PROPOSED PROCEDURES FOR CONDUCTING MECHANICAL INTEGRITY TEST IN THE CHARLOTTE COUNTY UTILITIES BURNT STORE CLASS I INJECTION WELL IW-1, CHARLOTTE COUNTY, FL

Prepared for:

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January 2025

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Project # 24-719

January 14, 2025

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I. INTRODUCTION

The Charlotte County Utilities (CCU) Burnt Store Class I injection well (IW-1) is located at the Burnt Store water treatment plant (WTP) and wastewater treatment plant (WWTP) site, which is at 17430 Burnt Store Road, Punta Gorda, about 0.2 mile north of the Charlotte County/Lee County line (Figures 1-1 and 1-2). The well disposes of reverse osmosis (RO) concentrate and treated wastewater from the Burnt Store WTP and WWTP. Operation of the Burnt Store injection well is regulated by Florida Department of Environmental Protection (FDEP) underground injection control (UIC) permit # 0271367-007-UO/11. A mechanical integrity test (MIT) is required to be performed on IW-1 every five years. The last MIT was performed in this well on June 5, 2020. The FDEP operation permit for the well requires MIT to be performed in the well prior to June 4, 2025.

IW-1 is constructed with 7.625-inch diameter steel injection casing, equipped with 4.5-inch outside diameter fiberglass tubing, set to a depth of 2,528 below land surface (BLS) and with an open-hole section to a depth of 3,268 feet BLS (Figure 1-3). The maximum permitted injection rate is 392 gallons per minute (gpm) which equates to a maximum daily rate of 0.564 million gallons per day (MGD).

The proposed MIT to be conducted prior to June 4, 2025 will consist of a video survey of the interior of the tubing and the entire open-hole section of the well, an annular pressure test, a high resolution temperature log of the well, and a radioactive tracer survey (RTS).

During the period of the planned MIT, which should be completed within 5 days after mobilization of equipment to the site, injection into the well will be discontinued, the wellhead will be disassembled, and then the MIT will be conducted. After the MIT has been conducted, the wellhead will be reassembled, and the well will be put back into service.

During the period when the MIT is being conducted, RO concentrate and treated wastewater will be directed to Burnt Store IW-2 or to the on-site rapid rate infiltration basins.

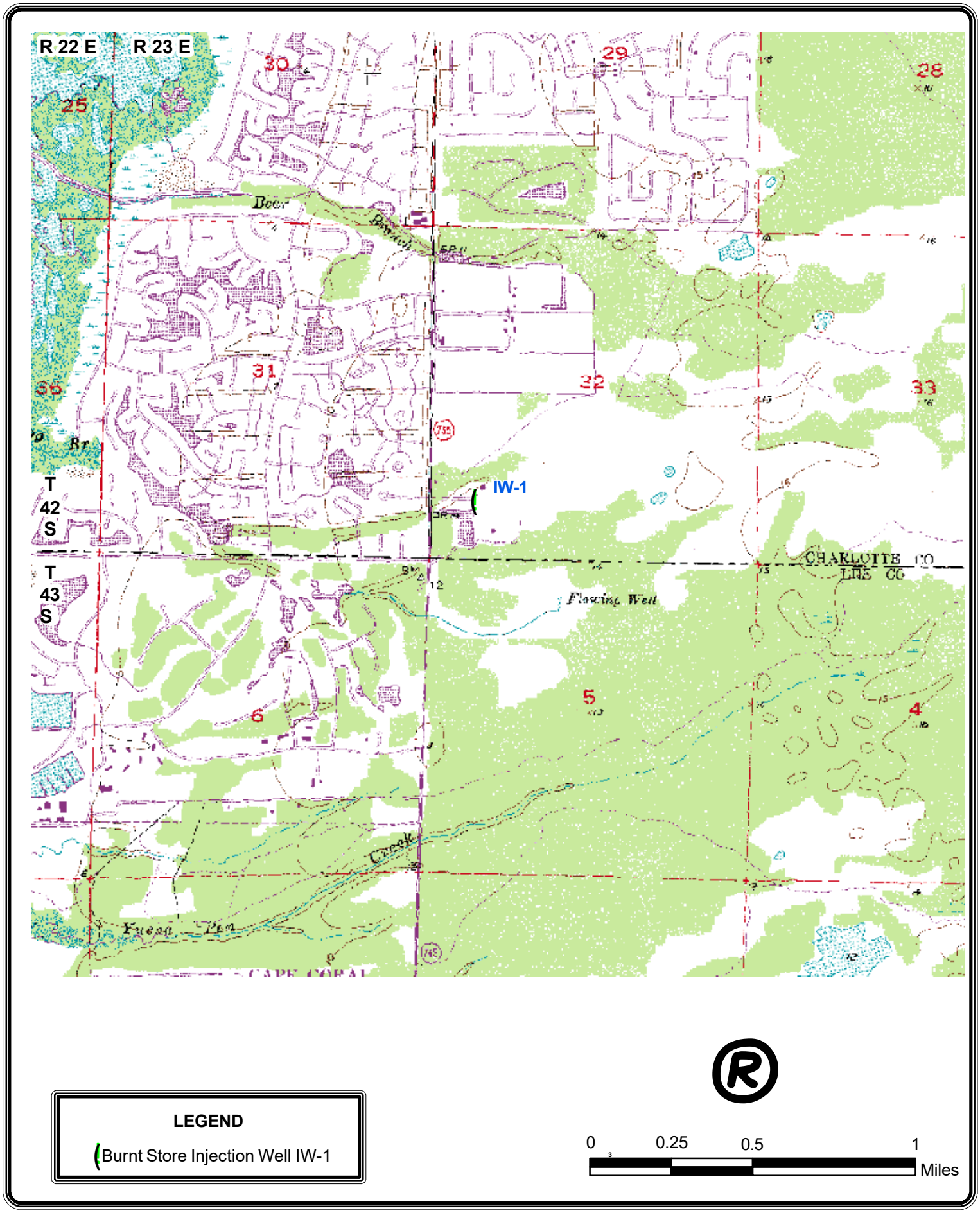
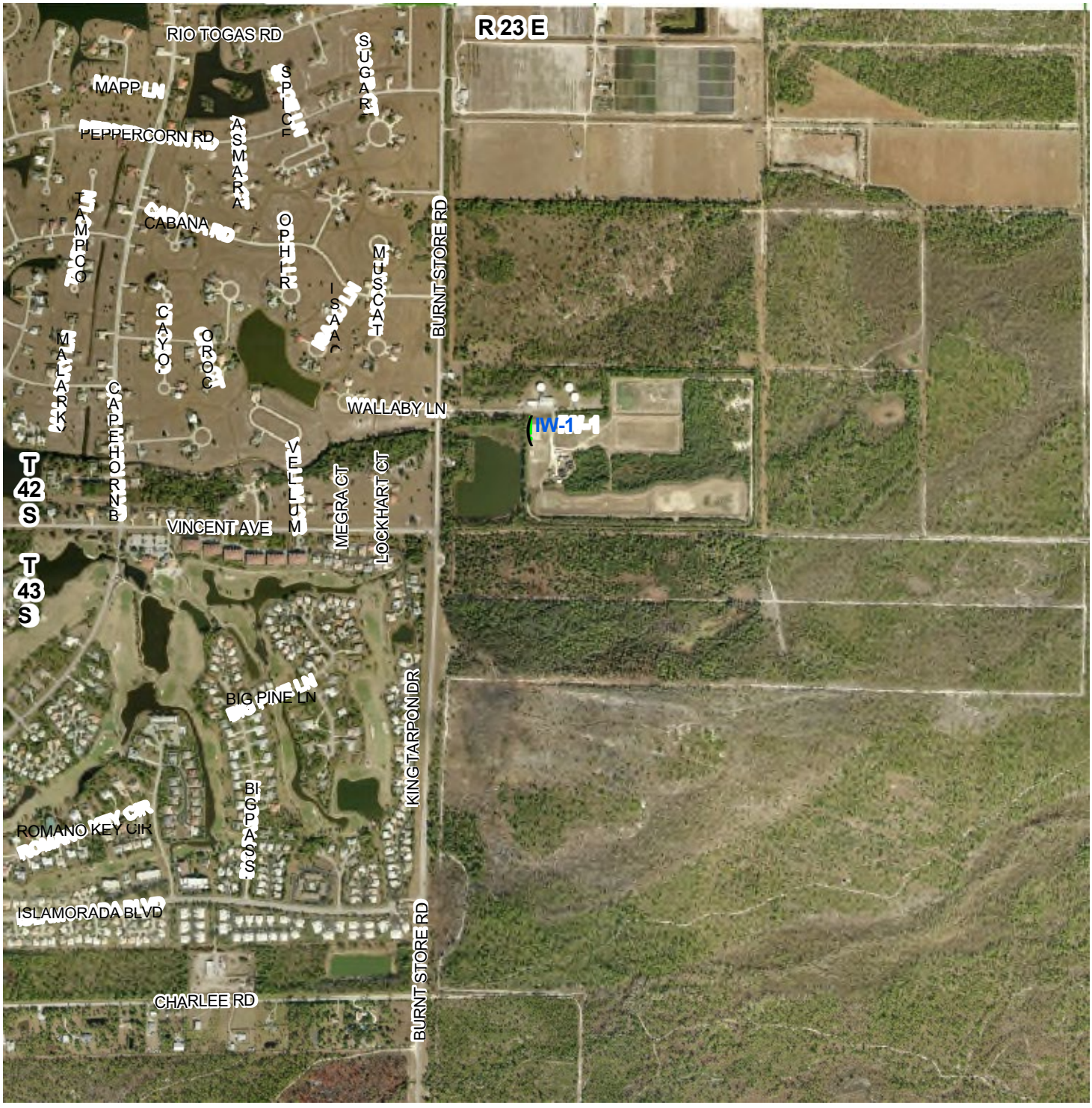


