NO. 584525
AT THE REQUEST OF
CITY OF MOSCOW
DATE & HOUR
3-21-17 3:29
HENRIANNE K. WESTBERG
LATAH COUNTY RECORDER
FEE $ 0 BY:

Recording Requested By and
When Recorded Return to:

SPACE ABOVE THIS LINE FOR RECORDERS USE ONLY

THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL COVENANT IMPOSING ACTIVITY AND USE LIMITATIONS PURSUANT TO THE UNIFORM ENVIRONMENTAL COVENANTS ACT, IDAHO CODE § 55-3001, *et seq.*

ENVIRONMENTAL COVENANT

This instrument is an Environmental Covenant ("Environmental Covenant") executed by the Moscow Urban Renewal Agency, a public body, corporate and politic (hereinafter "MURA"), organized pursuant to the Idaho Urban Renewal Law of 1965, Title 50, Chapter 20, Idaho Code, and the Idaho Department of Environmental Quality ("DEPARTMENT") pursuant to the Uniform Environmental Covenants Act, Idaho Code §§ 55-3001 through 3015. This Environmental Covenant sets forth protective provisions, covenants, restrictions and conditions (collectively referred to as "Activity and Use Limitations") on the Property described below. The Activity and Use Limitations are designed to protect natural resources, human health and the environment. MURA is a "holder" as defined in Idaho Code § 55-3002(6). MURA, as the current property owner grants this Environmental Covenant to all signatories to this instrument.

Property. This Environmental Covenant concerns real property 217 W. Sixth Street, Moscow, County of Latah, State of Idaho, is legally described as follows(hereafter referred to as "the Property"):

A parcel of land located in the NE ¼ of Section 18, Township 39 North, Range 5 West, B.M., and as shown on Record of Survey recorded under Recorder's Fee No. 506752 and being more particularly described as follows: Beginning at the northeast corner of said section 18, thence S 87°45'28" W, 363.92 feet (record 355.69 feet) along the north line of said section 18, thence S 00°45'10" W, 40.19 feet, to a point on the west right of way line of Jackson Street and the TRUE POINT OF BEGINNING, thence S 00°45'10", 153.39 feet; thence S 88°17'28" W, 207.70 feet (record 216.18 feet); thence N 40°29'13" W, 53.83 feet, thence N 01°42'23" W, 111.29 feet; thence N88°17'28" E, 248.00 feet (record 256.27 feet) to the TRUE POINT OF BEGINNING.

The restricted area is defined in the attached map, (Attachment 1)

Property Ownership. MURA hereby represents and warrants to the other signatories to this Environmental Covenant that it is the sole owner of the property, holds fee simple title to the property and MURA has the power and authority to enter into this Environmental Covenant.

Reason for Activity and Use Limitations. The Property described above was previously used to store and distribute agricultural fertilizers, becoming contaminated with nitrates. On May 2, 2014, MURA entered into a Voluntary Remediation Agreement with the Department to remediate the Property. MURA implemented a Voluntary Remediation Work Plan ("VRWP") on the Property. This Environmental Covenant is required because implementation of the VRWP resulted in residual concentrations of nitrates in groundwater underlying the Property. These concentrations are above allowable risk-based concentration as determined by the Department therefore future use of the Property shall be limited to protect human health and the environment.

Name and Location of Administrative Record. The administrative record for the Sixth and Jackson Property located at 217 West Sixth Street, Moscow, Idaho can be found at the Idaho Department of Environmental Quality Lewiston Regional Office, 1118 "F" St. Lewiston, Idaho.

Activity and Use Limitations. By acceptance and recordation of this Environmental Covenant, MURA, and any successors in interest, are hereby restricted from using the Property, now or at any time in the future, as specifically set forth below:

1. Except for the purposes of the purposes of groundwater remediation or groundwater investigation, there shall be no extraction of groundwater under, the Property for any purpose, including, without limitation, drinking by animals or human beings, irrigation or an industrial or commercial use.

2. MURA shall be responsible for the continued operation and maintenance of the administrative control (pump and discharge system) in perpetuity until such a time as the compliance well samples meet the compliance criteria specified in the Voluntary Remediation Work Plan.

3. The Operation and Maintenance Plan for the engineering controls used upon the property is attached to this Declaration as Attachment 2 and is incorporated into this Declaration. MURA, and any successors in interest, shall comply with the Operation and Maintenance Plan. The Operations and Maintenance Plan may be modified upon mutual consent from the Department and MURA, or its successor in interest, as provided in the Uniform Environmental Covenants Act, Idaho Code § 55-3010.

4. MURA shall establish, and MURA and its successors in interest shall maintain, an escrow account in the amount of five thousand two hundred sixty dollars ($5,260.00) for the specific purpose of future operation and maintenance costs associated with the engineering controls for this property. The escrow account shall be maintained for the benefit of the State of Idaho for future use at the Property in case the Department determines that no viable responsible party is available to ensure compliance with this Declaration.

Breach and Cure of Activity and Use Limitations MURA, or its successors in interest, shall be responsible for demonstrating that use on the Property is in conformity with the Activity and Use Limitations. If any event or action occurs that constitutes or may constitute a breach of the

activity and use limitations, the MURA or any successors in interest, shall notify the Department within thirty (30) days of becoming aware of the event or action, and shall remedy the breach of the activity and use limitations within sixty (60) days of becoming aware of the event or action, or such other time frame as may be agreed to by the MURA or any successors in interest, and Department.

Amendment by Consent. The Environmental Covenant may be amended by consent pursuant to Idaho Code § 55-3010. Except for an assignment undertaken pursuant to a governmental reorganization, assignment of the Environmental Covenant to a new holder is an amendment.

Duration and Termination. The Activity and Use Limitations shall apply to the Property, or any subdivided portion thereof, in perpetuity unless terminated by court action as provided in Idaho Code § 55-3009 or by consent pursuant to Idaho Code § 55-3010. The MURA, or its successors in interest, may seek consent to terminate the Activity and Use Limitations that apply to the Property, or any subdivided portion thereof, pursuant to Idaho Code § 55-3010, by demonstrating with the record before the Department that groundwater nitrates are at levels the Department deems in writing to be adequate for the Property to be developed for unrestricted use.

Provisions to Run With the Land. Each and all of the Activity and Use Limitations shall run with the land, and pass with each and every portion of the Property, and shall apply to and bind the respective successors in interest thereof. Each and all of the Activity and Use Limitations are imposed upon the entire Property unless expressly stated as applicable to a specific portion of the Property.

Concurrence of Subsequent Owners Presumed. All purchasers, lessees, or possessors of any portion of the Property shall be deemed by their purchase, leasing, or possession of such Property, to be in accord with the foregoing and to agree for and among themselves, and their successors, that the Activity and Use Limitations as herein established must be adhered to and that their interest in the Property shall be subject to the Activity and Use Limitations contained herein.

Recording/Filing of Environmental Covenant. This Environmental Covenant and any amendment or termination of the Environmental Covenant shall be recorded in the county recorder's office of every county in which any portion of the Property subject to the Environmental Covenant is located. The Environmental Covenant or any amendment or termination shall be recorded by MURA, or its successors in interest, within ten (10) days of receipt of this Environmental Covenant signed by the Department. Within ten (10) days of the recording of this Environmental Covenant, or any amendment or termination, MURA, or its successors in interest, shall provide to the Department a copy of this recorded Environmental Covenant, or any amendment or termination of this Environmental Covenant. Upon receipt of the copy of the recorded Environmental Covenant, and any amendment or termination therein, the Department shall post the copy of the fully executed instrument in the Registry as required by Idaho Code Section 55-3012(1). In addition, a copy of the recorded Environmental Covenant, or any amendment or termination, shall be provided by MURA, or by its successors in interest, to the following persons: (a) each person that signed the Environmental Covenant; (b) each person holding a recorded interest in the Property; (c) each person in possession of the Property; (d) each municipality or other local government in which the Property is located; and (e) any other person the Department requires. The validity of the Environmental Covenant

is not affected by failure to provide a copy of the Environmental Covenant as required under this section.

Compliance Reporting. MURA, or and any successors in interest, shall submit to the Department on an annual basis written documentation verifying that the activity and use limitations remain in place and their compliance with the activity and use limitations.

Enforcement. The Department and any party of the Environmental Covenant shall have authority to enforce the Activity and Use Limitations against MURA or its successors-in-interest, including subsequent owners of the Property and any other person using the Property. Failure of MURA, or its successor in interest, to comply with any of the Activity and Use Limitations set forth herein shall be grounds for the Department, or its successor, and/or any party to this Environmental Covenant to require that the MURA correct or remove any violations of this Environmental Covenant. Violation of this Environmental Covenant shall be grounds for the Department, or its successor, and/or any persons identified in Idaho Code § 55-3011 to file civil actions against the MURA or its successors-in-interest, as provided by law or in equity, including without limitation, the Uniform Environmental Covenants Act, Idaho Code § 55-3011.

