



INFORMATION SHARING PLAN

Revision date: February 23, 2023

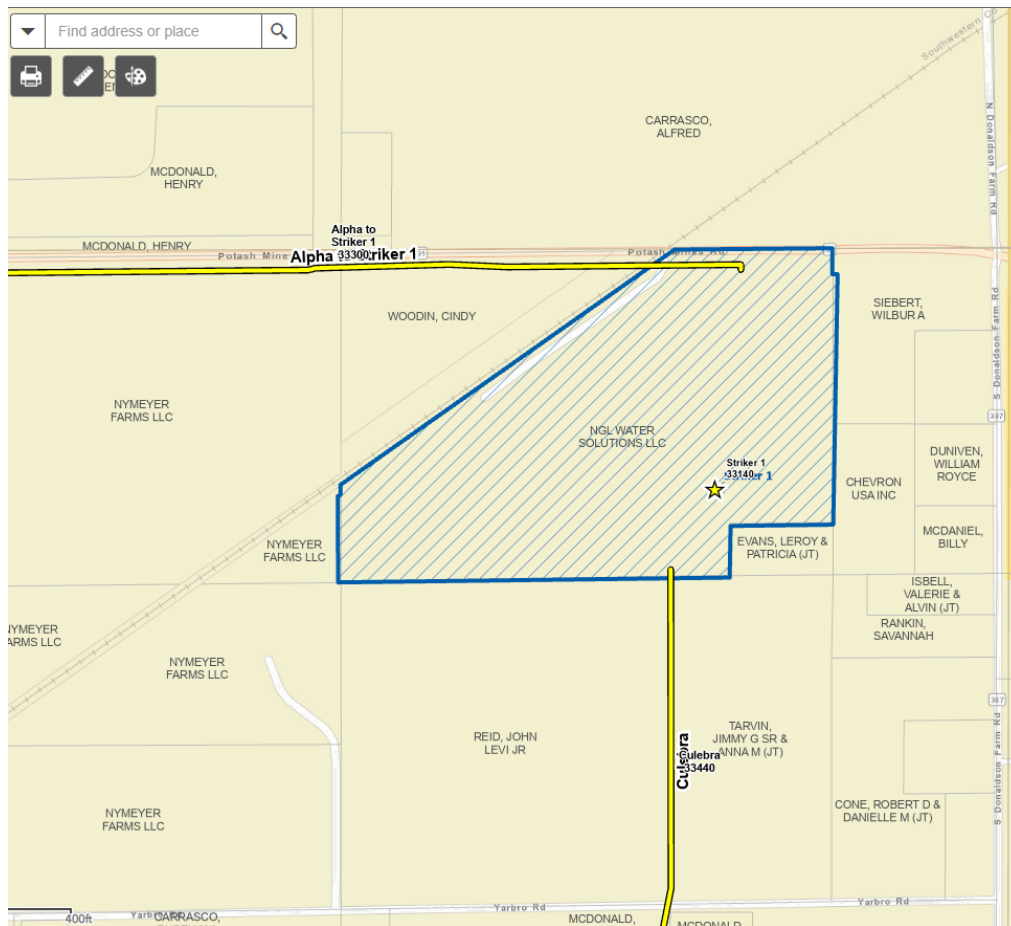
1. Name of Company (the "Applicant"): Sunvapor, Inc.
2. Address: 145 N Sierra Madre Blvd, Suite 3, Pasadena, CA 91107
3. Contact person and information: Philip Gleckman, email: philip.gleckman@sunvapor.net, Telephone: (650) 625-7818
4. Type of Project: Solar Produced Water Desalination Pilot Demonstration
5. The Applicant affirms that the project will be conducted as a closed loop system
6. Basin of origin of produced water to be used: Permian Basin
7. Project: The technology testing takes place adjacent to a Salt Water Disposal Well which serves oil and gas produced water
8. The proposed use of the treated produced water is for analysis only, to provide information to support the NMPWRC's efforts to evaluate the potential for future re-use outside of the oil and gas field.
9. The funding will be provided by the Department of Energy's Solar Desalination Prize, if awarded.
10. Company description: Founded in 2014, Sunvapor is a leading solar process heat company that has developed solar steam, energy storage, and desalination technologies with several awards from the US Department of Energy. Based in Pasadena, CA, Sunvapor designed, built, and operates the country's only operating solar boiler for industrial process heat. Sunvapor has won the first two phases of the prestigious Solar Desalination Prize from the US Department of Energy for its patented hybrid membrane process. Website: <http://www.sunvapor.net/>
11. Executive Summary: The planned pilot demonstration represents the final phase of the US Department of Energy's Solar Desalination Prize and is intended to provide data on the performance of the patented hybrid solar desalination system when applied to produced water. The equipment to be installed includes a solar thermal heat collection and steam generation system engineered by Sunvapor, a pre-treatment train to condition the raw produced water for use in the hybrid desalination system proven in the laboratory of Prof. Childress at USC, and the hybrid desalination process itself involving coupling commercial membrane distillation modules supplied by Aquastill to a falling film evaporator designed by Veolia. The equipment will be installed on land owned by NGL Energy Partners associated with an existing SWD well and produced water treatment train. Prior to injection in the well, produced water pretreated at NGL will be further treated by Sunvapor's process to create a concentrated brine stream and a distillate stream, and substantially all of it will be recombined and returned to the SWD well for disposal. A very small portion of the Sunvapor system distillate and the feedwater to the Sunvapor system (pre-treated produced water) will be sampled for evaluation by the NM Produced Water Research Consortium to evaluate the suitability of the distillate for future re-use and to establish the performance of the solar desalination system relative to performance metrics. The intent of the project is to operate the facility for at least one year, monitor performance, provide samples for evaluation, and invite stakeholders including the DOE and the Consortium to validate the performance as part of Sunvapor's application for the "Test" phase Prize at the conclusion of the demonstration period. Information gained from the pilot demonstration will inform the design of a future commercial upscale of Sunvapor's Hybrid Solar