FIGURE 1-1. USGS TOPOGRAPHIC MAP SHOWING LOCATION OF CCU BURNT STORE INJECTION WELL IW-1.

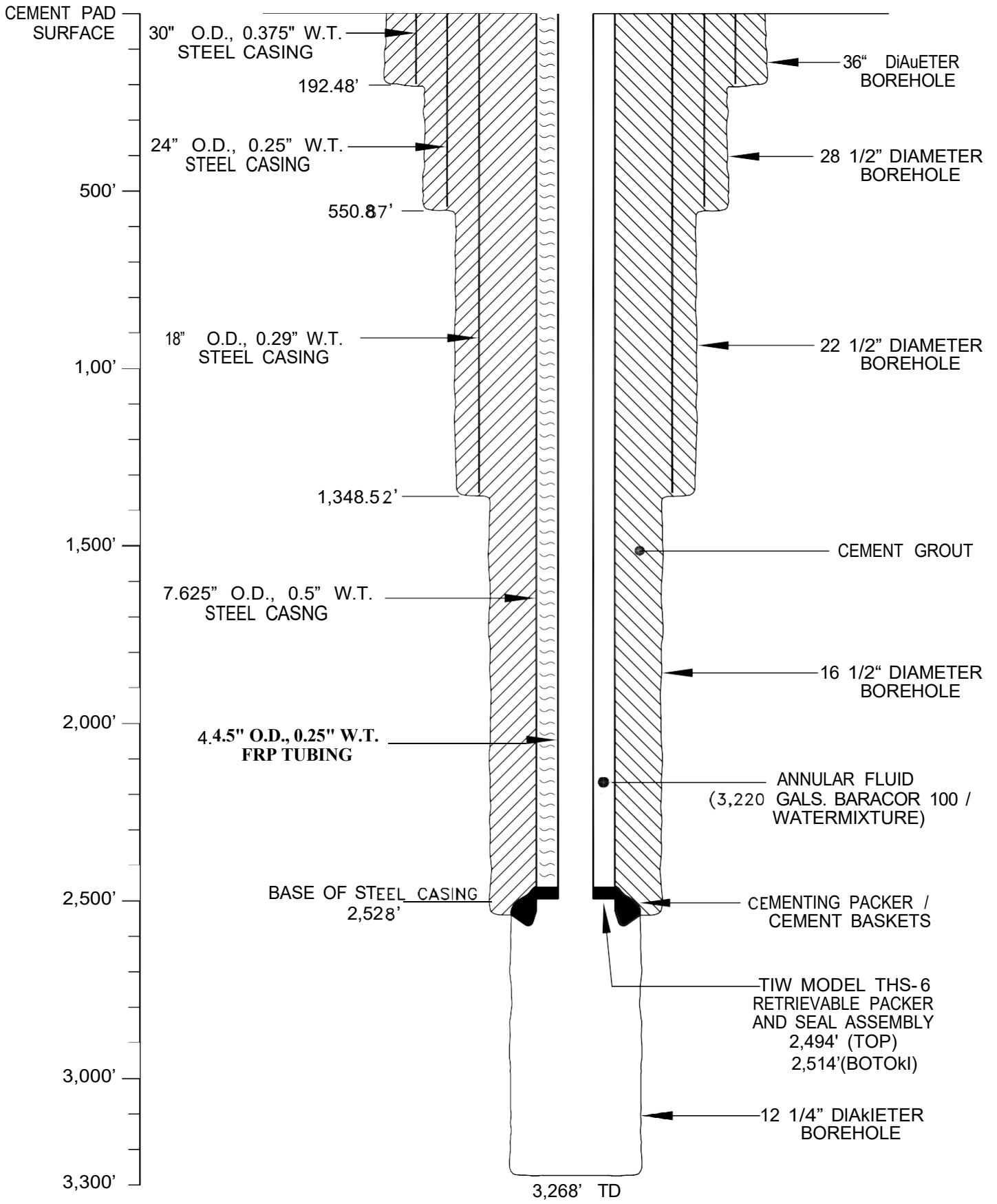


LEGEND

Burnt Store Injection Well IW-1

0 500 1,000 2,000 Feet

FIGURE 1-2. AERIAL PHOTO SHOWING LOCATION OF CCU BURNT STORE INJECTION WELL IW-1.



