIFICATION SECTION 02672 FOR FURTHER DETAILS.
10. FOR BIDDING PURPOSES, THE CONTRACTOR SHALL ASSUME THE POINT OF DISCHARGE TO BE THE STORM DRAIN MANHOLE ON EAGLE VIEW DRIVE ADJACENT TO THE SITE. SEE SPECIFICATIONS FOR DISCHARGE REQUIREMENTS. WATER QUALITY OBJECTIVES SHALL MEET THE WATER QUALITY CONTROL PLAN FOR THE SAN FRANCISCO BAY BASIN AND ALL REQUIREMENTS OF THE LOW-THREAT DISCHARGE PERMIT FROM THE BAY AREA REGIONAL WATER QUALITY CONTROL BOARD.
11. THE CONTRACTOR SHALL PROVIDE SOUND WALLS AROUND CONSTRUCTION SITE. SEE SPECIFICATIONS FOR NOISE AND SOUND WALL REQUIREMENTS.

CIVIL SITE PLAN
EAGLE VIEW WELL IMPROVEMENTS PROJECT – PHASE 1

NO.	DESCRIPTION	DATE	BY
1	ADDENDUM 2	8/11/2025	JDS

Revisions

WORK ACCEPTED: INSPECTOR:
BY: DATE:

DRAWN: KMC/AGP | DESIGN: SEW | HOR: NAD83
CHECKED: JS | VERT: NAVD88
APPROVED: DATE: | JOB NUMBER: 380-006
SCOTT CREER, CITY ENGINEER RCE #58879 EXP 6-30-27

CITY OF MORGAN HILL
City of Morgan Hill
Public Works Department
17575 Peak Avenue Morgan Hill, CA 95037 (408)778-6480, Fax (408)779-7236

HydroScience
10569 OLD PLACERVILLE RD.
SACRAMENTO, CA 95827
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CIVIL SITE PLAN
EAGLE VIEW WELL IMPROVEMENTS PROJECT – PHASE 1

PRINT DATE: 8/11/2025
DWG NUMBER: C101
SHEET NUMBER: 5 OF 7

REGISTERED PROFESSIONAL ENGINEER
JIGAR D. SHAH
C66080
CIVIL
STATE OF CALIFORNIA
08/11/2025

SECTION 02672
WATER PRODUCTION WELL

PART 1 - GENERAL

1.01 Summary

A. The work to be done includes the furnishing of all labor, material, transportation, tools, supplies, plant, equipment and appurtenances, and the performance of all work required for completing in a good workmanlike manner the drilling and testing of one water production well in conformity with all applicable State, Santa Clara Valley Water District (Valley Water), and AWWA/ASCE standards. All equipment and related material shall be adequate to drill the specified well as deep as three-hundred and seventy (370) feet and install the specified well casing and screens.

B. The well shall be located on the site as shown in the plans prepared by Hydroscience Engineers, Inc. and as directed by the Engineer or its duly appointed representative. The Contractor shall check and confirm the well location with the Owner, or its appointed representative, at least forty-eight (48) hours prior to setting up the drilling equipment and starting drilling operations.

1.02 References

A. City of Morgan Hill Code of Ordinances (Ord.)

1. Noise Ordinance: Title 8 Health and Safety, §8.28.040.

B. American Petroleum Institute (API)

1. API Standard 13-A: Drilling Fluid Materials

C. American Society for Testing and Materials (ASTM)

1. ASTM A-778: Standard Specification for Welded Austenitic Stainless Steel Tubing
2. ASTM A-53: Standard Specification for Pipe, Steel, Black, and Hot-Dipped, Zinc-Coated, Welded and Seamless

D. American Water Works Association (AWWA)

1. AWWA A100: Standards for Water Wells

1.03 Description

A. The project consists of the drilling and testing of one gravel envelope water well in accordance with the specifications herein set forth.

B. The work shall include furnishing and setting up of all equipment and mud pit as necessary, the drilling of an uncased bore, running of an electronic log and caliper log of the uncased hole, completion of uncased bore into finished bore, setting and supporting of unperforated casing and well screen, placing of gravel pack to level as directed, setting and supporting a gravel tube, setting and supporting a sounding tube, tremie placement of surface seal, setting of gravel pack, performance of plumbness and alignment tests, developing and testing of well, disinfection of completed well, TV scan of completed well, and installation of a temporary pump with minimum capacity to 1,200 gpm, and clean-up and restoration of site to its original condition, all in conformance with accepted good practices and with these specifications. All setting depths, drilled depths, bore diameters, hole diameters, and pipe diameters are per the plans.

C. The Contractor shall use bucket auger and reverse rotary drilling methods as specified herein. Bits for drilling and reaming as applicable shall be of a form and size to prevent eccentricity during rotation and to assure a plumb and straight bore hole to permit free installation and removal, without binding, of a test pump and capable of delivering 1,200 gpm (vertical turbine or submersible pump with approximately 12” bowl OD maximum and 8” column pipe).

D. Contractor's Work shall include all incidental work and subsidiary obligations necessary or required for the completion of the work, including but not limited to securing of permits, filing of drilling reports, provision of adequate mud pit, conveyance of water to site as necessary, coordination with Owner's representatives on allowable discharge location(s) for disposal of water, coordination with Owner's representatives on disposal of tailings, taking of water samples, all safety and protective measures, and other work required for the drilling, testing, and developing of a completed well as herein specified. Conveyance of water and tailings to disposal locations is the responsibility of the Contractor.

1. The Contractor shall obtain a Valley Water well construction permit.
2. The Contractor shall apply for and obtain enrollment under the statewide general order for Waste Discharge Requirements from the State Water Resources Control Board Water Quality Order No. 2003-0003-DWQ.

E. Deviation from the specifications will not be permitted unless prior authorization in writing is obtained from the Engineer or Owner's representative for the project.