Desalination process, provide data on treated water suitability for reuse, and allow NGL and other Consortium members to evaluate the process.

12. The Project Goals are to:
 - (a) Demonstrate at least 1 year of successful operation of the solar hybrid desalination process
 - (b) Provide at least monthly samples of distillate and feedwater for evaluation
 - (c) Meet or exceed estimated Technology Performance Metrics (See Metrics below)
 - (d) Develop feasibility level (+/- 25% accuracy) estimate of levelized cost of produced water
13. Site location: Property is located at 32.310 N, -104.070 W, API-30-015-44406
14. Driving instruction from Albuquerque

285 south past Carlsbad, 31 East, just before bridge over Pecos.
15. Site description: The site is an existing SWD well facility used for produced water treatment and disposal.
16. Land status: NGL Owned, 46 acres.
17. No parts of the project will be conducted or sourced within the exterior boundaries of a Native American reservation
18. List of all landowners adjacent to proposed project location

Alfred Carrasco, Cindy Woodin, Nymeyer Farms LLC, John Levi Reid Jr, Jimmy G Sr. and Anna M Tarvin, Leroy and Patricia Evans, Chevron USA Inc., Wilbur A Siebert



19. The source of the adjacent landowner data



The data is from NGL GIS

20. The Applicant confirms that adjacent owners have been notified regarding the proposed project

21. Proposed schedule for testing; dates and duration:

Task Name	Duration	Start	Finish
Testing Phase	290 days	Tue 9/1/23	Mon 10/10/24
Baseline Operation	140 days	Tue 9/1/23	Mon 3/14/24
Initial Performance Assessment and Tuning	5 days	Tue 9/8/23	Mon 9/14/23
3 Month Detailed Performance Assessment	10 days	Tue 11/24/23	Mon 12/7/23
6 Month Detailed Performance Assessment	10 days	Tue 2/16/24	Mon 2/29/24
Minimal PT Operation	140 days	Tue 3/15/24	Mon 9/26/24
Minimal PT Initial Performance Assessment and G/NG	5 days	Tue 3/22/24	Mon 3/28/24
9 Month Detailed Performance Assessment	10 days	Tue 6/7/24	Mon 6/20/24
Final (12 Month) Detailed Performance Assessment	10 days	Tue 9/27/24	Mon 10/10/24
NREL/DOE Observation and Assessment of System Operation	5 days	Tue 8/16/24	Mon 8/22/24

22. Technology Performance Metrics

- (a) Water Recovery >50%
- (b) Gain output ratio (GOR) >4.5
- (c) Distillate TDS <300 ppm
- (d) Distillate TOC <1 ppm

(These Values assume 120,000 ppm TDS feed. Values given here may be adjusted for actual observed feed TDS level.)

23. Treatment system design and process

A process flow diagram of the core portion of the treatment system is shown below (pre-treatment and final polishing and recombination and reinjection portions of the process are not shown but are described below).



in the condensing heat exchanger (state point 9a) and used to provide heat to the MD process. The distillate streams are combined in the condenser (E-001) where they are exposed to a mild vacuum and elevated temperatures which will assist in liberation of residual volatile organic compounds before being pumped up to atmospheric pressure (P-301) and passed through a filter containing granular activated carbon (GAC) as a final polishing step. A portion may be used for desuperheating (state point 12) or as feedwater for solar steam generation (state point 13) that will remain within the treatment system. Measurements or samples will be taken from the final distillate product, after which both the distillate and concentrate streams will be recombined and send back to the SWD well facility for ultimate disposal via injection into the well.

24. Emergency response plan for spills or releases of produced water or treated produced water
The Project will adhere to NGL's existing SPCC plan
25. Disposal and decommissioning plan: Before removal from the site, all equipment that has come into contact with produced water will be rinsed with the resulting water collected for disposal in the well.
26. The Applicant certifies to fully comply with all Consortium requirements and guidance documents related to Guidance on Produced Water Sampling Procedure, and Guidance on Produced Water Treatment Research, Development, and Demonstration Testing and Evaluation