Run GeoLogic Consultsnts, Inc.	PROJECT NANE: BURNT STORE IW-J	
	PROJECT NUkIBER: 24-719	DATE: 1/14/2025

FIGURE 1—3. SCHEMATIC DIAGRAM SHOWING CCU BURNT STORE INJEC" TION WELL IW—1 CONSTRUCTION DETAILS.

Prior to conducting the MIT, the FDEP South District will be notified at least 7 days in advance should an FDEP representative wish to witness any portion of the testing.

A report will be prepared and submitted to CCU and the FDEP describing the procedures and results of the MIT. The report will be submitted within 90 days of completion of the MIT and will include copies of all geophysical logs, video surveys, pressure test log, and other supporting documentation collected during the MIT. The report will also include an evaluation of the injection well system monitoring data for the last five years.

The well contractor has not been determined. It is CCU's intent to select the well contractor through a bidding process after the plan is approved by the FDEP.

II. VIDEO SURVEY

A video survey will be conducted of the tubing interior and open-hole section of the well. Prior to conducting the video survey, potable water from the Burnt Store WTP will be injected into the well to increase the clarity for the video inspection. The volume of potable water injected will be equivalent to at least one tubing volume (i.e. 1,650 gallons). A visual inspection of the packer will be made to check for any corrosion, incrustations, or any other anomalies. Should the interior of the tubing be found to be heavily incrusted, such that an adequate inspection of its condition is determined to not be possible, the well contractor will brush the tubing interior with a specialized tool, designed for that purpose, and the video will be rerun.

The inspection of the open hole will be to detect any caving of the formation which could cause a restriction to the movement of injected fluid. An on-site RMA GeoLogic Consultants (RMA) hydrogeologist will witness the video survey and prepare an inspection log to be included in the final report of the MIT.

The video survey will be conducted by a qualified contractor selected through a bidding process.

III. ANNULAR PRESSURE TEST

The annular pressure tank will be isolated from the injection well annulus during the annular pressure test. This will be accomplished by closing the applicable valves on the system. The annular pressure of the annulus will then be increased to 180 psi. A pressure gauge, calibrated within the previous six months, will be used to measure pressure. Pressures will be recorded at five-minute intervals for a period 60 minutes. The annular pressure test will be considered successful if a pressure decline or increase of not more than 5% occurs during the 60 minute test period. A copy of the pressure gauge calibration certificate will be included, along with the annular pressure test results, in the final report. An on-site RMA hydrogeologist will witness the annular pressure test and prepare a record of the test to be included in the final report of the MIT.

After successfully completing the annular pressure test, the pressure gauge used for the test will be removed. If, during the annular pressure test, a decline or increase in pressure of more than 5% occurs, the test will need to be repeated after locating and sealing any pressure leaks identified in the wellhead fixtures. The FDEP will be provided with adequate notice of the scheduled time for any necessary repeat casing pressure test.

IV. HIGH RESOLUTION TEMPERATURE LOG

A high-resolution temperature log will be conducted in the well. The injection well will be shut in for a minimum of 12 hours prior to conducting the high-resolution temperature log. A temporary wellhead assembly will be installed to prevent the well from flowing during the period the high-resolution temperature log is conducted. The purpose of the temperature log will be to locate any leaks in the tubing; changes in temperature resulting from fluid movement can be identified by use of such a log. It will be witnessed by an on-site RMA hydrogeologist. A copy of the high-resolution temperature log will be included in the final report along with a descriptive analysis of the log.

The high-resolution temperature logging will be conducted by a qualified geophysical logging contractor selected through a bidding process.

V. RADIOACTIVE TRACER SURVEY

A radioactive tracer survey (RTS) will be conducted to determine whether any upward movement of injected fluid is occurring around the outside of the base of the casing. The RTS will be witnessed by an on-site RMA hydrogeologist. It will be conducted by a qualified geophysical logging contractor.

A Geiger counter survey will be performed by the geophysical logging contractor at the site prior to loading the radioactive tracer. The Geiger counter survey will be repeated prior to the geophysical logging unit demobilizing from the site. The results of the two surveys will be provided to RMA and included by RMA in the MIT report provided to CCU and the FDEP.

The RTS tool will be configured with a lower or bottom gamma ray tool (GRB), a casing collar locator (CCL), a middle gamma ray tool (GRM), a radioactive tracer ejector, and an upper or top gamma ray tool (GRT).

The radioactive tracer used will be Iodine-131. The Iodine-131 tracer will be placed in the RTS tool after the background survey at the site is completed. The volume of this material to be loaded into the ejector will be 5 millicuries. A laboratory certificate for this fluid will be obtained and a copy of the certificate will be provided in the final MIT report.

The initial portion of the RTS will be performed while the well is shut in. A background gamma ray (GR) log will be run from the base of the injection zone to land surface prior to releasing any radioactive fluid during a dynamic test.

During the dynamic RTS testing water will be injected into the well at a flow rate of not more than 5 feet per minute. Burnt Store injection well IW-1 is equipped with a 4-inch inside diameter injection tubing. Therefore, the flow rate into the well will be no more than 3 gpm. The RTS ejector will be positioned inside the casing and 5 feet above the base of the casing. An initial volume of 1 millicurie of the tracer will be ejected. The RTS tool will be held in place for a

period of 60 minutes to determine any upward movement of fluid as detected by the GRM and GRT tools.

After completing the initial dynamic RTS test, if necessary, the well casing will be flushed by injecting a minimum of one casing volume of water (i.e. 1,650 gallons). A GR log will then be run to 200 feet above the base of the casing. If any upward movement of the radioactive tracer is noted, the depth of the top of the tracer will be noted and several overlapping gamma ray passes will be performed to definitely determine the depth of the maximum upward movement of the tracer.

A second similarly conducted dynamic RTS test will then be performed using an eject volume of 2 millicuries, with the RTS tool held in place for a period of 30 minutes.

After completing the second dynamic RTS test, the well casing will be flushed by injecting a minimum of one casing volume of water. A GR log will then be run to 200 feet above the base of the casing.

After completing the dynamic RTS tests, any remaining radioactive tracer fluid will be ejected below the base of the casing. A final GR log will then be performed from the total depth of the well to land surface.

VI. OPERATIONAL DATA REVIEW

The last five years of operational data will be tabulated, graphed, and analyzed. This will include the injected water volumes, injection rates, injection pressures, annular pressures, and specific injectivities. The water level and water quality data from the dual zone monitoring well will also be tabulated, graphed, and analyzed. The data analyses will identify any anomalies and evaluate the operational effectiveness and integrity of the injection well system. Any appropriate modifications to the operational protocols will be recommended.