Non-Waiver. No failure on the part of the Department or any holder at any time to require performance of any term of this Environmental Covenant shall be taken or held to be a waiver of such term or in any way affect the Department's or any holder's rights to enforce such term.

Property Access. The Department shall have a right of access to the Property at reasonable times for the purposes of evaluating compliance with this Environmental Covenant.

Notice of Conveyance of Property. Within thirty (30) days of the closing of any conveyance of the Property, or part thereof, the Conveyor of the Property, shall provide written notice to the Department and each municipality or other local government in which the Property is located, the name and address of all the then Owners and/or Occupants of the Property, or part thereof, conveyed. The Department shall not, by reason of this Environmental Covenant, have authority to approve, disapprove, or otherwise affect any conveyance of the Property except as otherwise provided by law.

Notices. All notices required or permitted to be given hereunder shall be in writing and mailed in the United States Mail, postage prepaid, by certified or registered mail, return receipt requested, to the appropriate address indicated below or at such other place or places as either MURA or its successors, or the Department or its successors, may, from time to time, respectively, designate in a written notice given to the other. Notices which are deposited in the United States Mail in accordance with the terms of this provision shall be deemed received three (3) days after the date of mailing thereof.

MURA:

Moscow Urban Renewal Agency
ATTN: Executive Director
221 E. Second Street
Moscow, ID 83843

THE DEPARTMENT: Idaho Department of Environmental Quality
ATTN: State Response Program Manager
1410 N. Hilton
Boise, ID 83706

Costs and Expenses. All costs of terminating this Environmental Covenant, including the cost of any remediation or abatement of any environmental condition related to Activity and Use Limitations pertaining to the Property, shall be borne by the party seeking such termination.

Partial Invalidity. If any portion of the Environmental Covenant or terms set forth herein is determined to be invalid for any reason, the remaining portion shall remain in full force and effect as if such invalidated portion had not been included herein.

Headings. Headings at the beginning of each section of this Environmental Covenant are solely for the convenience of the parties and are not a part of the Environmental Covenant.

Idaho Code References. All references to the Idaho Code sections include successor provisions.

Reservation of Rights. Notwithstanding any provision of this Environmental Covenant, the Department retains all of its access and enforcement authorities under any applicable statute or rule. Nothing in this Environmental Covenant shall affect the Department's ability to enforce the terms of any voluntary consent order or other agreement relating to remediation of the Property entered into between the Department and MURA or any other responsible party. Nothing in this Environmental Covenant shall affect the obligations of MURA or any other responsible party under such voluntary consent order or other agreement. The Department's acceptance hereunder is based upon the information presently known or available to the Department with respect to the environmental condition of the Property, and the Department reserves the right to take appropriate action under applicable authorities in the event the Department determines new information warrants such action.

Effective Date. The effective date of this instrument shall be the date the fully executed Environmental Covenant is recorded at the county recorder's office.

Signature and Acknowledgments
Accepted:

Idaho Department of Environmental Quality

Signature: John H. Tippets
Printed Name: John H. Tippets
Title: Director, Idaho Department of Environmental Quality
Date: 13 March 2017

State of Idaho)
) ss.
County of Ada)

On this 13 day of March, in the year 2017, before me, a Notary Public in and for said County and State, personally appeared John H. Tippets, known or identified to me to be the Director of the Idaho Department of Environmental Quality that executed this Environmental Covenant, and acknowledged to me that the Idaho Department of Environmental Quality executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

ROSIE M. ALONZO NOTARY PUBLIC STATE OF IDAHO

Notary Public for Idaho: Rosie M. Alonzo
Residing at: Nampa, Idaho
Commission Expires: 11/21/2020

Accepted:

MURA _____
Steve McGeehan, Chair

ACKNOWLEDGMENTS

State of Idaho)
) ss.
County of Latah)

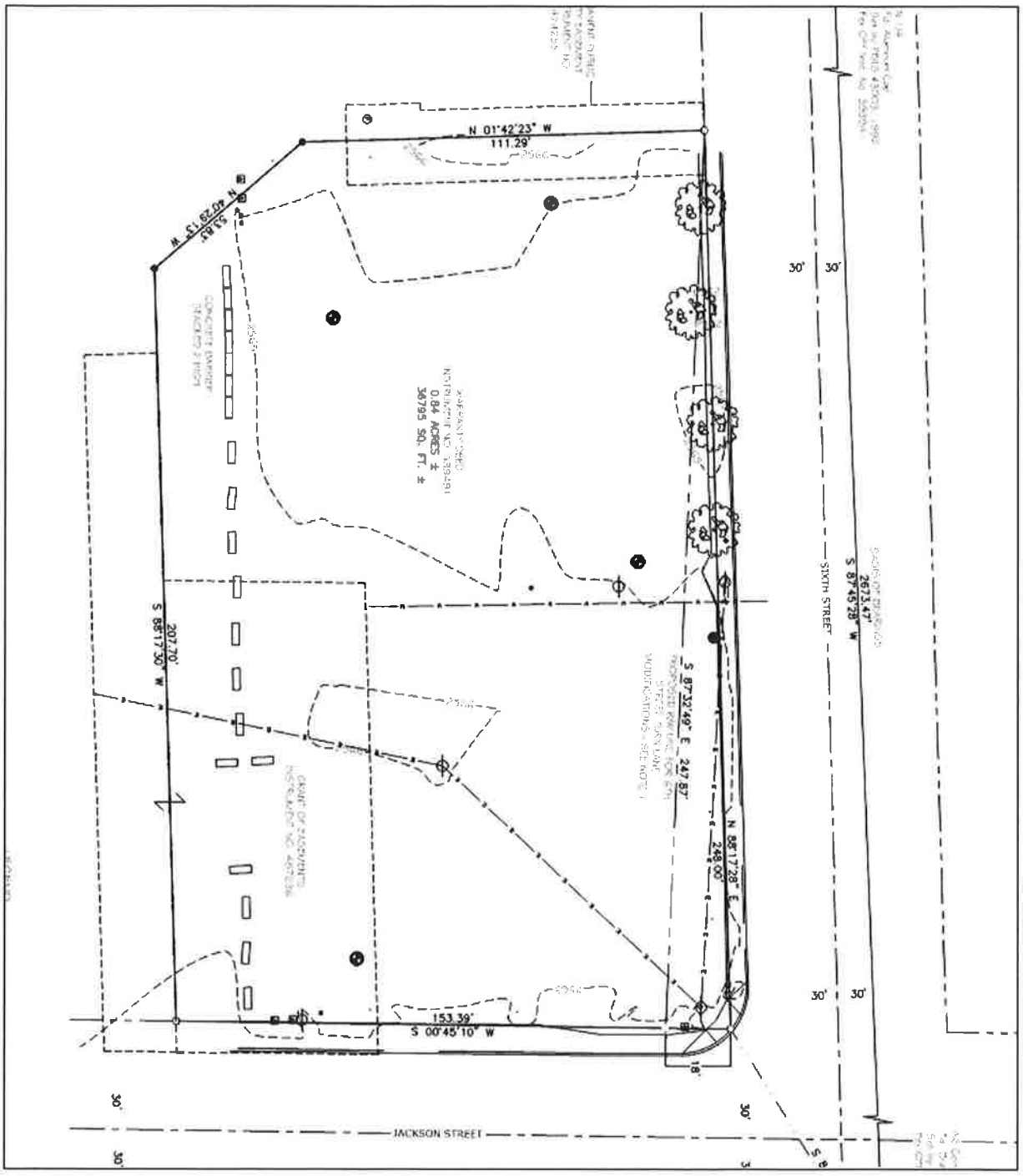
On this day personally appeared before me Steve McGeehan, in his official capacity as Chair of the Moscow Urban Renewal Agency, known to me to be the person described in the foregoing instrument and acknowledged that he executed the same on behalf of the Moscow Urban Renewal Agency as his free and voluntary act and deed, for the uses and purposes therein mentioned.

GIVEN under my hand and official seal this 2nd day of March, 2017.

ANNE L. PETERSON NOTARY PUBLIC STATE OF IDAHO

Notary Public for Idaho: Anne L. Peterson
Residing at: Moscow
Commission Expires: 8-27-18

ATTACHMENT 1
AFFECTED AREA LOCATION MAP



ATTACHMENT 2
OPERATIONS AND MAINTENANCE PLAN

584525

6th and Jackson
Operation and Maintenance Manual

Revision 1

Prepared for:

and

206 E 3rd Street

Moscow, Idaho 83843

Prepared by:

TerraGraphics Environmental Engineering, Inc.

