

CITY OF NORTH PORT**ASR PERMANENT FACILITY DESIGN, PERMITTING, CONSTRUCTION, AND CYCLE TESTING****SCOPE OF SERVICE**

This Scope of Services is for the Florida Department of Environmental Protection (FDEP) Underground Injection Control (UIC) construction permitting, permanent facility design and construction oversight, and start-up and testing of permanent Aquifer Storage and Recovery (ASR) well facilities at the City's Myakkahatchee Creek Water Treatment Plant (WTP). This effort includes Cycle Test 6, operational testing of the permanent facilities. The City's ASR Program is recognized in Southwest Florida Water Management District's (SWFWMD) Regional Water Supply Plans as a surface water option water supply project for Myakkahatchee Creek, SWFWMD Project K120. The items to be completed to satisfy Tasks 1 through 9 of this scope are listed below and the work plan to address each Task and subtasks are detailed in the following sections:

- 1) FY 2016 Quarterly and Annual Reporting
- 2) Design Plans
- 3) Construction Specifications
- 4) New UIC Construction Permit Application
- 5) Facility Construction Permitting
- 6) Bidding and Award of Construction of Surface Water Source Facilities
- 7) 2017 Monthly and Annual Reporting
- 8) Construction of Surface Water Source Facilities Oversight
- 9) Operational Cycle Test 6

Task 1 – 2016 Quarterly and Annual Reporting

Cardno is currently under contract for 2016 sampling and annual reporting. There is no additional fee for the completion of the remaining items in this task.

Task 2 – Design Plans

Cardno will provide the City with 60%, 90% and 100% design plans for the necessary piping, pumps, valves, controls, meters, and electrical connections for permanent facilities to take water from the surface water source and deliver the water to the existing ASR well and piping system.

The temporary facilities constructed for Cycle Test 5 will be modified as necessary to construct the permanent facility. In addition, permanent booster pumping, piping and electrical control and monitoring will be installed so that the facility is fully integrated into plant operations. Cardno will review the design as it is being developed with City of North Port staff for concurrence with the design.

Task 2 – Deliverables

60%, 90% and 100% design plans.

Task 2 – Time Line

Begin Design	01/01/2017
Complete Design	06/01/2017

Task 2 – Fee

The Lump Sum fee for Task 2 is \$81,650.

Task 3 – Construction Specifications

Cardno will provide the City with specifications at the 60%, 90% and 100% stages of plan preparation. The specifications will cover the anticipated construction activities and include general specifications and special conditions as required by the City of North Port.

Task 3 - Deliverables

60%, 90% and 100% design specifications.

Task 3 - Time Line

Begin Specifications	01/01/2017
Complete Specification	06/01/2017

Task 3 - Fee

The Lump Sum fee for Task 3 is \$10,000.

Task 4 – New UIC Construction Permit Application and Institutional Control Implementation Support

- a. Cardno will work with the City to prepare and submit an UIC construction permit application to request the use of partially treated surface water. Cardno and the City will meet with the FDEP and attend public meetings as needed to support the permit application. This includes advertisement of FDEP required permit notices and public meeting notifications. Cardno and the City will prepare for and run required public meetings and provide responses to any public or regulatory questions.
- b. The City will develop and implement, as needed, institutional controls as required by the UIC permit.

Based on consultations with FDEP, and review and analysis of Cycle Test 5 results, a new UIC construction permit application will be submitted for permanent facilities to minimally treat Myakkahatchee Creek surface water source and deliver the water to the existing ASR piping system. Institutional controls implemented by the City over the proposed area of influence (AOI) of the ASR system will be demonstrated for the permit application. The new construction permit will replace the existing UIC Permit Number 177979-007-UC/M5, which expires August 29, 2017.

Task 4A

Preliminary coordination may include two (2) meetings among representatives from the City, FDEP, and the SWFWMD to define the project constraints and adapt the program and necessary requirements for a new construction permit to allow for injection of water that may exceed primary and secondary drinking water standards (DWS).