1.04 Submittals

A. The Contractor shall submit to the Engineer for approval copies of the following data or material prior to purchase and use on the project: Electronic submission is acceptable.

1. Product data for the following:
   1) Conductor casing,
   2) Well screen,
   3) Well casing,
   4) Noise suppression products,
   5) Disinfectants,
   6) Dechlorination chemicals,
   7) Drilling fluid(s),
   8) Well drilling equipment,
   9) Test pump equipment,
   10) Sealing material,
   11) Any hazardous materials, and
   12) Gravel envelope
2. Contractor shall submit all required permits, geophysical and E-logs, formation samples, plumbness and alignment test results, well and aquifer test results, water quality analysis results, well completion report and any other information requested by the Owner or Engineer.
3. Contractor shall retain a certified laboratory and certified field staff to complete collection of all samples, testing and sample analysis as per the full Title 22 requirements, including but not limited to coliform, inorganic and volatile chemicals, perchlorates, and per- and polyfluoroalkyl substances.
4. Samples of at least one (1) quart size and a sieve analysis of the same material proposed to be furnished for gravel packing wells;
5. The name of the firm proposed to perform the geophysical logging (electric log), and a sample of the log data proposed to be furnished; and

6. The name of the laboratory proposed to perform water quality analysis services.

B. Notification to Owner's Representative: The Contractor shall be responsible for giving at least forty-eight (48) hours advance written notice to the Owner's representative prior to performance of specified operations as follows for the well:

1. Intending to start drilling operations at the well site;
2. Scheduling an anticipated date of the geophysical logging;
3. Scheduling the final reaming of the well bore, setting of casing, and placement of gravel pack and surface seal;
4. Scheduling development and testing of completed well;
5. Scheduling the plumbness and alignment test; and
6. Scheduling of the TV scan.

C. These minimum advance notification requirements are based on a normal sequencing and scheduling of work without unusual delays or interruptions. If delays or interruptions should occur, the Owner's representative shall be given as much advance notice as possible on the restart of work of the project.

1.05 Scheduling

A. The Contractor shall be responsible for scheduling work so that immediate and continuous installation of casing, gravel pack, and grout seal after final reaming and all other work of the project can proceed as specified. Such schedules shall be furnished to the Owner before each critical phase of the work.

1.06 Basic Depth and Capacity Data

A. The intention of these specifications is to provide one well capable of a minimum continuous yield of at least 800 gpm. The well depth and surface seal depth are shown on the plans.

B. Depending on data obtained from the drilling operations, the Engineer reserves the right to vary the extent or scope of work to be done, including terminating work if suitable strata are not encountered.

C. No changes in the specified depth of well, depth of surface seal, length of well screens, developing time, or other basic factors covered by the base bid will be approved except as authorized or directed by the Engineer in writing.

1.07 Special Requirements

A. Contractor shall construct a mud pit for temporary staging or storage of cuttings and return fluid from drilling operations and manage its capacity. Contractor shall supply a portable circulation pit or tank(s) in lieu of an excavated pit if there is inadequate space for a mud pit. Mud pits or circulation tanks shall be of size, capacity, and shape to remove cuttings from drilling operations and return fluid suitable for reverse rotary drilling. Mud pit shall be located in an area by the Contractor and approved by the Owner's Representative to avoid the footprint area of the future well building shown on the Drawings. Cuttings shall be removed from the mud pit or circulation tanks as necessary to maintain proper drilling fluid characteristics. After completion of the project, the mud pit shall be filled with materials removed in constructing the mud pit and compacted to 90% of the maximum density. Whenever workmen or a watchman is not present, a temporary cyclone fence to limit entry by animals or people shall enclose the site and mud pit. The fence shall be at least 6-foot tall with a lockable entry.

B. Contractor shall provide temporary sound walls or curtains that suppress noise during operations and night hours. Sound walls and/or sound curtains shall enclose the site and shall have a minimum

height of 16 feet. The approximate location and quantities of the sound walls are depicted on the Drawings.

C. Unless allowed by the Owner, noise levels due to construction activity shall not exceed unreasonable levels as determined by the Owner per local ordinance (Ord. Title 8, §8.28.040).

D. Unless otherwise approved by the Owner, construction activities are prohibited other than between the hours of seven (7) a.m. and eight (8) p.m. Monday through Friday and between the hours of nine (9) a.m. and six (6) p.m. on Saturday. The construction activities are prohibited on Sundays or federal holidays. Note, the drilling and well construction activities may continue as a 24-hour/7 days operation once started.

E. Refer to the Geotechnical Report included as an attachment to the Contract Documents for existing soils, subsurface conditions and construction considerations.

F. Hazardous Materials

1. The Contractor shall comply with all laws, rules, and regulations concerning use, handling, and disposal of hazardous wastes.

2. The Contractor shall not deliver any hazardous materials to the job site without submitting Material Safety Data Sheets and receiving prior approval from the Owner and Engineer.

3. Hazardous materials produced or generated due to the project construction shall not be disposed of via sewer, storm drain, or trash container or dumpster(s).

4. The Contractor shall be considered the hazardous waste generator and will be responsible for legal transport and disposal of all hazardous waste resulting from the project.

5. Violation of any hazardous materials transport and disposal requirements shall be sufficient cause for the Owner or Engineer to stop all work. In addition to the Contractor's costs for stoppage, any costs incurred by the Owner and Engineer caused by the work stoppage shall be borne by the Contractor, including any costs to return the job site and other effected areas to hazard-free conditions.

6. The Contractor shall be solely responsible for all costs, including fines and penalties, for the investigation and cleanup of any hazardous materials the Contractor transported, generated, handled, failed to dispose of legally, and any damage to property and/or injury to any person.