121 S. Jackson St.

Moscow, ID 83843

www.terragraphics.com

February 9, 2017

584525

Table of Contents

Figures

Tables

Appendices

Acronyms and Abbreviations

ABCA	Analysis of Brownfields Cleanup Alternatives
ASTM	American Society for Testing and Materials
bgs	below ground surface
City	City of Moscow
Coalition	Greater Moscow Area Coalition
DO	dissolved oxygen
IDEQ	Idaho Department of Environmental Quality
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
MS	matrix spike
MSD	matrix spike duplicate
O&M	Operation and Maintenance
ORP	oxidation-reduction potential
PVC	poly vinyl chloride
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
SEC	specific electrical conductance
SM	Standard Method
TerraGraphics	TerraGraphics Environmental Engineering, Inc.
URA	Urban Renewal Agency
USEPA	U.S. Environmental Protection Agency
VCP	Voluntary Cleanup Program

Units

mg/L	liter
mV	millivolt

Section 1.0 Introduction

This Operation and Maintenance (O&M) Manual has been prepared for the groundwater extraction system at the 6th and Jackson Site. This O&M Manual includes a description of the groundwater extraction system, a description of the system startup and operations, the groundwater monitoring and sampling procedures, and the reporting requirements for the groundwater extraction system.

Section 2.0 Background

The Moscow Urban Renewal Agency (URA), engaged TerraGraphics Environmental Engineering, Inc. (TerraGraphics) to implement the remedial action strategy presented in the Analysis of Brownfields Cleanup Alternatives [ABCA] and Remediation Work Plan (ABCA/Work Plan) for 217 & 317 W. 6th Street Moscow, Idaho (TerraGraphics 2015b). The Site is located southwest of the intersection between W. 6th Street and Jackson Street in Moscow, Idaho, between Moscow's historic downtown district and the University of Idaho Campus (Figure 1). The Site is approximately 0.84 acres and mostly unpaved. The URA currently owns the Site.

The ABCA/Work Plan identified remediation standards which ensure that substantial present or probable future risk to human health or the environment is eliminated or reduced to protective levels based upon present and reasonably anticipated future uses of the Site (IDAPA 58.01.18(02)b). This work was completed as part of the Greater Moscow Area Coalition (the Coalition) Assessment Grant BF-00J24101 project and in compliance with the Voluntary Cleanup Program (VCP) agreement between the Idaho Department of Environmental Quality (IDEQ) and the Moscow URA.

Historically, industrial agricultural businesses and storage of agricultural chemicals supported by the former railroad corridor occupied the Site. Most recently, a retail produce business operated on the northeast corner of the Site from about 2000 through 2010. All Site buildings have been removed and the Site is currently vacant and mostly unpaved, with the exception of a small paved area along the southwestern boundary.

Strata Inc. conducted Phase I Environmental Site Assessments in 2008 and 2010, which identified bulk storage of agricultural chemicals and a small heating oil underground storage tank in the eastern area of the Site as recognized environmental conditions (Strata Inc. 2008 and 2010).

In late 2015 and early 2016, TerraGraphics implemented remedial actions, including excavation, groundwater extraction system installation (Figure 2), and sodium lactate amendment injections (TerraGraphics 2016). The groundwater extraction system, which has been operating since February 2016, consists of three wells (EW-1, EW-2, and EW-3), each equipped with a dedicated 12-volt submersible pump which recovers groundwater from the well and discharges it into the City of Moscow (City) sanitary sewer (Figure 3). TerraGraphics designed the extraction system to remove nitrate- and ammonia-impacted groundwater and prevent it from migrating off the Site.

Section 3.0 Groundwater Extraction System Components

The groundwater extraction system components include: Three Grundfos® submersible pumps (one in each well), 1-inch diameter discharge piping, an inline flow meter for each well, electrical junction box, and electrical breaker control. All discharge piping and electrical wiring is buried approximately 2 feet below ground surface (bgs).

3.1 Extraction Wells

Field crews constructed the extraction wells (EW-1, EW-2, and EW-3) using 4-inch diameter poly-vinyl-chloride (PVC) with a screening interval from 10 to 15 bgs. The well-heads consist of 24 inch square flush mounted traffic-rated monuments with removable lids that provide access to the wells from the ground surface (Figure 3).

3.2 Pumps

The pumps used within the extraction wells are a submersible Grundfos® model SQ, SQE deployed to a depth of 12 feet bgs. Field crews secured the pumps with plastic coated support wiring that connect from the pump to the inside of the well plug. Each pump is deployed with the intake at approximately 12 feet bgs. Appendix A includes the manufacturer's information.

3.3 Electrical

The extraction well pumps are connected to an electrical junction box within the well vault. The electrical wiring is buried from each well vault through electrical conduit within a common trench to the above ground H-box located on the western edge of the site and connected to the electrical panel and meter. (Figure 3)

3.4 Discharge Piping

The extraction well pumps are connected to the City sewer stepping up from 1-inch PVC pipe from the well to 2-inch PVC pipe that enters into 8-inch stub to the sewer line. The piping is buried at a depth of approximately 2-feet bgs. At each well head, discharge piping is visible just below the ground surface within each well. The discharge piping includes a meter to measure flow as well as a shutoff valve prior to exiting the vault.

3.5 Control Box

An above ground meter socket and circuit breaker are located at the western edge of the property (Figure 3). The control box houses the three electrical connections, one for each pump. They are labeled showing what connection goes to each pump (Figure 2). The pumps are GFI protected and were installed by a licensed electrician with proper inspection. The pumps are turned on and off through the electrical breaker. TerraGraphics recommends consulting a licensed electrician when making any electrical modifications within the control box.

Section 4.0 Groundwater Extraction System Inspection

Each of the following system components require routine inspections. Inspections are required to ensure proper operation.

- **Pumps.** Inspect each of the three pumps monthly to confirm that they are operating according to the manufacturer's literature. If any of the three pumps are not operating properly and troubleshooting determines the pump(s) have failed, then the pump(s) will need to be replaced with the same model or similar.
- **Discharge tubing.** Inspect the discharge tubing from each well monthly to confirm that leaks have not formed that would compromise flow and insulation is intact to help prevent freezing during winter months. Also measure discharged flow from the well noting the day/time/flow rate.
- **Electrical.** Inspect the electrical control box monthly for signs of moisture, corrosion, or loose/disconnected wires.

Section 5.0 Groundwater Extraction System Maintenance

All equipment installed by TerraGraphics is designed to operate safely and properly. Equipment requiring specific instructions or manufacturer guidance manuals (Appendix A) were used by TerraGraphics in the fashion the manuals describe. Any unsolicited modifications made to the system may alter the performance and therefore affect the remedial action objectives.

5.1 Groundwater Extraction System Startup and Shutdown

All extraction system pumps can be stopped at the same time by flipping the circuit breaker switch to the "off" position. The circuit breaker panel is located next to the control box which is mounted on the "H-frame" panel located at the western edge of the property (Figure 3). Each well has its own circuit breaker. To turn the system on, flipped the desired well to the "on" position. Prior to startup, however, the pumps should be checked to ensure they are deployed 12 feet bgs.

5.2 Groundwater Extraction System Troubleshooting

To properly troubleshoot and fix the groundwater extraction system, personnel must be familiar with the components and operation.

- pumps:
    - Trouble: pumps not on
    - Possible reason:
        - System is turned off Pump has an internal failure
        - Pump has reached its operational life
        - Pump is not receiving power

See page 13 within Appendix A for more troubleshooting suggestions.

Section 6.0 Groundwater Monitoring

Groundwater monitoring activities are to be completed in accordance with the Site-specific Quality Assurance Project Plan (QAPP) (TerraGraphics 2015c). The monitoring frequency and monitoring well network shall be approved by IDEQ prior to initiation of this O&M Manual. TerraGraphics recommends that the Moscow URA seek an annual monitoring schedule for monitoring wells MW-3 and MW-6. The following summarizes the sampling procedures.

6.1 Measuring Groundwater Levels

- Measure depth to groundwater in monitoring wells with an electric water level indicator (Solinst® Water Level Meter or equivalent capable of measuring to 0.01 foot accuracy).
- Measure from the north side of the inside of the top of the PVC casing.
- Measure from the north side of the inside of top of the PVC casing a second time to confirm the first measurement. If measurement is not consistent within 0.01 foot, troubleshoot the situation and repeat the two measurements.
- Record the final depth to water on a groundwater sampling sheet. Appendix B includes an example groundwater sampling sheet for reference.
- Turn pumps off and allow system to rest 48 hours.
- Measure depth to groundwater in monitoring wells with an electric water level indicator (Solinst® Water Level Meter or equivalent capable of measuring to 0.01 foot accuracy).
- Measure from the north side of the inside of the top of the PVC casing.
- Measure from the north side of the inside of top of the PVC casing a second time to confirm the first measurement. If measurement is not consistent within 0.01 foot, troubleshoot the situation and repeat the two measurements.
- Record the final depth to water on a groundwater sampling sheet. Appendix B includes an example groundwater sampling sheet for reference.

6.2 Purging Monitoring Wells and Measuring Groundwater Quality Parameters

- Utilize new single-use tubing during each deployment.
- Purge the monitoring well using a low-flow peristaltic pump or similar.
- Adjust the flow until drawdown is less than 0.3 feet.
- If minimal drawdown cannot be obtained (<0.3 feet), purge at least three well volumes and sample after the monitoring well has recharged or after 2 hours has elapsed from the time the monitoring well was purged dry.