PROPOSED PROCEDURES FOR CONDUCTING MECHANICAL INTEGRITY TEST IN THE CHARLOTTE COUNTY UTILITIES EAST PORT WRF CLASS I INJECTION WELL IW-2, WACS 71655 CHARLOTTE COUNTY, FL

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Project # 24-622

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November 12, 2024

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I. INTRODUCTION

The Charlotte County Utilities (CCU) East Port Class I injection well (IW-2) is located at the East Port Water Reclamation Facility (WRF) site, which is at 3100 Loveland Boulevard, Port Charlotte, about two miles west of Interstate 75, on the north side of the Peace River (Figures 1-1 and 1-2). The well disposes of treated wastewater from the East Port WRF. Operation of East Port injection well IW-2 is regulated by Florida Department of Environmental Protection (FDEP) underground injection control (UIC) permit # 0330486-003-UO/1M. A mechanical integrity test (MIT) is required to be performed on IW-2 every five years. The last MIT was performed in this well on July 2, 2020. The FDEP operation permit for the well requires an MIT be performed in the well prior to July 1, 2025.

IW-2 is constructed with a 20-inch outside diameter (OD) steel injection casing set to a depth of 2,965 below land surface (BLS) and with an open-hole section to a depth of 3,246 feet BLS (Figure 1-3). The maximum permitted injection rate is 5,250 gallons per minute (gpm) which equates to a maximum daily rate of 7.56 million gallons per day (MGD).

The proposed MIT to be conducted prior to July 1, 2025 will consist of a video survey of the interior of the casing and the entire open-hole section of the well, a casing pressure test, a high resolution temperature log of the well, and a radioactive tracer survey (RTS).

During the period of the planned MIT, which should be completed within 5 days after mobilization of equipment to the site, injection into the well will be discontinued, the wellhead will be disassembled, and then the MIT will be conducted. After the MIT has been conducted, the wellhead will be reassembled, and the well will be put back into service.

During the period when the MIT is being conducted, excess treated wastewater will be directed to East Port injection well IW-1, to the 90 MG on-site storage ponds, reclaimed water customers, 45 MG reject pond, or to the on-site sprayfields.

Prior to conducting the MIT, the FDEP will be notified at least seven (7) calendar days in advance should an FDEP representative wish to witness any portion of the testing.

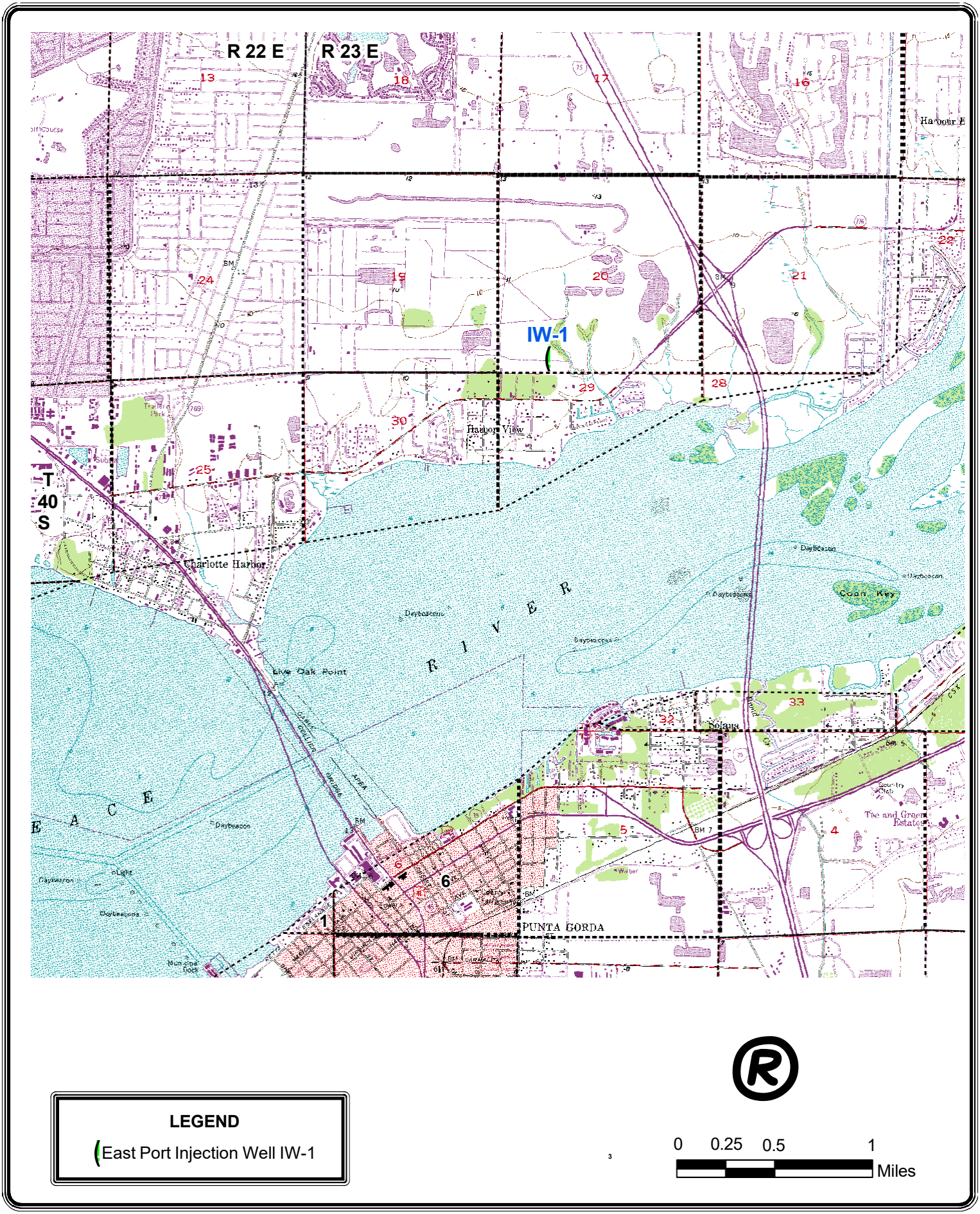
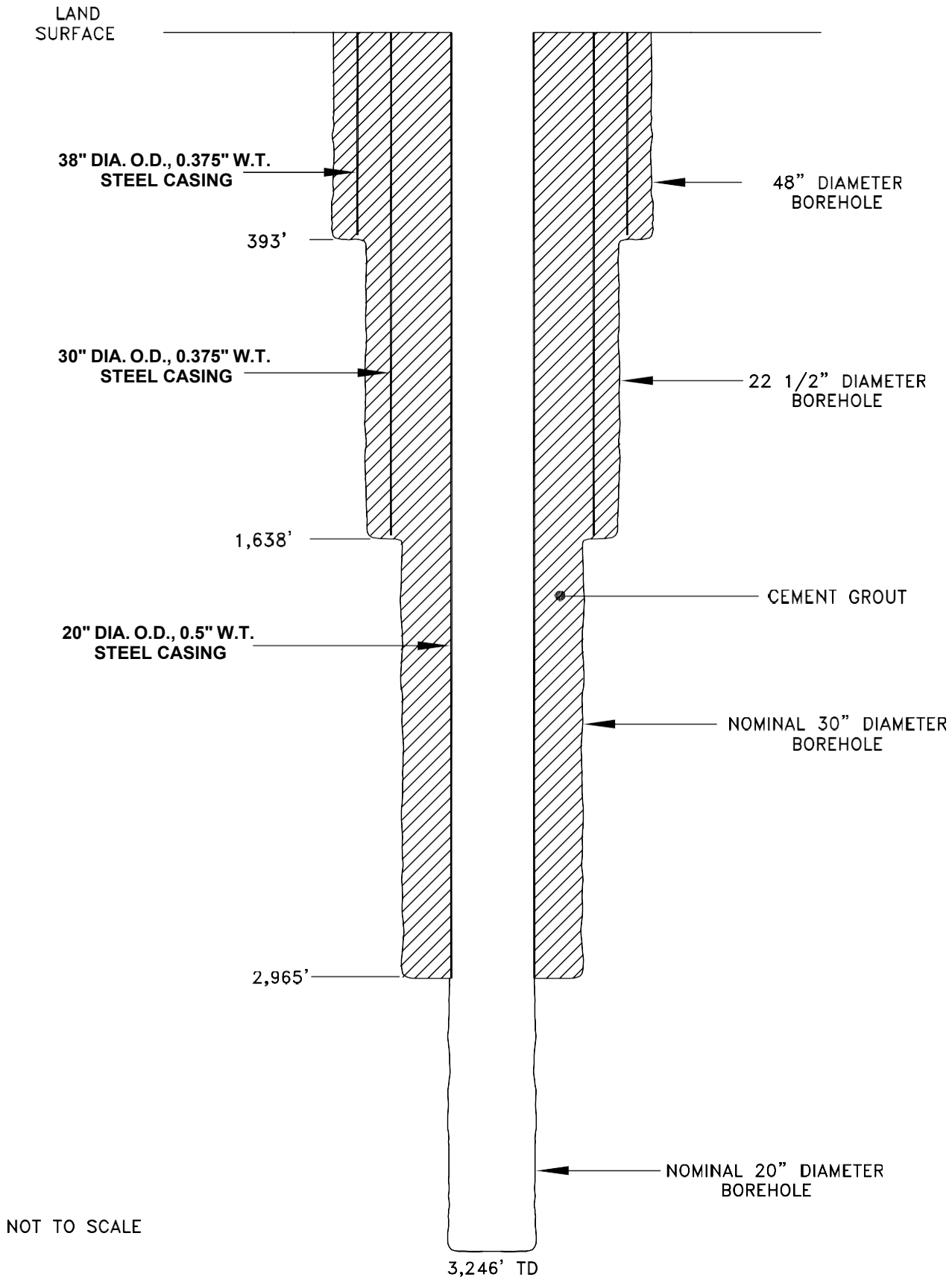