PART 2 - MATERIALS

2.01 Conductor Casing

A. The conductor casing shall consist of ASTM A-53 Grade B Steel with quantities and dimensions shown on the Drawings.

B. Collars shall be of the same thickness and physical and chemical properties as the casing, 5 inches minimum in width, shall be rolled to fit the outside diameter of joining sections, and shall be circumferentially welded to the casing section.

C. All casing welds shall be ground flush to uniform surfaces. Inside edges of collars shall have all sharp edges, burrs, and welds removed.

D. All casing segments shall terminate with flat ends perpendicular to the casing axis and shall not vary more than 0.010 inches at any point from a true plane perpendicular to the casing.

E. The casing shall be round and not deviate more than one percent ellipticity from the specified inside and/or outside diameter(s) on the Drawings.

2.02 Cement Grout

A. Cement grout mixture shall be composed of not more than two (2) parts by weight of sand to one part of Portland Cement to about seven (7) gallons of clean water (10.3 sack mix).

B. The cement shall be Type I or II and shall conform to the California Department of Water Resources Well Standards, Bulletin 74-81, Supplement 74-90 and any local ordinances from the Valley Water for sanitary seal requirements.

2.03 Well Casing

A. The well casing shall consist of ASTM A-778 Type 304 austenitic stainless steel with quantities and dimensions shown on the Drawings.

B. Ends of casing sections shall be furnished with collars for field assembly. Collars shall be of the same thickness and physical and chemical properties as the casing, 5 inches minimum in width, shall be rolled to fit the outside diameter of joining sections, and shall be circumferentially welded to the casing section. Collars shall be furnished with three alignment holes to ensure proper alignment and overlap with the casing sections.

C. All casing welds shall be ground flush to uniform surfaces. Inside edges of collars shall have all sharp edges, burrs, and welds removed.

D. All casing segments shall terminate with flat ends perpendicular to the casing axis and shall not vary more than 0.010 inches at any point from a true plane perpendicular to the casing.

E. The casing shall be round and not deviate more than one percent ellipticity from the specified inside and/or outside diameter(s) on the Drawings.

2.04 Well Screen

A. The well screen shall be louvered 0.070-inch slot size and consist of ASTM A-778 Type 304 austenitic stainless steel with quantities and dimensions shown on the Drawings. Products shall be Roscoe Moss Ful Flo, Super Flo type louvered or shutter screens or equal.

B. Ends of casing sections shall be furnished with collars for field assembly. Collars shall be of the same thickness and physical and chemical properties as the casing, 5 inches minimum in width, shall be rolled to fit the outside diameter of joining sections, and shall be circumferentially welded to the casing section.

C. All casing welds shall be ground flush to uniform surfaces. Inside edges of collars shall have all sharp edges, burs, and welds removed.

D. All casing segments shall terminate with flat ends perpendicular to the casing axis and shall not vary more than 0.010 inches at any point from a true plane perpendicular to the casing.

E. The casing shall be round and not deviate more than one percent ellipticity from the specified inside and/or outside diameter(s) on the Drawings.

2.05 Centralizers

A. Centralizers shall be of the same material as the adjoining conductor casing, well casing, or screen section(s).

B. Centralizers shall be 2 inches in width, 30 inches in length, and shall be angled perpendicular to the casing

C. Each centralizer location shall contain a minimum of four (4) centralizers equally spaced circumferentially around the casing(s).

D. Each centralizer shall provide at least 2-feet length of bearing surface on the bore interface.

2.06 Bottom Cap

A. The bottom end piece of the well casing shall be secured by an SE-type head of the same material and thickness as the blank casing.

2.07 Top Caps

A. The caps of the stub up pipes for the well casing, gravel pipe, and sounding tube shall be furnished with lockable covers of the same or similar product materials to prevent tampering and entrance of foreign objects from vandalism.

2.08 Gravel Pipe

A. The gravel pipe shall be Schedule 40 ASTM A-53, Black Steel Pipe with quantities and dimensions shown on the Drawings.

B. The gravel fill pipe shall be furnished in 20-foot sections and butt welded in the field.

2.09 Sounding Tube

A. The sounding tube shall be Schedule 40 ASTM A-778 Type 304 austenitic stainless steel, with quantities and dimensions shown on the Drawings.

B. The sounding tube shall be furnished in 20-foot sections and butt welded in the field.

2.10 Gravel Envelope

A. shall use 6 x 12 clean and washed well-rounded sand as manufactured by Cemex or approved equal.

B. The Owner reserves the right to modify the pack grading for the well, based on sieve analysis data obtained in drilling the well. The gravel envelope shall contain no more than 5% carbonates and shall be kept free of any contaminants and foreign matter.

2.11 Disinfectant

A. Pellet hypochlorite disinfectant shall be added to the gravel at the rate of 1/2 pound per cubic yard of pack material, based on 70% chlorine content. If a lesser strength hypochlorite, or other chlorine product is used, the quantity shall be adjusted accordingly.

B. Liquid sodium hypochlorite shall be used for disinfecting the completed well. The disinfectant shall be of such volume and strength and shall be so applied that a concentration of at least one hundred (100) ppm of chlorine shall be obtained in all parts of the well water, however, not less than twenty (20) pounds of 70% HTH, or its equivalent, shall be used. Liquid sodium hypochlorite shall not be stored for more than 60 days after its manufactured date prior to its use.

C. Disinfectants shall not be exposed to atmosphere or direct sunlight during storage.

D. Dechlorination chemicals shall be calcium thiosulfate based in such quantities to neutralize the chlorine to below 0.01 mg/L residual.

2.12 Sand Tester

A. A Rossum Sand Tester shall be used to measure sand content of pumped water. Sand testers shall meet the AWWA A 100 Appendix E for measuring sand content.