- Record drawdown, flow rate, and total volume purged on a groundwater sampling sheet.
- Calibrate and maintain instruments/equipment (multi-parameter meter and flow cell) used for the measurement of groundwater field parameters (temperature, pH, specific electrical conductance [SEC], dissolved oxygen [DO], and oxidation/reduction potential [ORP]) as recommended by the manufacturer, or as found in individual manuals (Orion Star™ or equivalent) to ensure accuracy within specified limits shown in Table 1.
- Measure water quality parameters in the field utilizing a multi-parameter meter (Orion Star™ or equivalent) and flow cell according to U.S. Environmental Protection Agency (USEPA) Low Stress (low flow) Purging and Sampling (USEPA 2010). Record the parameters on a groundwater sampling sheet (one sheet per well). Stabilization criteria are based on USEPA (2010) and Wilde (2008). Stabilization is determined by three consecutive readings at 5 minute intervals that are within the listed stabilization criteria in Table 1.

Table 1. Stabilization Criteria with References for Water Quality Indicator Parameters

Parameter	Stabilization Criteria	Reference
pH	± 0.1	USEPA 2010; Wilde 2008
temperature	± 0.2°C or 3%	USEPA 2010; Wilde 2008
SEC	± 3%	USEPA 2010
ORP	± 10 mV	USEPA 2010; Wilde 2008
DO	± 10% for values >0.5 mg/L. If three DO values <0.5 mg/L, consider the value stabilized or ± 0.2 mg/L	USEPA 2010; Wilde 2008

Notes:
In general, the order of stabilization is pH, temperature, and SEC, followed by ORP, and DO.
DO = dissolved oxygen
mg/L = milligram per liter
mV = millivolt
ORP = oxidation-reduction potential
SEC = specific electrical conductance

- Containerize and store the investigation derived waste consisting of purge water on Site, and dispose of it at an appropriate facility once characterized by the laboratory.

6.3 Collecting Groundwater Samples

- Field parameters determine the stability of groundwater recharge of the monitoring well and ensure a groundwater sample is representative of the formation. If the well goes dry during the purge process and water quality parameters have not yet stabilized, allow the well to recharge such that sufficient volume is present to collect samples without the need for stabilization (USEPA 2010).

- If you cannot obtain minimal drawdown, purge at least three well volumes and collect samples after the well has recharged or after 2 hours has elapsed, whichever is first.
- Develop and sample the groundwater monitoring wells using American Society for Testing and Materials (ASTM) D-4448-01, Standard Guide for Sampling Ground-Water Monitoring Wells (ASTM 2013).
- Double-bag and place all samples on ice in a cooler immediately after collection and hold the samples under chain of custody for shipment.

6.4 Chemically Analyzing Groundwater Samples

Analyze groundwater samples for ammonia by Standard Method (SM) 4500-NH_3 (SM 1997), and for nitrate by USEPA Method 300.0 (USEPA 1993).

6.5 Quality Assurance/Quality Control

Collect and analyze samples in accordance with the QAPP (TerraGraphics 2015c) to achieve the Quality Assurance/Quality Control (QA/QC) objectives. The following provides a summary of these QA/QC samples.

6.5.1 Laboratory QA/QC

The laboratory will perform QA/QC analysis including laboratory method blanks, laboratory control samples (LCS) or matrix spike (MS) samples, and laboratory control sample duplicates (LCSDs) or matrix spike duplicates (MSDs) to measure accuracy and precision/bias of the samples. The QAPP specifies the acceptance criterion for these analyses (TerraGraphics 2015c).

Section 7.0 Reporting

Generate and deliver one annual report to IDEQ, which will note laboratory analytical data, field activities, observations, and results for each semi-annual monitoring event occurring within the year (one annual report per two monitoring events). At a minimum, the report will contain the following:

- Sampling dates
- O&M Site visit summary
- Water level measurements
- Water quality parameter data
- Nitrate and ammonia concentration data compared to applicable cleanup goals
- Groundwater gradient map
- QA/QC data validation

Section 8.0 References and Resources Used

American Society for Testing Material (ASTM), 2010. D-4840-99, Standard Guide for Sampling Chain-of-Custody Procedures.

ASTM, 2013. D-4448-01, Standard Guide for Sampling Ground-Water Monitoring Wells.

IDAPA. 58.01.18. Idaho Land Remediation Rules. Available at http://adminrules.idaho.gov/rules/current/58/0118.pdf, accessed July 15, 2015.

Standard Method (SM), 1997. 4500-NH_3 Nitrogen (Ammonia). Approved by Standard Method Committee Joint Task Group: 20th Edition.

Strata Inc., 2008. Environmental Site Assessment – Phase I ESA, 217 West 6th Street, Moscow, Idaho 83843. Prepared for Mr. Duane Breslford, Corporate Pointe Developers, June 9.

Strata Inc., 2010. Phase I Environmental Site Assessment 217 West Sixth Street, Moscow, Idaho. Prepared for Moscow Urban Renewal Agency, August 5.

TerraGraphics Environmental Engineering, Inc. (TerraGraphics), 2015a. Phase II Environmental Site Assessment Report for 217 & 317 East 6th Street, Moscow, Idaho Final. Prepared for the City of Moscow, April 2.

TerraGraphics, 2015b. Final Analysis for Brownfields Cleanup Alternatives and Remediation Work Plan for 217 & 317 W. 6th Street Moscow, Idaho. Prepared for the City of Moscow and Moscow Urban Renewal Agency. September 24.

TerraGraphics, 2015c. Final Quality Assurance Project Plan (QAPP) for 217 & 317 West 6th Street Moscow, Idaho, Environmental Remediation. Prepared for Moscow Urban Renewal Agency. October 16, Revision #3.

TerraGraphics, 2016. Construction and Remediation Report for 217 & 317 W. 6th Street, Moscow, Idaho, Draft. Prepared for the City of Moscow and Moscow Urban Renewal Agency. August 10, Revision #0.

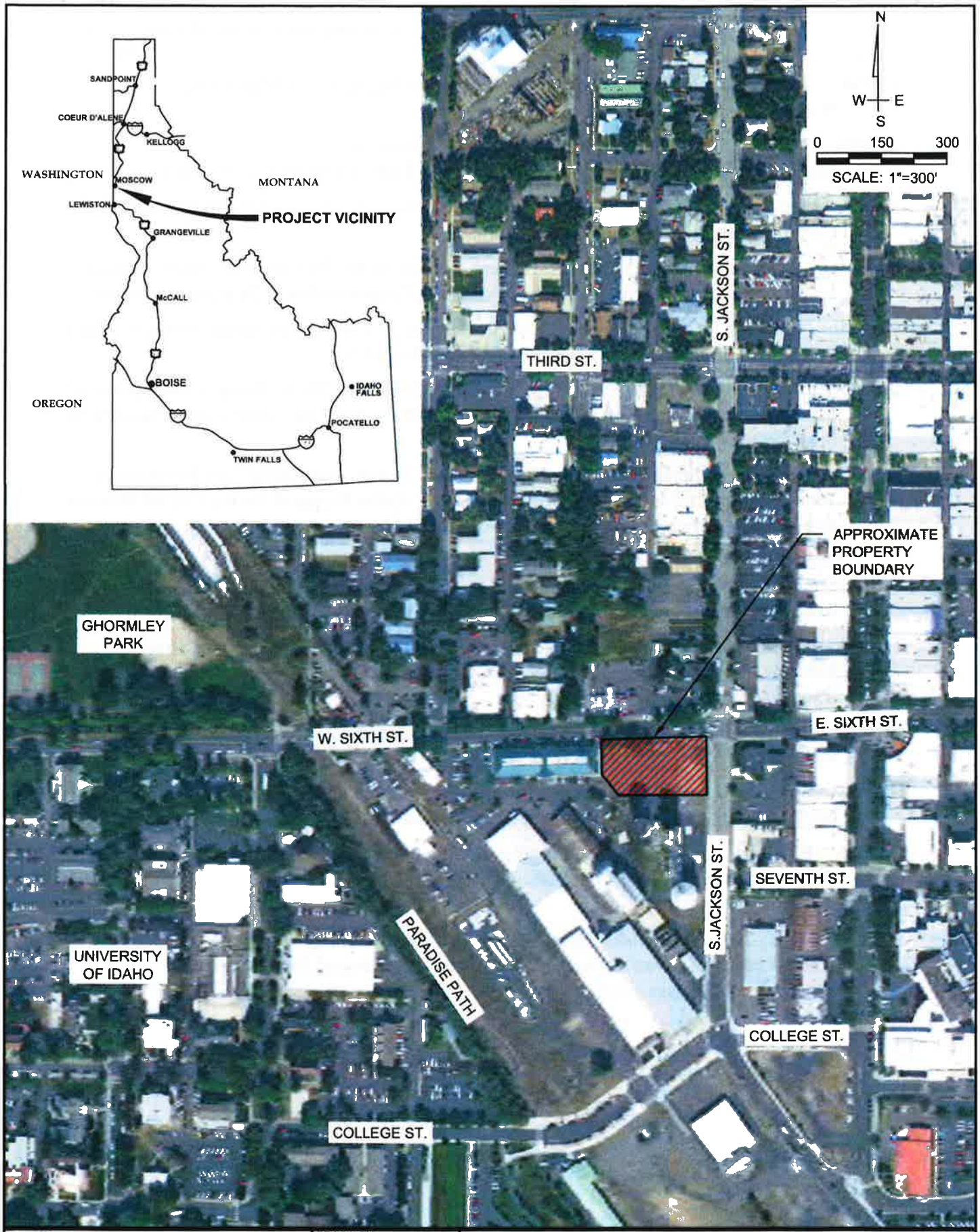
Tetra Tech, 2013. Final Phase II Environmental Site Assessment 217 West 6th Street Moscow, Idaho.