FIGURE 1-1. USGS TOPOGRAPHIC MAP SHOWING LOCATION OF CCU EAST PORT INJECTION WELL IW-1.

FIGURE 1-2. AERIAL PHOTO SHOWING LOCATION OF CCU EAST PORT INJECTION WELL IW-1.



RMA GeoLogic Consultants, Inc.	PROJECT NAME: EAST PORT IW-2	
	PROJECT NUMBER: 24-622	DATE: 11/10/2024

FIGURE 1-3. SCHEMATIC DIAGRAM SHOWING CCU EAST PORT INJECTION WELL IW-2 CONSTRUCTION DETAILS.

A report will be prepared and submitted to the FDEP describing the procedures, evaluation, and results of the MIT. The report will include copies of all geophysical logs, video surveys, pressure test log, and other supporting documentation collected during the MIT. The report will also include a review and evaluation of the injection well system operational data collected during the last five years.

The well contractor has not been determined. It is CCU's intent to select the well contractor through a bidding process after the plan is approved by the FDEP.

II. VIDEO SURVEY

A video survey will be conducted of the casing interior and open-hole section of the well. Prior to conducting the video survey, groundwater from the upper zone of the nearby dual zone monitoring well will be injected into the well to increase the clarity for the video inspection. The dual zone monitoring well will be used as the water source because there is no potable water source at the injection well site and no practical way to convey water from the East Port WRF, located about 0.75 miles away. The volume of water injected will be equivalent to at least one casing volume (i.e. 48,500 gallons).

A visual inspection of the casing will be made to check for any corrosion, incrustations, or any other anomalies. Should the interior of the casing be found to be heavily incrusted, such that an adequate inspection of its condition is determined to not be possible, the well contractor will brush the casing interior with a specialized tool, designed for that purpose, and the video will be rerun.

The inspection of the open hole will be to detect any caving of the formation which could cause a restriction to the movement of injected fluid. An on-site RMA GeoLogic Consultants (RMA) geologist will witness the video survey and prepare an inspection log to be included in the final report of the MIT.

The video survey will be conducted by a qualified contractor selected through a bidding process.

III. CASING PRESSURE TEST

An inflatable packer will be installed in the well casing to a depth of at least 2,945 feet BLS (i.e. within 20 feet of the base of the casing) by the well contractor. The packer will then be inflated, and the well will be pressurized to 180 pounds per square inch (psi). A pressure gauge, calibrated within the previous six months, will be used to measure pressure. Pressures will be recorded at five-minute intervals for a period of 60 minutes. The casing pressure test will be considered successful if the pressure declines or increases no more than 5% during the 60-minute test period. A copy of the pressure gauge calibration certificate will be included, along with the casing pressure test results, in the final report. An on-site RMA geologist will witness the casing pressure test and prepare a record of the test to be included in the final report of the MIT.

As indicated in the previous section of this plan, if the casing is found to be heavily encrusted with the video inspection, the packer assembly shall be equipped with a tool to allow brushing of the casing. The brush will be located below the inflatable portion of the packer. The diameter of the brush will be sufficient to fully contact the tubing interior. A minimum of two passes shall be performed over every work string joint. In no case will the brush assembly be allowed to enter the open-hole portion of the well. The proposed casing brush will be inspected and approved by RMA prior to its transport to the site.

After successfully completing the casing pressure test, the packer will be deflated and removed from the well. If, during the casing pressure test, a decline or increase in pressure of more than 5% occurs, the test will need to be repeated after locating and sealing any pressure leaks identified in the wellhead fixtures. The FDEP will be provided with adequate notice of the scheduled time for any necessary repeat casing pressure test.