A zone of discharge (ZOD) will be requested per Florida Administrative Code (F.A.C.) 62.520. Permitting a ZOD will allow exceedances of DWS within the groundwater system affected by the ASR recharge system. It is anticipated that the ZOD will be within the boundary of the property owned by the City. The permitting of a ZOD within the limits of property owned by the City will help demonstrate institutional control over the ASR. Additionally, the FDEP requires that a site boundary well be installed at the edge of the ZOD, however, the location of the existing ASR storage zone monitor well (SZMW-1) will allow the well to function as the site boundary well. No additional monitor well construction is proposed.

The following subtasks will be completed in coordination with the City and may be altered to meet regulatory constraints to the highest degree possible.

- Preliminary planning and hydrogeologic support for defining the City's proposed ZOD that is anticipated to be affected within the ASR storage zone. This subtask may include up to two (2) meetings with City personnel.
- Prepare and submit a permit application for a new UIC construction permit requesting construction of necessary piping, pumps, valves, controls, meters and electrical connections for permanent facilities to take water from the surface water source and deliver the water to the existing ASR piping system. The application will also include Cycle Test 6, operational testing of permanent facilities. Cycle Test 6 will use partially-treated surface water that may exceed DWS upon recharge. Cardno will participate with the City in meetings with the FDEP and attend public meetings as needed to support the permit application.
- Additional permit modification support for a response(s) to FDEP requests for additional information, relating to changes in the permitting process for Class V wells and anticipated regulatory comments. Although every effort will be made to address all issues surrounding the testing and operation of the facility, FDEP is likely to require the submission of additional information.

Task 4B

Demonstration of institutional controls will be provided for this permit application. Institutional controls demonstrate control of the recharged water by property ownership or control beyond the AOI. An Institutional Control is a land use control and consists of legal measures that limit human exposure by restricting activity, use, and access to properties. The ZOD is the mechanism the FDEP uses to allow exceedances of DWS within the groundwater system affected by the ASR recharge. The AOI

encompasses the calculated potential area that ASR operations currently affect or may affect after another 5 and 10 years of operation. Cardno will provide analytical analysis and numeric groundwater flow modeling to delineate the AOI based on the SWFWMD's District-Wide Regulation Model Version 3 (DWRM3) and MT3D model. The MT3D is a three-dimensional multispecies transport groundwater flow model. Cardno will work with the City to demonstrate the City's institutional control over the AOI. This will include demonstration of hydrostratigraphic and geographic isolation of the AOI.

Task 4 – Deliverable

Task 4 deliverable will include draft and final permit application and supporting reports and/or petitions. Draft documents will be presented electronically for review before final submission. Draft documents will be reviewed in a timely manner to ensure that the project schedule will not be impacted. Final documents will be prepared in PDF format and submitted electronically to the extent possible.

Task 4 – Time Line

Begin Permitting	01/01/2017
Complete Permitting	9/30/2017

Task 4 – Fee

The Lump Sum fee for Task 4 is \$28,500

Task 5 – Facility Construction Permitting

The permanent system will need to be permitted by submitting an FDEP “Application for a Specific Permit to Construct PWS Components”. Also a City of North Port Building Permit will be required. These permit applications can be submitted when the design plans and specifications are completed. This task includes the permit application submittal and the response to one Request for Information (RAI). Permit fees are not included.

Task 5- Deliverables

Deliverables – Permit applications, letters of response to RAI's (if needed)

Task 5 - Time Line

Begin Permitting	04/15/2017
Complete Permitting	06/01/2017

Task 5 - Fee

The Lump Sum fee for Task 5 is \$5,000.

Task 6 – Bidding and Award of Construction of Surface Water Source Facilities

Cardno will prepare bid documents for the construction of the surface water source facilities. The City will advertise the request for bids and hold a pre-bid meeting. Cardno will answer any bidder Requests for Information (RFI's).

After submission of Contractor bids, Cardno will evaluate the submittals and make a recommendation of award.

Task 6 – Deliverable

Deliverables - Engineer's recommendation of award, bidder RFI responses, (if required).