PART 3 - EXECUTION

3.01 Construction Inspection

A. The Contractor shall notify the Engineer, Owner, and appropriate regulatory agencies in advance of the start and completion of the well. It shall be the Contractor's responsibility to obtain and conform to the appropriate well drilling and discharge permits.

B. The Contractor shall be responsible to provide safe and proper access for Owner or regulatory agency inspections at all times throughout construction.

C. The Contractor shall be responsible for contacting and notifying the Engineer and/or Owner at least 24 hours in advance of required inspections at various stages of construction. The Contractor shall perform no work until such inspection(s) have been made by the Engineer or Owner.

D. The following list of required inspections shall be coordinated by the Contractor and completed and must receive approval by the Owner and/or Engineer.

Inspections	Items for Inspection
1. Mobilization	Drilling Equipment, site layout, stormwater prevention measures, sound walls and noise mitigation measures, sanitary facilities
2. Construction Materials	Drilling fluid additives, casing and screen sections, gravel Gravel pipe, sounding pipe, centralizers, end caps, cement for seal
3. Drilling	Drilling fluid properties, geophysical and caliper logs, formation samples, mud pit or circulation tanks
4. Construction	Conductor casing installation, blank casing and screen Installation, gravel pipe installation, sounding tube installation, gravel envelope installation, seal placement
5. Plumbness and Alignment	Equipment, testing
6. Well Development	Swabbing tool, pump equipment, discharge assembly, baker tanks, discharge location
7. Well Testing	Sand test, well and aquifer tests, discharge locations
8. Disinfection	Disinfectant, dechlorination chemicals, chlorine analyzer
9. Final	Casing and pipe stub ends, lockable caps, site clean up

3.02 Test Well Construction and Logging

A. A Driller's log of the bore, which carefully and accurately logs the materials encountered, shall be made for each well as the drilling proceeds. The logs show all changes in strata and other pertinent information, which might develop in the drilling of the boreholes. Two (2) one pint or larger samples of all strata changes shall be taken by the Contractor and placed in suitable containers and turned over to the Engineer. Strata samples shall be taken from the mud circulation discharge in a two (2) gallon or larger bucket, decanting the overlying water using care not to remove sand or silts, then taking representative strata samples from the decanted materials. One of the strata samples from each water bearing aquifer five (5) feet or more in thickness shall be dried and sieved by the Contractor for grain size distribution with selected sieves so that no more than 30% of the formation will be held on one sieve. The sieve analysis results shall be plotted and submitted to the Engineer. Formation samples not used for sieve analyses, as specified above, shall be turned over to the Owner's Representative. The viscosity of the drilling fluid shall be measured and recorded throughout the drilling operation.

3.03 Well Drilling Fluids

A. The Contractor shall submit a drilling fluid control program to the Engineer for approval prior to drilling operations. The Contractor shall not deviate from the approved fluid control program without approval from the Owner or Engineer.

B. The Contractor shall be responsible for drilling fluid and additive selection, maintaining drilling fluid quality and protection of water bearing and potential water bearing formations in boreholes, and the ability to obtain representative samples of formations and aquifer materials encountered during the drilling process. The Contractor shall use fresh, potable water from the Owner's approved source to prepare the drilling fluid.

C. The Contractor shall submit to the Engineer for approval a list of all additives and fluids anticipated to be used during the drilling operations. Drilling fluid additives shall meet or exceed API Standard 13-A. All drilling fluid additives must comply with recognized industry standards and practices and must be applied and used in accordance with manufacturer instructions. Toxic or dangerous substances shall not be added to the drilling fluid. Disallowance of any materials by the Owner prior to or during construction will not relieve the Contractor of the responsibility to complete the drilling process or construction of the well as defined in the Contract Documents.

3.04 Production Well Construction

A. Contractor shall install the well casings in accordance with the design in the plans.

B. Depth of the completed well shall be as directed by the Engineer. Upon completion of the initial borehole, the Contractor's lithology log and geophysical logging shall be provided to the Engineer. The Engineer will determine final depth, and the number and width of screened sections. Upon determination of the final depth, and the number and width of screened sections, the well bore shall be reamed to the full depth as selected by the Engineer using a reamer with the same diameter as the borehole. This final reaming is required regardless of the size of the initial bore.

C. The Contractor shall perform a caliper log immediately after reaming the bore to the full diameter. The log shall show the true diameter of the borehole plotted as a function of the depth of the borehole. After final reaming of the bore as specified above, work shall proceed continuously and without interruption until the casing has been set, the gravel pack fully installed, and the surface seal placed, all as hereinafter specified.

D. The well bore shall always be maintained full of the drilling fluid until the casing, gravel pack, and surface seal are set and placed. Minor receding of drilling fluid during non-work hours is acceptable provided it does not compromise the integrity of the well bore. Contractor shall be responsible for maintaining a free, uncollapsed borehole until the casing and screen are fully installed, the gravel pack placed, and the surface seal with graveling pipe completely placed. All drilling fluids and additives shall be NSF approved for potable water use and shall be accompanied with MSDS sheets.

E. After the final boring or reaming to the specified diameter and the Engineer's approval of the screen/casing placement, the Contractor shall proceed to set the well casing. The Contractor shall schedule his work so that the casing and gravel pack materials are on the site and are placed with the minimum possible delay after reaming the well bore to final size. The Contractor shall be responsible for ensuring that the well bore meet the minimum size per the plans so that a full and complete gravel envelope is achieved. Failure of the bore to take at least 80 percent of the calculated volume of gravel with allowance for normal losses and compaction shall be cause for rejection of the well by the Owner.

F. The well shall be cased to the depth as directed using a casing with diameter per the plans. The contractor shall submit product data for the well casing.

G. Centralizers shall be provided for the well to center the well casing in the borehole. Starting five (5) feet from the bottom, centralizers shall be placed at the bottom and top of each section of well screen and at intervals of not greater than forty (40) feet up to the ground level. At least four (4) centralizing strips, or one (1) centralizing unit, shall be placed at each location for centering the casing or screen to provide minimum interference with the sounding line and graveling.