IV. HIGH RESOLUTION TEMPERATURE LOG

A high-resolution temperature (HRT) log will be conducted in the well. The injection well will be shut in for a minimum of 12 hours prior to conducting the HRT log. A temporary wellhead assembly will be installed to prevent the well from flowing during the period the HRT log is conducted. The purpose of the temperature log will be to locate any leaks in the casing; changes in temperature resulting from fluid movement can be identified by use of such a log. It will be witnessed by an on-site RMA geologist. A copy of the HRT log will be included in the final report along with a descriptive analysis of the log.

The HRT logging will be conducted by a qualified geophysical logging contractor selected through a bidding process.

V. RADIOACTIVE TRACER SURVEY

A radioactive tracer survey (RTS) will be conducted to determine whether any upward movement of injected fluid is occurring around the outside of the base of the casing. The RTS will be witnessed by an on-site RMA geologist. It will be conducted by a qualified geophysical logging contractor.

A Geiger counter survey will be performed by the geophysical logging contractor at the site prior to loading the radioactive tracer into the logging tool. The Geiger counter survey will be repeated prior to the geophysical logging unit demobilizing from the site. The results of the two surveys will be provided to RMA and included by RMA in the MIT report.

The RTS tool will be configured with a lower or bottom gamma ray tool (GRB), a casing collar locator (CCL), a middle gamma ray tool (GRM), a radioactive tracer ejector, and an upper or top gamma ray tool (GRT).

The radioactive tracer used will be Iodine-131. The Iodine-131 tracer will be placed in the RTS tool after the background survey at the site is completed. The amount of this material to be loaded into the ejector will be 5 millicuries. A laboratory certificate for this fluid will be obtained and a copy of the certificate will be provided in the final report.

The initial portion of the RTS will be performed while the well is shut in. A background gamma ray (GR) log will be run from the base of the injection zone to land surface prior to releasing any radioactive fluid during a dynamic test.

During the dynamic RTS testing water will be injected into the well at a flow rate of not more than 5 feet per minute. The East Port Store injection well IW-2 is equipped with a 19-inch inside diameter injection casing. Therefore, the flow rate into the well will be no more than 73 gallons per minute (gpm). The RTS ejector will be positioned inside the casing and 5 feet above the base of the casing. An initial amount of 1 millicurie of the tracer will be ejected. The RTS tool will be

held in place for a period of 60 minutes to determine any upward movement of fluid as detected by the GRM and GRT tools.

After completing the initial dynamic RTS test, if necessary, the well casing will be flushed by injecting a minimum of one casing volume of water (i.e. 48,500 gallons). A GR log will then be run to 200 feet above the base of the casing. If any upward movement of the radioactive tracer is noted, the depth of the top of the tracer will be identified and several overlapping GR passes will be performed to definitely determine the depth of the maximum upward movement of the tracer.

A second similarly conducted dynamic RTS test will then be performed using an eject amount of 2 millicuries, with the RTS tool held in place for a period of 30 minutes.

After completing the second dynamic RTS test, the well casing will be flushed by injecting a minimum of one casing volume of water. A GR log will then be run to 200 feet above the base of the casing.

After completing the dynamic RTS tests, any remaining radioactive tracer fluid will be ejected below the base of the casing. A final GR log will then be performed from the total depth of the well to land surface.

VI. OPERATIONAL DATA REVIEW

The last five years of operational data will be tabulated, graphed, and analyzed. This will include the injected water volumes, injection rates, injection pressures, and specific injectivities. The water level and water quality data from the dual zone monitoring well (DZMW) will also be tabulated, graphed, and analyzed. The data analyses will identify any anomalies and evaluate the operational effectiveness of the injection well system. Any appropriate modifications to the operational protocols will be recommended.

PROPOSED PROCEDURES FOR CONDUCTING MECHANICAL INTEGRITY TEST IN THE CHARLOTTE COUNTY UTILITIES WEST PORT WRF CLASS I INJECTION WELL IW-1, WACS 71658 CHARLOTTE COUNTY, FL

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Project # 24-622

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November 8, 2024

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I. INTRODUCTION

The Charlotte County Utilities (CCU) West Port Class I injection well (IW-1) is located at the West Port Water Reclamation Facility (WRF) site, which is at 15005 Cattledock Point Road, Port Charlotte, about two miles south of El Jobean, on the west side of the Myakka River (Figures 1-1 and 1-2). The well disposes of treated wastewater from the West Port WRF and the Rotonda WRF. Operation of West Port WRF injection well IW-1 is regulated by Florida Department of Environmental Protection (FDEP) underground injection control (UIC) permit # 0330461-002-UO/1M. A mechanical integrity test (MIT) is required to be performed on IW-1 every five years. The last MIT was performed in this well on June 16, 2020. The FDEP operation permit for the well requires an MIT be performed in the well prior to June 15, 2025.

IW-1 is constructed with a 12.75-inch outside diameter steel injection casing set to a depth of 1,274 below land surface (BLS) and with an open-hole section to a depth of 1,650 feet BLS (Figure 1-3). The maximum permitted injection rate is 3,300 gallons per minute (gpm) which equates to a maximum daily rate of 4.75 million gallons per day (MGD).

The proposed MIT to be conducted prior to June 15, 2025, will consist of a video survey of the interior of the casing and the entire open-hole section of the well, a casing pressure test, a high-resolution temperature (HRT) log of the well, and a radioactive tracer survey (RTS).

During the period of the planned MIT, which should be completed within 5 days after mobilization of equipment to the site, injection into the well will be discontinued, the wellhead will be disassembled, and then the MIT will be conducted. After the MIT has been conducted, the wellhead will be reassembled, and the well will be put back into service.

During the period when the MIT is being conducted, treated wastewater will be stored in the on-site 20 MG reclaimed water storage ponds, distributed to reuse water customers in the combined central and west county reclaimed water distribution system, or sprayed on site at the restricted access sprayfields.

Prior to conducting the MIT, the FDEP will be notified at least seven (7) calendar days in advance should an FDEP representative wish to witness any portion of the testing.