Task 6 – Time Line

Time Frame –07/01/2017 (Advertise Bid) to 09/30/2017 (recommend award)

Task 6 – Fee

The Lump Sum fee for Task 6 is \$11,000.

Task 7 – 2017 Monthly and Annual Reporting

Cardno proposes to conduct water quality sampling of the two existing monitor wells associated with the ASR system, prepare and submit required monthly operating reports (MORs), and prepare and submit an annual summary report for the previous calendar year's sampling and reporting. Currently, the system sampling is conducted on a weekly basis, but that schedule would return to SZMW-1 sampling bi-weekly and UZMW-1 monthly when the system is in the storage phase.

During storage phases, the tasks below will be conducted under the authorizations for the respective work elements:

- Monitoring well sampling and analysis in accordance with the UIC permit.
- Prepare monthly reports in accordance with the UIC permit.
- Prepare annual report in accordance with the UIC permit (will include graphical presentation of the water quality results and cumulative volume in storage).

Task 7A

Cardno will collect monitor well water quality samples in accordance with the UIC permit conditions and submit them to a State-certified NELAC laboratory for analysis. Cardno will measure dissolved oxygen (DO), oxidation-reduction potential (ORP), specific conductance, pH and temperature in the field whenever samples are collected for laboratory analysis. Quality control/quality assurance (QA/QC) review of the analytical reports will be performed soon after they are received.

Task 7B

Cardno will prepare monthly reports in accordance with the UIC permit. Draft documents will be presented electronically for review and revision before final submission. Draft documents will be reviewed in a timely manner to ensure that the project schedule will not be impacted. Final documents will be prepared in PDF format and submitted electronically to the greatest extent possible.

Task 7C

Cardno will provide the annual report in accordance with the UIC permit which will include graphical presentation of the water quality results and cumulative volume in storage. Draft documents will be presented electronically for review and revision before final submission. Draft documents will be reviewed in a timely manner to ensure that the project schedule will not be impacted. Final documents will be prepared in PDF format and submitted electronically to the greatest extent possible.

Task 7– Deliverable

Project deliverables will include draft and final MORs and annual summary report.

Task 7 – Time Line

Begin Monthly Reporting	01/01/2017
Complete Annual Report	01/31/2018

Task 7 – Fee

The fee for sampling and reporting presented in Tasks 7a and 7b is \$2,725 per month. For FY 2017 (Jan –Sep 2017) the Lump Sum Fee is **\$24,525**. For FY 2018 (Oct – Dec 2017) monthly sampling the Lump Sum Fee is **\$ 8,175**. The fee for 2017 annual report (FY 2018 Deliverable) is **\$6,000**. The total lump sum fee for Task 7 is **\$38,700**. This fee assumes that Cardno will provide related support services to the City as a part of this task, and not be responsible for the cost of laboratory analysis. Laboratory fees will be paid directly by the City.

Task 8 – Construction of Surface Water Source Facilities Oversight

The City will administer the construction contract and Cardno will provide oversight and inspection of the construction activities at the direction of the City. The City will process pay requests and pay the Contractor.

Cardno will be better able to refine this tasks and cost as progress is made on previous tasks. This task will include Cardno providing periodic inspection of the construction of the surface water source facilities to ensure they are in accordance with the Contract design and specifications. Cardno will review and approve shop drawing submittals. Cardno will review Contractor requests for changes and pay requests and make recommendations to the City. Cardno will attend start-up and testing of the facilities. Cardno will make the Record Drawings from the Contractor's as-builts and submit the Certification of completion of Construction.

Task 8 – Deliverable

City will submit executed construction contract and record drawings of the permanent facilities.

Task 8 – Time Line

Begin Construction	11/01/2017
Construction Complete	07/01/2018

Task 8–Fee

The upset amount for Task 8 is \$60,000. The fee may be less than \$60,000 but will not be greater. Upon completion of Tasks 2, 3, 5, and 6 detailed above, the fee for task 8 will be better refined.