H. The well screen and unperforated casings shall be furnished in 20-foot lengths to permit placing of well screen at selected water bearing strata, and the Contractor is hereby notified that odd lengths of unperforated casing may be involved in setting the well screen at the selected locations and in providing an unperforated bottom section (length per plan).

I. Louvered well screen:

1. The Contractor shall use a total of ninety (90) linear feet of louvered well screen and preliminary screen slot size of 0.070-inch for the well. Based on the conditions encountered in drilling the production well, the Owner shall select actual total length of the screen, and the Contractor shall be compensated for changes from the base bid. Changes in screen slot size and use of various lengths of screen shall not be basis for change of proposal bid prices, provided screen and blank sections are 20 feet long.

2. The intent is that louvered screen and blank casing sections may be of mixed order in the well and of intermixed lengths to take maximum advantage of water bearing strata encountered in the well, and to minimize the chances of sanding or water quality problems. All pipes are mechanical and 20 feet long.

3. If field conditions of bore hole lithology differ from those indicated on the plans, the Contractor shall submit recommended screen opening size to be used and the gravel pack to be used for Engineer's approval after completion of the production well bore hole, but prior to casing installation. Engineer will confirm Contractor's recommended lengths and order of the unperforated casing and well screen for the well within seventy-two (72) hours of Contractor's submitted recommendation.

4. To minimize the chances of errors, the order in which the casing and well screen lengths are to enter the bore hole shall be marked clearly on the inside of the collared ends of the casing and screen lengths with a lead-free, non-toxic crayon or similar marker before any casing is placed in the well.

J. A gravel pipe and sounding tube shall be installed for adding gravel through the surface seal and for monitoring downhole water level as hereinafter specified. Refer to the Drawings and Part 2 of this specification for details and materials.

K. Support of well casing, screen, sounding tube, and gravel pipe: The Contractor shall be responsible for supporting and anchoring the well casing and graveling pipe in the well in such a way as to hold it in place until the surface seal as hereinafter specified has been placed and set for at least twenty-four (24) hours. Welding the gravel pipe to any supports in contact with the well casing or directly to the well casing shall not be allowed.

L. Graveling: After the well casing has been installed in place as specified and the drilling fluid adjusted to the proper consistency, the gravel pack with disinfectant shall be placed in the well using procedures to minimize segregation and bridging of the gravel, all as herein specified.

1. The annular space between the well casing and the bore of the well shall be filled to the level of the bottom of the intermediate seal with a clean, graded gravel pack as herein specified. Care shall be taken not to include extraneous soil or other foreign material in the gravel pack in the graveling operation. Contractor shall use a tremie pipe to install the gravel pack.

2. The Owner reserves the right to modify the pack grading for the well, based on sieve analysis data obtained in drilling the well. In no case shall gravel envelope contain no more than 5% carbonates. Contractor shall provide sample for Engineer's approval after receiving notice-to-proceed.

3. A sample of the gravel pack material proposed to be used, and the current sieve analysis of the material shall be submitted to the Owner's representative for approval, and approval obtained in writing before any pack material is delivered to the well site. As the pack is installed in the well, the disinfectant shall be added to the gravel at the rate of 1/2 pound per

cubic yard of pack material, based on 70% chlorine content. If a lesser strength hypochlorite, or other chlorine product is used, the quantity shall be adjusted accordingly. The pack shall be placed from bottom to the top with suitable precautions to avoid the possibility of the pack bridging or clogging at any point. A sounding line shall be used continuously during the placement of the gravel pack to monitor the gravel layer and detect bridging of the pack. The packing of the well shall be properly coordinated with the surging and cleaning of the well.

4. Care shall be taken not to extend the gravel pack above the level selected for the bottom of the seal for the well. To ensure this end, the Contractor shall carefully monitor the pack level as the critical level is approached in the well and shall stop graveling at a slightly lower level and then carefully add gravel to achieve the correct level. The Contractor at their expense must remove any gravel placed above the selected level before proceeding to place the surface seal.

3.05 Surface Seal

A. A plumbness and alignment test, in accordance with Section 3.09, shall be performed prior to setting the surface seal.

B. A surface seal shall be provided between the casing and the well bore from the depth as directed by the Engineer to the ground level. For purposes of the Base Bid, the Contractor shall use a surface seal depth per the plans.

C. The sealant mixture for the well shall be placed in one continuous operation from the bottom to the top using a tremie pipe to form a continuous seal. The Contractor shall be responsible for providing for adequate grout to give a complete seal to the ground surface. The Contractor shall furnish grout pumps and all other equipment and material for effectively installing a continuous seal. The end of the tremie pipe shall be kept below the top level of the grout in the annulus as it is placed to avoid diluting and weakening the seal.

D. Neat cement or cement grout shall be entirely placed before the occurrence of an initial set. To meet this requirement, any batch of the sealant shall be fully placed in not more than 1-1/2 hours from the time of adding cement and water to mix. Sealant material not placed within this time shall be subject to rejection for use in sealing the well. Contractor shall be responsible for scheduling the batching or ordering and preparation of sealant to meet this requirement. Unless specifically approved by the Engineer based on the field conditions, no addition of water to mix will be allowed. Water addition, if authorized, shall be clean potable water.

E. After the surface seal is placed, bailing or other operations which might damage the seal are prohibited for a minimum period of twenty-four (24) hours, or longer as required by local regulation

3.06 Cleaning and Surging

A. After the specified time has elapsed upon placing the surface seal for the well, the Contractor shall surge and airlift the well to set the gravel pack and remove the drilling fluid from the water bearing strata until the well is mostly free of drillers mud. If storage volume for development water is no longer available, Contractor shall coordinate alternate disposal of development water prior to drilling with Owner's representatives and then after that is made available shall continue cleaning the well until the well is mostly free of drillers mud.