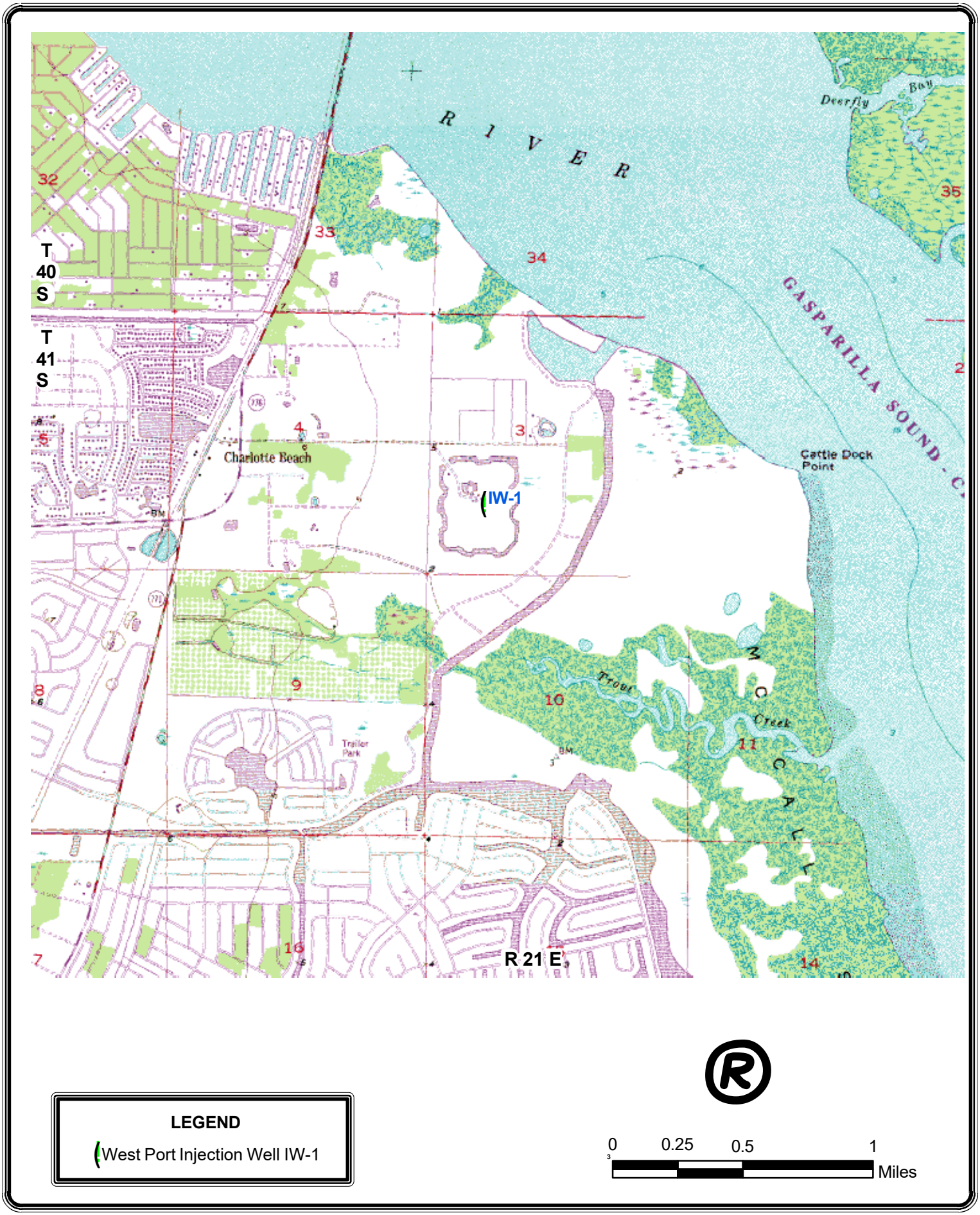
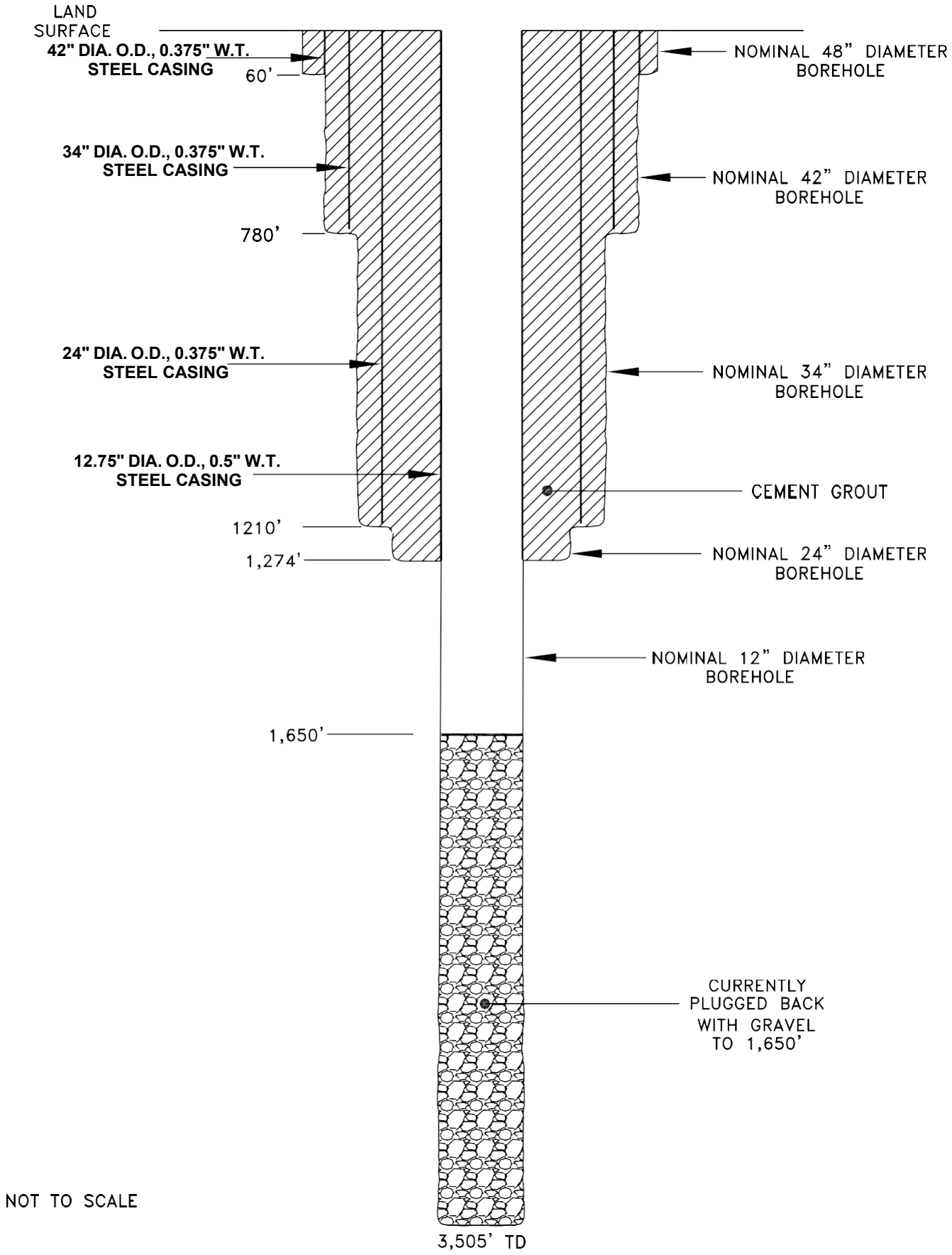


FIGURE 1-1. USGS TOPOGRAPHIC MAP SHOWING LOCATION OF CCU WEST PORT INJECTION WELL IW-1.

FIGURE 1-2. AERIAL PHOTO SHOWING LOCATION OF CCU WEST PORT INJECTION WELL IW-1.