US Environmental Protection Agency (USEPA), 1993. Method 300.0. Determination of Inorganic Anions by Ion Chromatography. Revision 2.1. August.

USEPA, 2010. Low Stress (low flow) Purging and Sampling Procedure for the Collection of Groundwater Samples from Monitoring Wells. USEPA Region 1. Revision 3. EQASOP-GW 001.

Wilde, F.D., ed., 2008. Field measurements: U.S. Geological Survey Techniques of Water-Resources Investigations, book 9, chap. A6, accessed July 12, 2010, http://pubs.water.usgs.gov/twri9A6/.

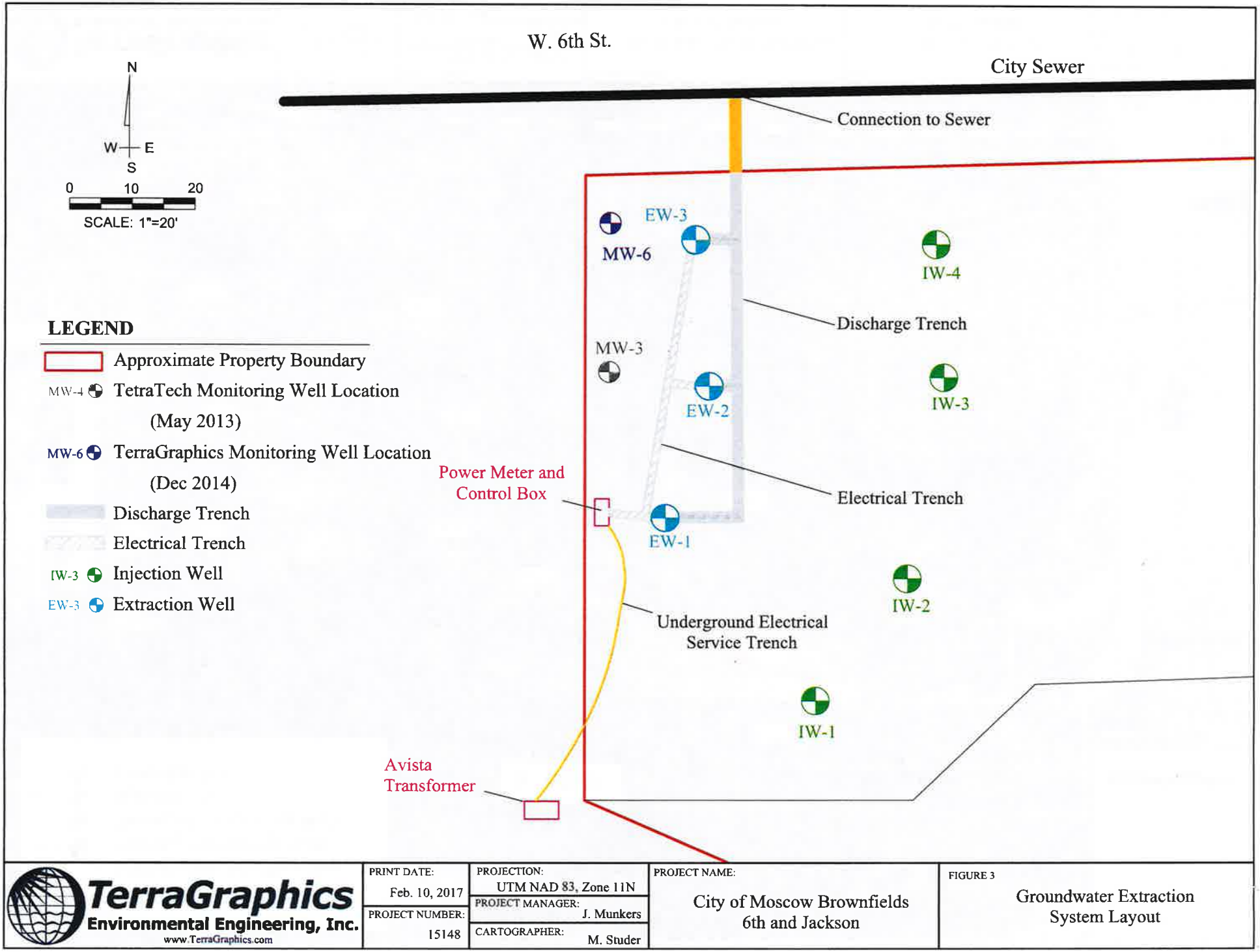
584525



TerraGraphics Environmental Engineering, Inc.	DRAWN BY: D.PFEIFER/M. STUDER PROJECT NO: 13068 DATE: 10/31/2014	FIGURE 2	317 W. SIXTH STREET SITE VICINITY MAP

TerraGraphics Environmental Engineering, Inc. www.TerraGraphics.com	PRINT DATE: August 31, 2016 PROJECT NUMBER: 15148	PROJECTION: UTM NAD 83, Zone 11N PROJECT MANAGER: J. Munkers CARTOGRAPHER: M. Studer	PROJECT NAME: City of Moscow Brownfields 6th and Jackson	FIGURE 2 Site Layout with Well Locations	*This map was produced using information obtained from several different sources that have not been independently verified. These sources have also not provided information on the precision and accuracy of the data. Information on this map is not a substitute for survey data.

5845255



TerraGraphics Environmental Engineering, Inc. www.TerraGraphics.com	PRINT DATE: Feb. 10, 2017 PROJECT NUMBER: 15148	PROJECTION: UTM NAD 83, Zone 11N PROJECT MANAGER: J. Munkers CARTOGRAPHER: M. Studer	PROJECT NAME: City of Moscow Brownfields 6th and Jackson	FIGURE 3 Groundwater Extraction System Layout

5845925

Appendix A

Groundwater Extraction System Components and Manufacturer's Literature

584525

GRUNDFOS **INSTRUCTIONS**

SQ, SQE

Installation and operating instructions

US F E

c UL us LISTED

BE > THINK > INNOVATE >

GRUNDFOS

CONTENTS

WARNING:

Prior to installation, read these installation and operating instructions. Installation and operation must comply with local regulations and accepted codes of good practice.

1. General description

The SQ/SQE is a 3 inch diameter deep well submersible pump mainly designed for the pumping of raw water in domestic water supply.

This manual is designed to assist in the proper set-up, installation and operation of these pumps.

1.1 Applications

Typical applications:

- residential housing
- small waterworks
- pressure boosting
- liquid transfer in tanks
- irrigation systems.

WARNING: This pump has not been investigated for use in swimming pool or marine areas.

2. Preinstallation

2.1 Well preparation

If the pump is to be installed in a new well, the well should be fully developed and bailed or blown free of cuttings and sand.

The construction of the Grundfos SQ/SQE submersibles makes them resistant to abrasion; however, no pump made of any material can forever withstand the destructive wear that occurs when constantly pumping sandy water.

If this pump is used to replace an oil-filled submersible or oil-lubricated line-shaft turbine in an existing well, the well must be blown or bailed clear of oil.

2.2 Make sure you have the right pump

Determine the maximum depth of the well and the drawdown level at the maximum pump capacity. Pump selection and setting depth should be made based on this data.

2.3 Pumped liquid requirements

Submersible well pumps are designed for pumping clear, cold water; free of air or gases. Decreased pump performance and life expectancy can occur if the water is not clear, cold or contains air or gases.

A check should be made to ensure that the installation depth of the pump will always be at least three feet below the maximum drawdown level of the well. The bottom of the motor should never be installed lower than the top of the well screen or within five feet of the well bottom.

CAUTION: This pump has been approved for pumping maximum 86°F water only.

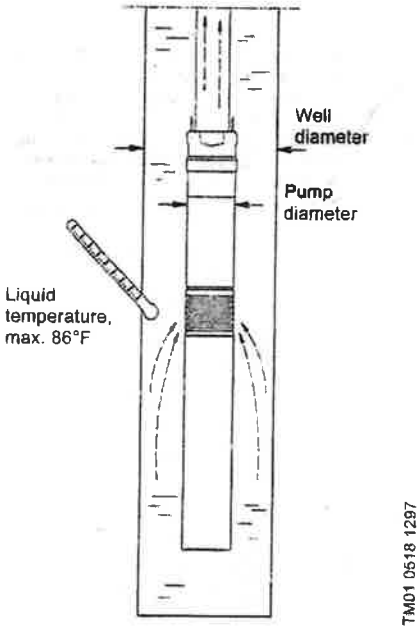
2.4 Liquid temperatures/cooling

Figure 1 shows an SQ/SQE pump installed in a well.