B. A close-fitting swab or suitable bailer may be used to surge the well during and/or following the packing operation to pack the gravel pack and remove fines from the strata. Surging shall be in conformance with the following specifications:

1. The outside diameter of the bailer shall not be more than one-quarter (1/4) inch smaller than the inside diameter of the well casing. The Contractor may exercise their judgment on whether to start bailing to set the gravel as it is placed or to wait until the gravel pack is at a

level above the top of the highest perforations in the well. The Contractor shall be responsible for operating the bailer to fully consolidate and seat the entire gravel pack. Care shall be taken not to cave the walls of the well bore or disturb the gradation of the gravel pack during the graveling and/or bailing operations. Drilling fluid shall be maintained to the full depth of the well throughout the graveling and bailing operation. Drilling fluid properties shall be monitored and recorded.

2. After the gravel pack is installed and the pack has been set by bailing, the surface seal as hereinafter specified shall be tremied in place. Bailing to set the gravel shall not be continued after start of placing the surface seal to prevent damage to the seal.

C. In lieu of the above, Contractor may submit for Engineer review and approval an alternative mechanical method for cleaning and surging well.

3.07 Well Development

A. Open-ended Development shall include within 24 to 36 hours after completion of the annular sealing operation. The well shall be cleaned of residual drilling fluids by displacing the well through open-ended drill pipe or tubing set in the well sump. This process shall be conducted for a minimum of 4 hours and until the discharge is clear of residual drilling fluids. After drilling residues have been displaced from the well, the development tool shall be installed in the well.

B. After notice-to-proceed, Contractor shall submit for Engineer's review the plan for surging and pumping the well at a rate of up to one thousand two hundred (1,200) gallons per minute.

C. Upon completion of surging and cleaning of the well, the Contractor shall install a temporary submersible pump with top of bowls set at a depth of between the blank casing and screen section from two hundred and eighty (280) to two hundred and ninety (290) feet below the surface of the ground for developing at various flow rates up to one thousand two hundred (1,200) gallons per minute from said depth.

D. An airline of up to two hundred and ninety (290) feet in length with suitable gauge and air pump or other water level device shall be provided for measuring the water level in the well. Contractor may substitute alternate, acceptable level measurement device.

E. A sand content tester shall be installed in the discharge line from the test pump during the development of the well. Measurements shall be taken at frequent intervals to determine the changes in sand production as the well is developed and at the various rates of flow. Location of the sand content tester in the pump discharge line shall be as directed by the Engineer. Measurements shall be performed in accordance with the Manufacturer's recommendations.

F. Prior to starting the surging and airlift operation to set the gravel pack, the graveling pipe shall be filled with gravel as specified for the well gravel pack. Gravel shall be measured and maintained at all times to within ten (10) feet of the bottom of the gravel fill pipe during the surging and airlift operation. Care shall be taken not to include soil or other foreign material in the gravel pack material. The surge assembly shall be lowered into the well to the bottom of the lowest perforations and the strata cleaned and the gravel set by surging and airlifting the well. The approved surge and cleaning method shall induce vigorous motion while airlifting the developed water at any given zone undergoing development.

G. After an initial swabbing-airlift pass, a solution of potable water and Baroid "Aqua Clear PFD" product, or approved equal, shall be placed in the well. The product shall be mixed at the surface in the manufacturer-recommended proportion and injected evenly across each screened section of the well. The solution shall be displaced by adding a volume of potable water equal to the inside of the drill pipe and swabbed without airlifting. After placement of the solution, the well shall then remain idle for a period of 12 hours. Swabbing and airlift pumping of the well shall then resume from the top screen section to the bottom for a minimum of 5 minutes per foot of well screen.

H. If there continues to be circulation of sand, silt, mud, or water with a turbidity in excess of 25 NTU to the surface from the section of screen being cleaned, additional swabbing and pumping shall be performed until the section is cleaned of such material. It is anticipated that the mechanical development described above will take on the order of 12 minutes per foot of well screen.

I. The sounding pipe and gravel fill pipe shall be cleaned by circulating water and a solution of potable water and Baroid “Aqua Clear PFD” through the pipes.

J. The water discharged from the well shall be disposed of by the Contractor as directed by the Owner’s representatives.

K. At the completion of the surging of the well, the well shall be sounded and if the sounded depth is less than the total depth of the well, the well shall be bailed to the bottom to remove mud, sand, and/or other material which has entered and settled in the well casing.

3.08 Well and Aquifer Testing

A. Testing of the well shall commence immediately after completion of development pumping.

B. The rate of recovery of the well water level shall be measured after shutting down from the maximum developing rate. The recovery test shall continue to be recorded in the same measurement intervals specified for pumping tests at least until the difference between the static water level and the recovered water level is within 10% of the difference between the static water level and the maximum measured drawdown, not to exceed a period of twelve (12) hours. This recovery logging time shall be considered independent of the time allotted for development.

C. Sand production shall be monitored and recorded throughout the test pumping period at the time intervals specified herein. At no point shall the average sand content for any 5-minute period exceeds 5 parts per million. If the average sand content exceeds 5 parts per million for ay 5-minute period during well and aquifer testing, the Contractor at the Contractor’s sole expense shall perform development work until the sand content is 5 parts per million or less over a 30-minute period after pump start up.

D. The Contractor shall measure and record static water level prior to each pumping test. Three consecutive measurements of ten minutes apart shall be provided each time.

E. The Contractor shall measure and record depth to water at the time intervals specified herein to the nearest 0.01 feet.