RMA GeoLogic Consultants, Inc.	PROJECT NAME: WEST PORT IW SYSTEM	
	PROJECT NUMBER: 24-622	DATE: 11/8/2024

FIGURE 1–3. SCHEMATIC DIAGRAM SHOWING CONSTRUCTION DETAILS FOR WEST PORT INJECTION WELL IW–1.

A report will be prepared and submitted to the FDEP describing the procedures, evaluation, and results of the MIT. The report will include copies of all geophysical logs, video surveys, pressure test log, and other supporting documentation collected during the MIT. The report will also include a review and evaluation of the injection well system operational data collected during the last five years.

The well contractor has not been determined. It is CCU's intent to select the well contractor through a bidding process after the plan is approved by the FDEP.

II. VIDEO SURVEY

A video survey will be conducted of the casing interior and open-hole section of the well. Prior to conducting the video survey, potable water from a nearby fire hydrant from Charlotte County Utilities public water supply distribution system will be injected into the well to increase the clarity for the video inspection. The volume of potable water injected will be equivalent to at least one casing volume (i.e. 7,500 gallons).

A visual inspection of the casing will be made to check for any corrosion, incrustations, or any other anomalies. Should the interior of the casing be found to be heavily incrustated, such that an adequate inspection of its condition is determined to not be possible, the well contractor will brush the casing interior with a specialized tool, designed for that purpose, and the video will be rerun.

The inspection of the open hole will be to detect any caving of the formation which could cause a restriction to the movement of injected fluid. An on-site RMA GeoLogic Consultants (RMA) geologist will witness the video survey and prepare an inspection log to be included in the final report of the MIT.

The video survey will be conducted by a qualified contractor selected through a bidding process.

III. CASING PRESSURE TEST

An inflatable packer will be installed in the well casing to a depth of at least 1,254 feet BLS (i.e. within 20 feet of the base of the casing) by the well contractor. The packer will then be inflated, and the well will be pressurized to 180 pounds per square inch (psi). A pressure gauge, calibrated within the previous six months, will be used to measure pressure. Pressures will be recorded at five-minute intervals for a period of 60 minutes. The casing pressure test will be considered successful if a pressure decline or increase of not more than 5% occurs during the 60 minute test period. A copy of the pressure gauge calibration certificate will be included, along with the casing pressure test results, in the final report. An on-site RMA geologist will witness the casing pressure test and prepare a record of the test to be included in the final report of the MIT.

As indicated in the previous section of this plan, if the casing is found to be heavily encrusted with the video inspection, the packer assembly will be equipped with a tool to allow brushing of the casing. The brush will be located below the inflatable portion of the packer. The diameter of the brush will be sufficient to fully contact the tubing interior. A minimum of two passes shall be performed over every work string joint. In no case will the brush assembly be allowed to enter the open-hole portion of the well. The proposed casing brush will be inspected and approved by RMA prior to its transport to the site.

After successfully completing the casing pressure test, the packer will be deflated and removed from the well. If, during the casing pressure test, a decline or increase in pressure of more than 5% occurs, the test will need to be repeated after locating and sealing any pressure leaks identified in the wellhead fixtures. The FDEP will be provided with adequate notice of the scheduled time for any necessary repeat casing pressure test.

IV. HIGH RESOLUTION TEMPERATURE LOG

A high-resolution temperature (HRT) log will be conducted in the well. The injection well will be shut in for a minimum of 12 hours prior to conducting the HRT log. A temporary wellhead assembly will be installed to prevent the well from flowing during the period the HRT log is conducted. The purpose of the temperature log will be to locate any leaks in the casing; changes in temperature resulting from fluid movement can be identified by use of such a log. It will be witnessed by an on-site RMA geologist. A copy of the HRT log will be included in the final report along with a descriptive analysis of the log.

The HRT logging will be conducted by a qualified geophysical logging contractor selected through a bidding process.

V. RADIOACTIVE TRACER SURVEY

A radioactive tracer survey (RTS) will be conducted to determine whether any upward movement of injected fluid is occurring around the outside of the base of the casing. The RTS will be witnessed by an on-site RMA geologist. It will be conducted by a qualified geophysical logging contractor.

A Geiger counter survey will be performed by the geophysical logging contractor at the site prior to loading the radioactive tracer into the logging tool. The Geiger counter survey will be repeated prior to the geophysical logging unit demobilizing from the site. The results of the two surveys will be provided to RMA and included by RMA in the MIT report provided to the FDEP.

The RTS tool will be configured with a lower or bottom gamma ray tool (GRB), a casing collar locator (CCL), a middle gamma ray tool (GRM), a radioactive tracer ejector, and an upper or top gamma ray tool (GRT).

The radioactive tracer used will be Iodine-131. The Iodine-131 tracer will be placed in the RTS tool after the background survey at the site is completed. The amount of this material to be loaded into the ejector will be 5 millicuries. A laboratory certificate for this fluid will be obtained and a copy of the certificate will be provided in the final report.

The initial portion of the RTS will be performed while the well is shut in. A background gamma ray (GR) log will be run from the base of the injection zone to land surface prior to releasing any radioactive fluid during a dynamic test.

During the dynamic RTS testing water will be injected into the well at a flow rate of not more than 5 feet per minute. The West Port WRF injection well IW-1 is equipped with an 11.75-inch inside diameter injection casing. Therefore, the flow rate into the well will be no more than 28 gallons per minute (gpm). The RTS ejector will be positioned inside the casing and 5 feet above the base of the casing. An initial amount of 1 millicurie of the tracer will be ejected. The RTS

tool will be held in place for a period of 60 minutes to determine any upward movement of fluid as detected by the GRM and GRT tools.

After completing the initial dynamic RTS test, if necessary, the well casing will be flushed by injecting a minimum of one casing volume of water (i.e. 7,500 gallons). A GR log will then be run to 200 feet above the base of the casing. If any upward movement of the radioactive tracer is noted, the depth of the top of the tracer will be identified and several overlapping gamma ray passes will be performed to definitely determine the depth of the maximum upward movement of the tracer.

A second similarly conducted dynamic RTS test will then be performed using an eject amount of 2 millicuries, with the RTS tool held in place for a period of 30 minutes.

After completing the second dynamic RTS test, the well casing will be flushed by injecting a minimum of one casing volume of water. A GR log will then be run to 200 feet above the base of the casing.

After completing the dynamic RTS tests, any remaining radioactive tracer fluid will be ejected below the base of the casing. A final GR log will then be performed from the total depth of the well to land surface.

VI. OPERATIONAL DATA REVIEW

The last five years of operational data will be tabulated, graphed, and analyzed. This will include the injected water volumes, injection rates, injection pressures, and specific injectivities. The water level and water quality data from the dual zone monitoring well (DZMW) will also be tabulated, graphed, and analyzed. The data analyses will identify any anomalies and evaluate the operational effectiveness of the injection well system. Any appropriate modifications to the operational protocols will be recommended.