With the pump operating, figure 1 illustrates the following:

- Well diameter
- Pump diameter
- Temperature of pumped liquid
- Flow past the motor to the pump suction strainer.

Note: The well diameter must be at least 3 inches. If there is a risk that the motor will be covered with sediment, it is recommended the pump be placed in a flow sleeve. The motor should always be installed above the well screen.



TM01 0618 1297

Fig. 1 Pump installed in well

2.5 Motor preparation

Grundfos MS 3 and MSE 3 submersible motors have water-lubricated slide bearings. No additional lubrication is required.

The submersible motors are factory-filled with a special Grundfos motor liquid, type SML 2 or SML 3, which will protect the motor liquid down to 4°F (–20°C) and prevent the growth of bacteria. The level of motor liquid is important for the operating life of the bearings and consequently the life of the motor.

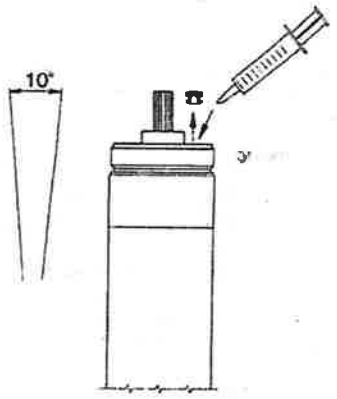
2.6 Refilling of motor liquid

If for any reason the motor liquid has been drained or lost, the motor must be refilled with Grundfos motor liquid SML 2 or SML 3.

To refill the motor, proceed as follows:

1. Remove the cable guard and separate the pump end from the motor.
2. Place the motor in vertical position with an inclination of approximately 10°.
3. Remove the filling plug using a screwdriver or a similar tool.
4. Inject motor liquid into the motor with a filling syringe or similar tool, see fig. 2.
5. To allow possible air to escape, move the motor from side to side and turn the shaft.
6. Replace the filling plug and make sure it is tight.
7. Assemble pump end and motor.
8. Fit the cable guard.

The pump is now ready for installation.



TM02 9606 3504

Fig. 2 Injecting motor liquid

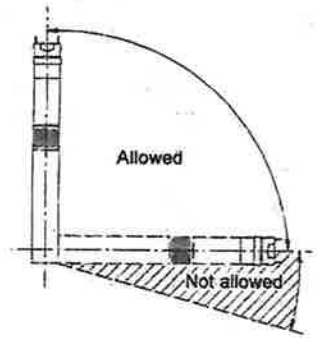
US

3. Installation positions

3.1 Positional requirements

The pump is suitable for vertical as well as horizontal installation, however, the pump shaft must never fall below the horizontal plane, see fig. 3.

If the pump is to be installed horizontally, e.g. in a tank, and there is a risk that the pump might be covered by mud, it must be installed in a flow sleeve.



TM01 1375 4397

Fig. 3 Pump position

4. Electrical connection

4.1 General

The electrical connection should be carried out by an authorized electrician in accordance with local regulations.

WARNING:

Before starting work on the pump, make sure that the electricity supply has been switched off and that it cannot be accidentally switched on.

This pump is permanent wiring connection only.

Reduced risk of electric shock during operation of this pump requires the provision of acceptable grounding.

The grounding connection must be made by a copper conductor, at least the size of the circuit conductors supplying the pump.

The pump must be connected to an external mains switch.

The pump must never be connected to a capacitor or to another type of control box than CU 300 or CU 301.

The pump must never be connected to an external frequency converter.

The supply voltage, rated maximum current and power factor (PF) appear on the motor nameplate.

The required voltage for Grundfos submersible MS 3 and MSE 3 motors, measured at the motor terminals, is –10%/+6% of the nominal voltage during continuous operation (including variation in the supply voltage and losses in cables).

If the pump is connected to an installation where a Ground Fault circuit breaker (GFI) is used as additional protection, this circuit breaker must trip out when ground fault currents with DC content (pulsating DC) occur.

Supply voltage

1 x 100-115 V or 1 x 200-240 V, 50/60 Hz.

The current consumption can only be measured accurately by means of a true RMS instrument. If other instruments are used, the value measured will differ from the actual value.

The SQE pumps can be connected to a CU 300 or CU 301 control box.

4.2 Motor protection

The motor has built-in automatic thermal overload protection and requires no additional motor protection.

4.3 Connection of motor

The motor can be connected directly to the main circuit breaker.

Start/stop of the pump will typically be done via a pressure switch, see figs. 4 and 5.

Note: The pressure switch must be rated for the maximum amps of the specific pump.

WARNING:

Reduced risk of electric shock during operation of this pump requires the provision of acceptable grounding. If the means of connection to the supply connected box is other than grounded metal conduit, ground the pump back to the service by connecting a copper conductor, at least the size of the circuit conductors supplying the pump.

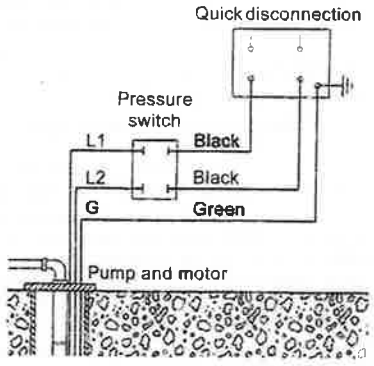


Fig. 4 Wiring diagram for 2-wire Grundfos motors (200-240 V)

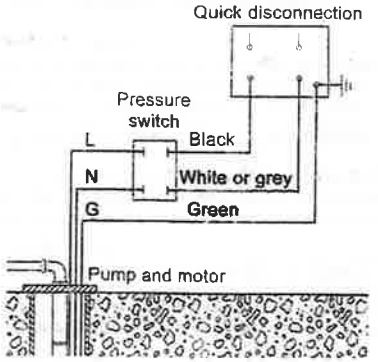


Fig. 5 Wiring diagram for single-phase Grundfos motors (100-115 V)

5. Cable sizing

Single-phase 60 Hz maximum cable length motor service to entrance:

Motor rating			Maximum lengths of copper wire in feet (9% voltage drop)						
Volts	hp	amps	14 AWG	12 AWG	10 AWG	8 AWG	6 AWG	4 AWG	2 AWG
115	0.5	12	140	220	360	550	880	1390	2260
230	0.5	5.2	640	1000	1660	2250	4060	–	–
230	0.75	8.4	400	620	1030	1580	2510	3970	–
230	1.0	11.2	300	460	770	1190	1890	2980	4850
230	1.5	12	280	430	720	1110	1760	2780	4530

Note: The values apply to 230 V, 60 Hz, and conform to the requirements stated in the National Electrical Code Book.

Note: Recommended maximum cable length between the SQE and the CU 300 or CU 301 control box = 650 ft.

6. Splicing the cable

Splice the drop cable with the motor cable. The splice must be made carefully.

It is recommended to use a third-party-approved watertight junction box or splice connection.

7. Fitting the cable guard

To fit the cable guard, proceed as follows:

1. Make sure that the motor lead lies flat in the cable guard.
2. Place the cable guard in the groove in the cable plug. The two flaps must engage with the upper edge of the pump sleeve, see fig. 6.

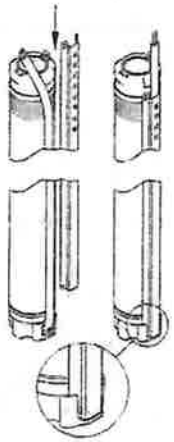


Fig. 6 Placing the cable guard

3. Fasten the cable guard to the pump suction strainer with the two self-tapping screws supplied, see fig. 7.

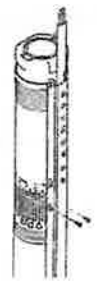


Fig. 7 Fitting the cable guard to the pump suction strainer

8. Piping

- The pump should only be gripped by the two flats at the top of the pump, see fig. 8.
- The pump can be installed vertically or horizontally. During operation, the pump must always be completely submerged in water.
- When plastic pipe is used, a stainless-steel safety wire is recommended for lowering and lifting the pump. Fasten the wire to the eyelet on the pump, see fig. 9.
- The threaded joints must be well cut and fit together tightly to ensure that they do not work loose.

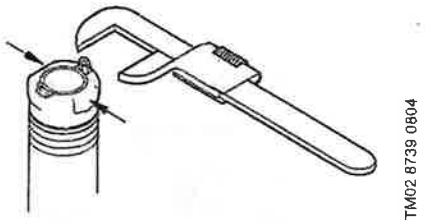


Fig. 8 Gripping the pump

9. Installing the pump

9.1 Installation depth

The dynamic water level should always be above the pump, see fig. 9.