F. The Contractor shall measure discharge flow rates at the time intervals specified herein and shall maintain flow rates within 5 percent of the specified rates by means of actuating the discharge valve and throttling engine speed. Prior to the start of the first test, the pump shall be adjusted to each of the prescribed pumping rates to determine the appropriate engine speeds (rpm) and discharge valve positions to facilitate rapid adjustment of the pump at the commencement of testing. The Contractor shall furnish all measuring devices and incidentals necessary for the pump test. The water developed shall be measured by an orifice plate in the discharge line, or Pitot tube survey, or other approved means. Contractor will be required to substantiate accuracy of propeller, electronic, or other type meters used by an on-site Pitot tube check or other approved means.

G. The Contractor shall furnish all power needed, or connect to the Owner-provided power, to operate the pump at the above required capacity for the well and shall surge and develop the well. The Contractor shall include in the base bid thirty (30) hours for testing of the well (eight (8) hours step-drawdown test, ten (10) hours constant-rate test, and twelve (12) hours recovery test). However, the Owner reserves the right to terminate the development at any time or to extend the development based on the field conditions encountered. The well shall be attended at all times during development and shall be surged whenever the water clears.

H. Water from testing the well shall be disposed of by the Contractor on-site as directed by Owner's representatives.

I. After the development of the well, the amount pumped shall be so varied as to determine the draw-down curve for the well. The draw-down tests shall be made by backing down from the peak pumping rate. During the draw-down tests, water level measurements to the nearest 0.01 ft shall be measured at pumping rates of six hundred (600), eight hundred (800), one thousand (1,000), and one thousand two hundred (1,200) gallons per minute. A sufficient number of tests, but not less than four (4) 2-hour tests at each flow rate, shall be made for the well to accurately determine the draw-down curve over a range from six hundred (600) to one thousand two hundred (1,200) gallons per minute as directed by the Owner.

J. The following measurement intervals shall apply to flow rates, sand content, and water level measurements for all step drawdown, constant rate, and recovery tests:

1. Turn the pump on to approved test pumping capacity at time (t) = 0 minutes.
2. From Time t = 1 to t = 10 minutes: each 1 minute;
3. From Time t = 10 to t = 20 minutes: each 2 minutes;
4. From Time t = 20 to 50 minutes: each 5 minutes;
5. From Time t = 50 to 100 minutes: each 10 minutes;
6. From Time t = 100 to 300 minutes: at t = 120, t = 150, t = 180, t = 240, and t = 300;
7. From Time t = 300 onwards: each 100 minutes.

K. Data for the draw-down curve for the well shall be furnished to the Owner by the Contractor.

L. The Contractor shall perform a ten (10) hour run at a constant discharge rate at the design discharge of 800 gallons per minute.

M. After completion of developing and testing of the well, the Contractor shall sound the well to determine if the well has partially sanded during development and any material in the well shall be removed by bailing, or other approved means. Contractor shall perform this work at no additional cost to the Owner.

N. The Contractor or their certified laboratory shall provide certified field staff to draw water quality samples in accordance with the procedures recommended by the Contractor's certified laboratory. The certified field staff or certified laboratory shall furnish the sample bottles and shall submit them to the laboratory.

O. After completion of testing, the record of water level measurements shall be delivered to the Engineer all test data. The test pump shall not be removed from the well until the Engineer has evaluated the data and authorized its removal.

3.09 Plumbness and Alignment Testing

A. The Contractor shall use every precaution to ensure a straight and plumb well without bend or offset. Plumbness and alignment of the well shall be tested by the Contractor after completing and developing of the well by lowering into the well casing to its full depth a section of pipe forty (40) feet long or a dummy of the same length. The outer diameter of the plumb shall not be more than one (1) inch smaller than the inside diameter of the well casing. The Contractor may check plumbness and alignment prior to test pumping.

B. If a dummy is used, it shall consist of a rigid spindle with three (3) rings, each ring being twelve (12) inches wide. The rings shall be truly cylindrical and shall be carefully centered on the central spindle. Rings shall be spaced one at each end of the dummy and one in the center thereof. The central spindle member of the dummy shall be rigid so that it will maintain the alignment of the axes of the

rings. Outside diameter of the rings shall not be more than one (1) inch smaller than the inside diameter of the well casing.

C. Testing will be required to be in complete compliance with the above specifications. Deviation in the diameter or length of the test pipe or dummy as set forth will not be permitted.

D. Contractor shall provide a rig that will suspend test pipe or dummy from at least ten (10) feet and preferably twenty (20) feet or more, above the top of the well casing and shall carefully center the plumb in the well casing with the top of the plumb flush with the top of the well casing. Properly centered, the test pipe or dummy should be readily rotated by hand.

E. For the plumbness test, the plumb shall be lowered slowly into the well and the movement of the support line from the center position at the top of the well casing recorded both as to direction and amount. Such measurements shall be made at points of maximum deviation, changes in direction of deviation, and at intervals not to exceed forty (40) feet for the full depth of the well. The height of the support point above the top of the casing and the depth to the top of the plumb shall be recorded for each deviation measured. From these measurements the variation of the well casing from the vertical shall be calculated. A deviation from the vertical more than two-thirds the inside diameter of each well casing per one hundred (100) feet of depth shall be cause for rejection of the well by the Engineer.

F. The alignment test shall be made by lowering the test section up to the screen depth of the well. Failure of the test section to move freely throughout the length of the well casing shall be cause for rejection of the well by the Owner. A written report of the results of the plumbness and alignment test shall be made by the Contractor and furnished to the Owner. Procedures used shall be as set forth above and in conformance with the procedures set forth in the current version of AWWA A-100.

G. Failure to meet the plumbness and alignment limitations as above set forth is the responsibility of the Contractor and shall be subject to correction at the Contractor's sole expense.

H. Cost of the plumbness and alignment tests for the well shall be included in the Base Bid. These tests will not be allowed as part of the setting, developing, and testing time as put forth in Section 3.06 of these Specifications, and other miscellaneous requirements.