Task 9 – Operational Cycle Test 6

Cardno will assist the City with Cycle Test 6 by providing work elements that include monitoring, sampling, reporting events, and preparation of a completion report with recommendations.

Task 9A – Cycle Test

The proposed Cycle 6 injection cycle will consist of 60 million gallons of minimally treated surface water to be injected over a 30 to 35 day period, 25 days of subsurface storage, and up to 30 million gallons of water recovery. System operation and maintenance activities must be conducted on a weekly schedule regardless of the cycle duration. The duration of this cycle test is expected to be between three and five months.

Cardno will assist during startup and help troubleshoot routine problems that may occur. We will conduct weekly site visits during ASR injection and recovery and weekly visits during the storage period to collect water samples and operational data for the ASR system.

For the purposes of this proposal, it is assumed that actual operation of the system and any required repairs or equipment replacement will be the responsibility of the City. It is also assumed that the semi-annual calibration of all gages and instruments (pressure transducers, flow meters, etc.) required by the permit will be performed by the City. The City will provide calibration reports for meters and pressure transducers prior to the commencement of testing.

Task 9B – Water Quality Sampling and Analyses

Samples of the injected water, recovered water, and monitor wells will be collected in accordance with the pending UIC permit conditions and will be submitted to a State-certified NELAC laboratory for analysis. Cardno will measure dissolved oxygen (DO), oxidation reduction potential (ORP), specific conductance, pH and temperature in the field whenever samples are collected for laboratory analysis. Quality control/quality assurance (QA/QC) review of the analytical reports will be performed soon after they are received. All laboratory fees will be paid directly by the City, but Cardno will be responsible for collection and transportation of the samples to the laboratory.

Task 9C – Water Quality and Injection/Recovery Rate Reporting

Cardno will download data recorded from the ASR well and monitor well pressure transducers and flow meters maintained by TriNova. The operational data collected will be reviewed by the project manager for quality assurance purposes. Water quality and injection/recovery rates will be summarized in spreadsheet format on a monthly basis. Recommendations will be made as needed to help optimize system performance.

Task 9D – Monthly Operation Reports

The data collected during the testing will be compiled by Cardno in worksheet tables using Microsoft™ Excel software and provided to the City for monthly operating report (MOR) submittals.

Task 9E – Evaluate Recovered Water Impacts on Water Produced by the Existing Water Treatment Plant

Cardno will provide assistance to the City in determining how the quality of water recovered from the ASR well will affect the finished water from the City's existing treatment system. The evaluation of the impacts will include calculations based on the water quality analytical data collected during the recovery cycle, water quality data provided by the City, and data and input from the City's water treatment process engineer.

Task 9F – Evaluate and Determine if Changes Are Necessary to the Entry Point of the Recovered Water Back Into the System for Public Consumption

Cardno will provide assistance to the City and the City's water treatment process engineer in evaluating if changes are necessary to the entry point of the recovered water back into the system for public consumption.

Task 9 – Deliverable

Cardno will compile and evaluate data collected during the cycle test and prepare a technical memorandum describing the results, and provide recommendations for the future use of the ASR system.

The technical memorandum will summarize the injection flow and wellhead pressure data collected during injection and the pumping rate and drawdown data collected during the recovery period. The memorandum will detail the water quality sampling parameters and methods, and will evaluate the

analytical results, and potential water quality impacts to the treatment process. The report will provide an assessment of the level of success and the potential for an operational ASR system based on the use of minimally treated surface water and if deemed necessary by FDEP, will provide recommendations for future cycle tests.

Task 9– Time Line

Begin Cycle Test 6:	07/01/2018
Complete Cycle Test 6:	12/30/2018
Submit Test Report:	01/31/2019

Task 9–Fee

The upset amount for Task 9 is \$93,000. Upon completion of Tasks 2-6 detailed above, the fee for task 9 will be better refined. This fee assumes that Cardno will provide related support services to the City as a part of this task, and not be responsible for the cost of laboratory analysis. Laboratory fees will be paid directly by the City.