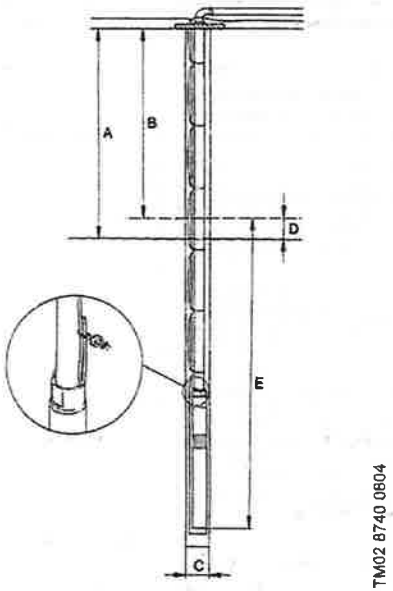
A = Dynamic water level

B = Static water level

C = Minimum 3 inch well diameter

D = Drawdown

E = Installation depth below static water level. Maximum 500 feet.



TM02 8740 0804

Fig. 9 Installation depth

Procedure

To install the pump, proceed as follows:

1. Attach the enclosed data plate sticker at the well head.
2. Check the well for proper clearance. The well must be at least 3 inches in diameter.
   It is a good idea to check the well for clearance using a plumb ring (2.95 ø x 10 in.).
3. Attach the first section of riser pipe to the pump.
4. Lower the pump into the well. Make sure the motor cable is not damaged when the pump is lifted or lowered into the well, especially in 3 inch wells.
   Note: Do not lower or lift the pump using the motor cable.
5. When the pump has been installed to the required depth, the installation should be finished by means of a well seal.
   Note that the dynamic water level should always be above the pump.
6. Loosen the safety wire so that it becomes unloaded and lock it to the well seal using a cable clamp.
7. Complete the electrical connections.

Note: The pump must never be connected to a capacitor or to another type of control box than CU 300 or CU 301.

Installation depths

Maximum installation depth:
500 feet below the static water level.

Minimum installation depth:
1.75 feet below the dynamic water level.

Vertical installation

During start-up and operation, the pump must always be completely submerged in water.

Horizontal installation

The pump must be installed at least 1.75 feet below the dynamic water level.

If there is a risk that the pump might be covered by mud, the pump must always be placed in a flow sleeve.

Note: Do not lower or lift the pump using the motor cable.

10. Generator operation

It is safe to operate the SQ/SQE with a generator.

The generator must be sized 50% above the P_1 (input power) values of the pump. See the following table.

Motor [hp]	Min. generator size [W]	Recommended generator output [W]
0.5	1200	1500
0.75	1900	2500
1.0	2600	3200
1.5	2800	3500

11. Starting the pump for the first time

When the pump has been connected correctly, the pump should be started with the discharge valve closed approximately one third.

Due to the soft start feature, the pump takes approximately 2 seconds to develop full pressure.

11.1 Motor cooling and other considerations

- Make sure the well is capable of yielding a minimum quantity of water corresponding to the pump capacity.
- Do not start the pump until it is completely submerged in the liquid.
- As the valve is being opened, the drawdown should be checked to ensure that the pump always remains submerged.
- To ensure the necessary cooling of the motor, the pump should never be set so low that it gives no water.
  If the flow rate suddenly falls, the reason might be that the pump is pumping more water than the well can yield. The pump must immediately be stopped and the fault corrected.

11.2 Impurities in the water

If there are impurities in the water, the valve should be opened gradually as the water becomes clearer. The pump should not be stopped until the water is clean, otherwise the pump parts and the check valve may become clogged.

When the water is clean, the valve should be fully opened.

11.3 Minimum flow rate

To ensure the necessary cooling of the motor, the pump flow rate should never be set to a value lower than 0.2 gpm.

If the flow rate suddenly falls, the reason might be that the pump is pumping more water than the well can yield. The pump must immediately be stopped and the fault corrected.

WARNING: The pump's dry-running protection is effective only within the recommended duty range of the pump.

Note: Do not let the pump run against a closed discharge valve for more than 5 minutes. When the discharge valve is closed, there is no cooling flow and there is a risk of overheating in motor and pump.

11.4 Built-in functions

The motor incorporates an electronic unit which functions as follows:

- In case of overload, the built-in overload protection will stop the pump for 5 minutes. After that period, the pump will attempt to restart.
- If the pump has been stopped as a result of dry running, it will start automatically after 5 minutes.
- If the pump is restarted and the well has not recovered, the pump will stop after 30 seconds.

11.5 Resetting the pump

Switch off the electricity supply for 1 minute.

11.6 MS 3 motors

Note: All MS 3 motors are factory-set to detect dry-running conditions.

Check that the combination of pump and motor corresponds to the data on page 35.

11.7 MSE 3 motors

Note: All MSE 3 motors are factory-set to detect dry-running conditions. However, if the maximum pump speed setting is changed, the dry-running stop value must also be changed. Please refer to either the CU 300 or CU 301 I&O for instructions on this procedure.

11.8 Maintenance and service

The pumps are normally maintenance-free.

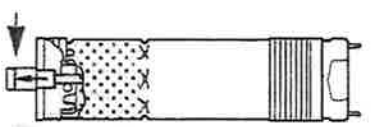
Deposits and wear may occur.
For that purpose, service kits and service tools are available from Grundfos.

The pumps can be serviced at a Grundfos service center.

12. Assembly of pump and motor

To assemble pump end and motor, proceed as follows:

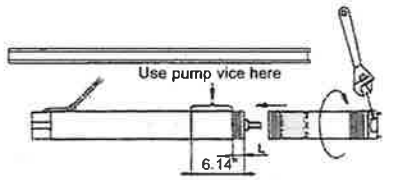
1. Place the motor horizontally in a vice and tighten it, see fig. 11.
2. Pull the pump shaft out to the position shown in fig. 10.



TM02 8425 5203

Fig. 10 Pump shaft position

3. Grease the motor shaft end with the grease supplied with the motor.
4. Screw the pump end on the motor (55 Nm).
   Note: The pump shaft must engage with the motor shaft.
   A spanner may be used on the clamping faces of the pump end, see fig. 11.
5. Fit the cable guard as described in section 7.



TM01 2854 3804

Fig. 11 Pump in vice

0.5 hp: L = 4.7".
0.75 hp: L = 4.0".
1.0 hp: L = 2.6".
1.5 hp: L = 2.6".

When pump end and motor have been assembled correctly, there must be no clearance between pump end and motor.

To disassemble, reverse procedure.

13. Troubleshooting

Fault	Cause	Remedy
1. The pump does not run.	a) The fuses are blown.	Replace the blown fuses. If the new fuses blow too, check the electrical installation and the drop cable.
	b) The GFI circuit breaker has tripped.	Reset the circuit breaker.
	c) No electricity supply.	Contact the electricity provider.
	d) The motor protection has cut off the electricity supply due to overload.	Check for motor/pump blockage.
	e) The drop cable is defective.	Repair or replace the pump/cable.
	f) Overvoltage has occurred.	Check the electricity supply.
2. The pump runs but gives no water.	a) The discharge valve is closed.	Open the valve.
	b) No water or too low water level in well.	Increase the installation depth of the pump, throttle the pump or replace it with a smaller capacity model.
	c) The check valve is stuck in its closed position.	Pull the pump and clean or replace the valve.
	d) The suction strainer is closed.	Pull the pump and clean the strainer.
	e) The pump is defective.	Repair or replace the pump.
3. The pump runs at reduced capacity.	a) The drawdown is larger than anticipated.	Increase the installation depth of the pump, throttle the pump or replace it with a smaller capacity model.
	b) The valves in the discharge pipe are partly closed/blocked.	Check and clean or replace the valves as necessary.
	c) The discharge pipe is partly choked by impurities (iron bacteria).	Clean or replace the discharge pipe.
	d) The check valve of the pump is blocked.	Pull the pump and clean or replace the valve.
	e) The pump and the riser pipe are partly choked by impurities (iron bacteria).	Pull the pump. Check and clean or replace the pump, if necessary. Clean the pipes.
	f) The pump is defective.	Repair or replace the pump.
	g) Hole in discharge pipe.	Check and repair the piping.
	h) The riser pipe is defective.	Replace the riser pipe.
	i) Undervoltage has occurred.	Check the electricity supply.
4. Frequent starts and stops.	a) The differential of the pressure switch between the start and stop pressures is too small.	Increase the differential. However, the stop pressure must not exceed the operating pressure of the pressure tank and the start pressure should be high enough to ensure sufficient water supply.
	b) The water level electrodes or level switches in the reservoir have not been installed correctly.	Adjust the intervals of the electrodes/level switches to ensure suitable time between the cutting-in and cutting-out of the pump. See installation and operating instructions for the automatic devices used. If the intervals between start/stop cannot be changed via the automatics, the pump capacity may be reduced by throttling the discharge valve.
	c) The check valve is leaking or stuck half-open.	Pull the pump and clean or replace the check valve.
	d) The supply voltage is unstable.	Check the electricity supply.
	e) The motor temperature is too high.	Check the water temperature.

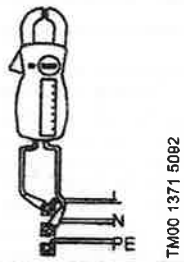
13.1 Instruments not allowed

Note: The use of the following instruments is not allowed during troubleshooting.