3.10 Capping Well

A. Except when drilling is in progress, the top of the well casing, the open borehole, and all entrance pipes, shall be kept securely covered or capped, both night and day, in such a manner as to effectively prevent either tampering with the well or entrance of foreign matter.

B. Upon completion of the well, the top of the casing and all entrance pipes shall be capped by means of a lockable cap or lockable steel plate of proper size securely fastened in place.

3.11 Logs and Samples

A. The Contractor shall furnish the Engineer with a daily record or log, which will give accurately the depth, thickness, and nature of the strata penetrated, as well as water level, and daily site activities.

B. As previously specified, the Contractor shall draw a water sample from the well and shall submit the sample to a State certified drinking water analysis laboratory for analysis. The sample shall be analyzed for Irrigation Water Quality and all primary (Inorganic Chemicals 40 CFR 141.62 b; Volatile Organic Chemical 40 CFR 141.61 a; Synthetic Organic Chemicals 40 CFR 141.61 c) and secondary MCL standards for drinking water constituents defined by Title 22 of the California Code of Regulations (Section 64449). The General Physical properties of the water shall also be analyzed. Laboratory methods and detection levels shall be in accordance with State of California drinking water standards. The laboratory reports shall be submitted to the Engineer.

3.12 Water and Tailings

A. The water for drilling shall be available from the City supply at no cost to the Contractor. The Contractor is responsible for supplying all necessary labor, equipment, and tools to furnish or convey water from the City supply to the site for all purposes of this contract. The Contractor shall also be responsible for obtaining a backflow device and water meter assembly from the City at no additional cost to the Contractor.

B. The Contractor shall be responsible for obtaining a discharge permit through the State Water Resources Control Board Water Quality Order No. 2003-0003-DWQ for Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality from water well drilling construction. Disposing of all development and test water shall be in conformance with all County, State, and Federal regulations.

C. For bidding purposes, the Contractor shall assume development water requires Baker Tanks or equivalent filtration treatment prior to discharge. Water, including mud, sand, and debris pumped from the well during developing and testing shall be treated, conveyed, and disposed of by the Contractor as a part of this contract in such a manner as to adhere to all applicable permits. The Contractor shall not damage or interfere with property of others and shall cooperate with the Owner.

D. The developing waters shall be discharged to an existing storm drainage system as determined by the Owner or the applicable County, State, and Federal regulatory authorities. The Contractor may propose alternative locations for disposal of the developing waters, subject to approval by the Engineer and by the regulatory authorities. The Contractor shall comply with the County and State requirements for such discharge. All existing facilities disturbed or removed by the Contractor shall be replaced to their original condition immediately upon completion of the specific work. The Contractor shall provide protective barriers and other safety protection as necessary to protect the public and workmen.

E. The Contractor shall remove and dispose of all drilling fluid, cuttings, and tailings in a lawful manner, and as approved by the Owner's representatives. The Contractor may temporarily stockpile tailings at a location designated by the Owner's representatives.

3.13 Disinfection

A. After the well has been completely constructed, it shall be thoroughly cleaned of all foreign substances, including tools, timbers, rope, debris of any kind, cement, oil, grease, joint dope, and scum. The well shall then be disinfected with a chlorine solution.

B. The chlorine solution used for disinfecting the well shall be of such volume and strength and shall be so applied that a concentration of at least one hundred (100) ppm of chlorine shall be obtained in all parts of the well water, however, not less than twenty (20) pounds of 70% HTH, or its equivalent, shall be used. The chlorine solution shall remain in the well at least eight (8) hours.

C. The chlorine solution shall be applied after the well has been developed. It shall be added while the test pump is still in place and the well surged to help distribute the chlorine solution into the well and surrounding strata. Chlorinated development water shall be dechlorinated prior to discharge, in accordance with NPDES requirements. Dechlorination may be performed inside the well. If on-site capture of chlorinated water is necessary for dechlorination, Contractor to coordinate with Owner's representatives.

3.14 Standby Time

A. During the drilling and construction of the well, it may be necessary for the Owner or Engineer to perform work requiring the drilling workforce and equipment to stand idle. In such an event, the Owner shall request the Contractor in writing to cease operations and stand idle and shall state the anticipated extent or duration thereof.

B. If the Owner requests cessation of operations, an extension of time equal to the period of stoppage will be granted. The Contractor will be paid for standby time at the rate provided in the Bid Schedule.

3.15 Miscellaneous Requirements and Provisions

A. The Contractor shall employ only competent workmen for the execution of the work, and all such work shall be performed under the direct supervision of an experienced well driller.

B. In the event the Contractor shall abandon a hole or holes because of loss of tools, or other causes, which are the responsibility of the Contractor, and prevent completion of the well as specified, the Contractor shall destruct the well in accordance with Santa Clara Valley Water District requirements at the Contractor's expense.

C. TV Scan: Contractor shall conduct a TV scan of the completed well and turn two (2) copies of the video film over to the Owner as an electronic video file on flash drive. Any damage discovered during the TV scan shall be corrected to the Owner's satisfaction at the Contractor's expense. The TV scan shall be repeated after any corrective work at no cost to the Owner.

D. Following completion of the work, the Contractor shall remove from the premises and work areas all excess materials, tools, and equipment used in the execution of the work, and shall dispose of all debris resulting from the work. The well site shall be left in a condition approximating site conditions prior to the work and to the satisfaction of the Owner.

E. Basis for payment: Payment shall be on the basis of the respective bid item bid price(s) with adjustments for additions or deductions to be approved on a case-by-case basis by the Owner. The bid price(s) shall include all incidental work of each item, and no claim will be considered for additional payment for incidental work necessary for any items of work without approval from the Owner.

**** END OF SECTION ****