Task 10 – New Operational UIC Permit Application

Based upon findings from Operational Cycle Test 6, Cardno will work with the City to prepare and submit a UIC operational permit application to request the use of the permanent ASR facility for recharge and recovery of partially treated surface water. Cardno and the City will meet with the FDEP and attend public meetings as needed to support the permit application. This includes advertisement of FDEP required permit notices and public meeting notifications. Cardno and the City will prepare for and run required public meetings and provide responses to any public or regulatory questions.

Task 10– Time Line

Begin Permitting	02/28/2019
Complete Permitting	09/30/2019

Task 10– Planning Level Fee

The upset amount for Task 10 is \$25,000.

Task 11 – 2018 January- June Monthly Monitoring and Reporting

Cardno proposes to conduct water quality sampling of the two existing monitor wells associated with the ASR system, prepare and submit required monthly operating reports (MORs) for the time period of January thru June 2018 when the system is anticipated to be in storage phase prior to commencing Cycle Test 6 in July of 2018. Cardno will conduct the monthly monitoring and reporting during storage phase for these months as detailed in Task 7. Between July and December 2018, monthly monitoring and annual reporting (2018) during recharge, storage, and recovery during the Operational Cycle Test 6 are included in the Fees for Task 9.

Task 11– Deliverable

Project deliverables will include draft and final MORs.

Task 11– Time Line

Begin Monthly Monitoring	01/01/2018
Complete Monthly Monitoring	06/30/2018

Task 11– Fee

The fee for sampling and reporting is \$2,725 per month, for Jan –Jun 2018. The Lump Sum Fee is **\$16,350**. This fee assumes that Cardno will provide related support services to the City as a part of this task, and not be responsible for the cost of laboratory analysis. Laboratory fees will be paid directly by the City.

Assumptions

- The City will pay all laboratory fees for water quality sample analysis
- The 2018 monthly reporting and monitoring fees required during January 2018 thru June 2018 are included in Task 11. Monitoring and annual reporting during recharge, storage, and recovery during the Operational Cycle Test 6 are included in the Fees for Task 9.
- The City will provide advertisement of FDEP required permit notices and public meeting notifications. The City will prepare for and host required public meetings and provide responses to any public or regulatory questions.
- Cost increases resulting from the imposition of new rules, laws, or restrictions by the state legislature, water management districts, or local governments are not included in the cost of this scope of services.
- The cost of appearances or presentations to hearing officers or administrative law judges are not included in this scope.

Fee Schedule

Task	Description	Start Date	End Date	Fee
1	2016 Sampling and Annual Reporting	Complete	Complete	\$0.00
2	Design Plans	12/01/2016	06/01/2017	\$ 81,650
3	Construction Specifications	12/01/2016	06/01/2017	\$10,000
4	New UIC Construction Permit	12/01/2016	09/30/2017	\$28,500
5	Facility Construction Permitting	04/15/2017	06/01/2017	\$5,000
6	Bidding and Award of Construction of Surface Water Source Facilities	07/01/2017	09/30/2017	\$11,000
7	2017 Monthly and Annual Reporting (Jan-Sep 2017)	01/01/2017	09/30/2017	\$24,525
	Sub-Total FY 2017			\$160,675
7	FY 2017 Monthly Sampling and Annual Reporting (Oct –Dec 2017)	10/1/2017	01/31/2018	\$14,175
8	Construction of Surface Water Source Facilities Oversight	11/1/2017	07/01/2018	\$60,000
9	Operational Cycle Test 6 (including Monthly Sampling July 2018-Sept 2018)	7/1/2018	09/30/2018	\$31,000
11	2018 Monthly Sampling and Annual Reporting (Jan-June 2018)	1/1/2018	06/30/2018	\$16,350
	Sub-Total FY 2017-2018			\$121,525
9	Operational Cycle Test 6 (including Monthly Sampling Oct 2018-Dec 2018 and Annual Reporting)	10/1/2018	01/31/2019	\$62,000
10	New Operational UIC Permit Application	2/28/2019	9/30/2019	\$25,000
	Sub-Total FY 2018-2019			\$87,000
Total				\$369,200