Fig. 12 Instruments not allowed

Note: When measuring, use RMS instruments.

14. Checking of motor and cable

1. Supply voltage 	Measure the voltage L1 (RMS) between phase and L2. Connect the voltmeter to the terminals at the connections.	The voltage should, when the motor is loaded, be within the range specified in section *4. Electrical connection*. Large variations in supply voltage indicate poor electricity supply, and the pump should be stopped until the problem has been corrected.
2. Current consumption 	Measure the current (RMS) while the pump is operating at a constant discharge head (if possible, at the capacity where the motor is most heavily loaded). For maximum current, see motor nameplate.	If the current exceeds the full-load current, there are the following possible faults: • Poor connection in the leads, possibly in the cable joint. • Too low supply voltage, see item 1.

15. Environment

During handling, operation, storage and transport, all environment regulations dealing with the handling of hazardous materials must be observed.

WARNING:

When the pump is taken out of operation, it must be ensured that no hazardous material is left in the pump and in the riser pipe, which can be injurious to persons and the environment.

16. Technical data

Supply voltage

1 x 100-115 V, 50/60 Hz, PE.
1 x 200-240 V, 50/60 Hz, PE.

Operation via generator

Recommended generator output must be equal to P_1 [kW] + 50% and minimum P_1 + 10%.

Starting current

The motor starting current is equal to the highest value stated on the motor nameplate.

Starting

Soft starting.

Run-up time

Maximum 2 seconds.

Power factor

PF = 1.

Service factor

0.5 hp: 1.85 at 115 V/240 V.
0.75 hp: 2.05 at 240 V.
1.0 hp: 2.25 at 240 V.
1.5 hp: 1.65 at 240 V.

Motor cable

3-Wire, RHW-2, 14 AWG XLPE.
Length: 5 feet.

Motor liquid

Type SML 2 or SML 3.

pH values

5 to 9.

Liquid temperature

The temperature of the pumped liquid must not exceed 86°F.

Discharge port

5 SQ/SQE: 1" NPT.
10-15 SQ/SQE: 1¼" NPT.
22-30 SQ/SQE: 1½" NPT.

Storage conditions

Minimum ambient temperature: 4°F.
Maximum ambient temperature: 140°F.

Freeze protection

Note: The motor must not be stored without being filled with motor liquid.

If the pump has to be stored after use, it must be stored on a frost-free location or it must be ensured that the motor liquid is frost-proof.

Motor dimensions

0.5 hp: 20.9" length x 2.68" diameter.
0.75 hp: 20.9" length x 2.68" diameter.
1.0 hp: 22.3" length x 2.68" diameter.
1.5 hp: 22.3" length x 2.68" diameter.

Motor weights

0.5 hp: 6.0 lbs.
0.75 hp: 7.1 lbs.
1.0 hp: 8.2 lbs.
1.5 hp: 8.2 lbs.

Pump end dimensions

Pump diameter: 2.68".
Pump diameter, incl. cable guard: 2.91".

Pump end dimensions (min. and max.)

5 SQ/SQE: 10.6" to 18.0".
10 SQ/SQE: 10.6" to 14.8".
15 SQ/SQE: 10.6" to 16.9".
22 SQ/SQE: 10.6" to 16.9".
30 SQ/SQE: 10.6" to 13.7".

Pump end weights (min. and max.)

All SQ/SQE models: 2.2 lbs to 3.5 lbs.

Well diameter

Minimum 3".

Installation depth

Maximum 500 feet below static water level.

17. Disposal

This product or parts of it must be disposed of in an environmentally sound way:

1. Use the public or private waste collection service.
2. If this is not possible, contact the nearest Grundfos company or service workshop.

Subject to alterations.

GARANTIE LIMITÉE

Les produits fabriqués par GRUNDFOS PUMPS CORPORATION (Grundfos) sont couverts par une garantie à l'utilisateur initial à l'effet qu'ils sont exempts de vices attribuables aux matériaux et à la fabrication pour une période de 24 mois après la date d'installation, mais sans excéder une période de 30 mois après la date de fabrication. Selon les termes de cette garantie, la responsabilité de Grundfos se limitera à réparer ou à remplacer sans frais, à la discrétion de Grundfos et FAB de l'usine de Grundfos ou d'un poste de service autorisé, tout produit provenant de l'usine de Grundfos. Grundfos ne sera pas responsable des frais d'enlèvement, d'installation, de transport, ou de tous les autres frais pouvant être encourus dans le cadre d'une demande d'indemnité concernant la garantie. Les produits vendus, mais qui ne sont pas fabriqués par Grundfos, sont couverts par la garantie offerte par les fabricants de ces produits, et ils ne sont pas couverts par la garantie de Grundfos. Grundfos ne sera pas responsable de la détérioration des produits ou des produits endommagés dans les cas suivants : conditions d'utilisation anormales, accidents, abus, mauvais usage, modification ou réparation non autorisée, ou lorsque le produit n'a pas été installé conformément aux instructions écrites de Grundfos concernant l'installation et l'exploitation.

Pour obtenir un service selon les termes de cette garantie, vous devez retourner le produit défectueux au distributeur ou au fournisseur de produits Grundfos qui vous a vendu le produit, incluant la preuve d'achat et la date d'installation, la date de la défaillance, et les informations concernant l'installation. Sauf disposition contraire, le distributeur ou le fournisseur contactera Grundfos ou un poste de service autorisé pour obtenir les instructions. Tout produit défectueux doit être retourné "fret payé à l'avance" à Grundfos ou à un poste de service. Les documents décrivant la demande d'indemnité aux termes de la garantie et/ou une autorisation de retour de marchandise doivent être inclus si exigé.

GRUNDFOS NE SERA PAS RESPONSABLE DES DOMMAGES INDIRECTS OU CONSÉCUTIFS, DES PERTES, OU DES FRAIS DÉCOULANT DE L'INSTALLATION, L'UTILISATION, OU DE TOUTE AUTRE CAUSE. IL N'EXISTE AUCUNE GARANTIE EXPRESSE OU IMPLICITE, INCLUANT LA QUALITÉ MARCHANDE OU L'ADAPTATION À UNE FIN PARTICULIÈRE, QUI OUTREPASSE LES GARANTIES DÉCRITES OU RÉFÉRENCÉES CI-DESSUS.

Certaines juridictions ne permettent pas l'exclusion ou la limitation des dommages indirects ou consécutifs, et certaines juridictions ne permettent pas de limiter la durée des garanties implicites. Il est donc possible que les limitations ou que les exclusions mentionnées précédemment ne s'appliquent pas à vous. Cette garantie vous accorde des droits légaux spécifiques, et vous pouvez également avoir d'autres droits qui varient d'une juridiction à l'autre.

Appendix B

Example Groundwater Sampling Sheet

GROUNDWATER SAMPLING RECORD

NOTE: Information must be filled in for all gray highlighted cells. All other cells are optional info.

Project:	Well Number:
Project Number:	Sample Number:
Location:	Weather:
Date:	Sampler(s):

Depth to Bottom (ft):	Purge Time:
Depth to Water (ft):	Purge Method:
DTB-DTW (ft):	Purge Flow Rate (ml/min):
Drawdown once stabilized (feet):	Total Purge Volume:

Conversion Factors (height x factor=vol)	¾" diameter 0.023	1" diameter 0.041	1 ½" diameter 0.092	2" diameter 0.163	4" diameter 0.652	8" diameter 2.611

GROUNDWATER DATA

Purged Volume (gal)	Time	pH	Cond (___/cm)	Temp (°C)	Dissolved Oxygen		ORP (mV)
					mg/L	%	

Sampling Date:	Sampling Method:	Time Sampled:	

Container (circle one)	Volume (ml) (circle one)	Preservative (circle one)	# Containers	Other
Poly, Glass	40, 100, 125, 250, 500, 1,000	Hcl, nitric, NaThio, MeoH, none		
Poly, Glass	40, 100, 125, 250, 500, 1,000	Hcl, nitric, NaThio, MeoH, none		
Poly, Glass	40, 100, 125, 250, 500, 1,000	Hcl, nitric, NaThio, MeoH, none		
Poly, Glass	40, 100, 125, 250, 500, 1,000	Hcl, nitric, NaThio, MeoH, none		
Poly, Glass	40, 100, 125, 250, 500, 1,000	Hcl, nitric, NaThio, MeoH, none		
Poly, Glass	40, 100, 125, 250, 500, 1,000	Hcl, nitric, NaThio, MeoH, none		
Poly, Glass	40, 100, 125, 250, 500, 1,000	Hcl, nitric, NaThio, MeoH, none		

Duplicate Sample Number:

Notes:

Stabilization Criteria

Temperature ± 0.2°C	**pH = ± 0.1°**	**DO = ± 10% or 0.2 mg/L**
Turbidity = ± 10%	**SEC = ± 3%**	**ORP = ± 5.0 mV**

Drawdown Criteria = <0.3 feet