

May 19, 2023



North Dakota Industrial Commission  
State Capitol – Fourteenth Floor  
600 East Boulevard Avenue  
Bismarck, ND 58505

**Re: Project titled “Unlocking the Full Potential of Produced Water as a Key Component of Clean Sustainable Energy”**

To NDIC & Clean Sustainable Energy Authority Program:

Triple 8 LLC dba Wellspring Hydro (WH) is submitting this application for grant and loan funds under the North Dakota Industrial Commission Clean Sustainable Energy Authority Program. This project initiates the commercialization of a business plan submitted in an earlier NDIC CSEA grant in December 2021, that supported the completion of FEL-3 engineering and design.

Wellspring Hydro will utilize a unique feedstock from oilfield brines (a.k.a. produced water) that presently is treated and pumped into disposal wells. Wellspring Hydro’s project will produce three commercially essential products (and lithium extraction) in a sustainable format that will diversify North Dakota’s economy, bolster existing industries with an improved cost position, and drive clean sustainable energy.

Wellspring Hydro, a North Dakota company, is at Financial Investment Decision (FID) to execute a strategy to commercialization of an estimated \$250 million dollar treatment facility. When completed this business will:

1. create 53 new full-time jobs and 200+ local contractors to build.
2. generate new local products and tax revenues for North Dakota.
3. enhance North Dakota’s economic diversity, sustainable energy, and environmental outlook.
4. create feedstocks from other valuable materials in the future, including lithium.

We are requesting \$5,000,000 in grant funds and \$50,000,000 in loan funds from the Clean Sustainable Energy Authority Program of the North Dakota Industrial Commission. In return, Triple 8 LLC commits to matching the funds and remaining capital with equity investment.

If you have any questions or require additional information, please do not hesitate to contact Mark Watson 281-813-6735 or [mark@wellspringhydro.com](mailto:mark@wellspringhydro.com).

Mark Watson  
CEO  
Wellspring Hydro

## APPLICATION CHECKLIST

*Use this checklist as a tool to ensure that you have all of the components of the application package. Please note, this checklist is for your use only and does not need to be included in the package.*

<input checked="" type="checkbox"/>	Application
<input checked="" type="checkbox"/>	Transmittal Letter (Included in Application)
<input checked="" type="checkbox"/>	Tax Liability Statement (Appendix)
<input checked="" type="checkbox"/>	Letters of Support (Appendix)
<input checked="" type="checkbox"/>	Confidentiality Request (Attached)
<input checked="" type="checkbox"/>	Business Plan (Attached)
<input checked="" type="checkbox"/>	Historical Financial Statements (3 years Included in Business Plan)
<input checked="" type="checkbox"/>	Budgeted Projections (Included in Business Plan)
<input checked="" type="checkbox"/>	Loan/Loan Guarantee Application (Attached)
<input type="checkbox"/>	Other Appendices (If Applicable)

When the package is completed, send an electronic version to [sustainableenergy@nd.gov](mailto:sustainableenergy@nd.gov) and 2 hard copies by mail to:

Clean Sustainable Energy Authority  
North Dakota Industrial Commission  
State Capitol – 14<sup>th</sup> Floor  
600 East Boulevard Ave Dept 405  
Bismarck, ND 58505-0840

For more information on the application process please visit:  
<http://www.nd.gov/ndic/csea-infopage.htm>

Questions can be addressed to Al Anderson (701) 595-9668.

Clean Sustainable Energy Authority  

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North Dakota Industrial Commission

## Application

**Project Title: Unlocking the Full Potential of Produced Water as a Key Component of Clean Sustainable Energy**

**Applicant: Mark Watson**

**Date of Application: May 18, 2023**

**Amount of Request**

**Grant: \$5,000,000 USD**

**Loan: \$50,000,000 USD**

**Total Amount of Proposed Project:  
\$250,886,700 USD**

**Duration of Project: 26 Months**

**Point of Contact (POC): Mark Watson**

**POC Telephone: (281) 813-6735**

**POC Email: mark@wellspringhydro.com**

**POC Address: 4828 Highway 85 Williston, ND  
58801**

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## ABSTRACT

### Background:

Wellspring Hydro is a locally founded North Dakota company with a mission to unlock the full potential of produced water as a feedstock for sustainable, clean energy. Wellspring Hydro is requesting financial support for commercialization of an innovative solution that will diversify the state's economy through an environmental solution. The Wellspring Hydro process is based on combining proven technologies in a novel way to develop products from various renewable components, including produced water waste stream as the key feedstock.

Wellspring Hydro's project will produce commercially essential commodity products in the State of North Dakota in a sustainable format that will diversify the economy, bolster existing industries (clean sustainable energy), and operate with a vision of zero waste or harmful emissions.

Wellspring Hydro was awarded a \$1 M grant from the Clean Sustainable Energy Authority (CSEA) in December 2021 focused on the execution of the FEL-3 engineering and design study to position for commercialization. Wellspring hydro is in the final steps to complete this critical stage before Financial Investment Decision (FID) by utilizing these grant funds, an equity match from Hargrove Engineers and other private equity investment. The FEL 3 engineering study (led by Hargrove Engineers and Constructors) was completed in May 2023, with final cost estimates expected to be completed by June 2023. The purpose of the FEL 3 study was to provide a +/- 10% estimate for a 150 ton per day chlor-alkali plant to be located outside of Williston, ND.

The overall salt recovery process design has been validated through four independent bench-scale testing performed in 2021, 2022 and 2023. The quality of salt contained in North Dakota's geology has proven to be of high quality, more than adequate for chlor-alkali use. The salt in North Dakota is only second to Chilean Salt which is considered by many to be the Gold Standard. Due to the quality and significant quantity of salt in North Dakota, Wellspring Hydro has the technical feasibility of success to progress the project.

Wellspring Hydro's cost to build and install a new greenfield 150 STPD membrane plant in Williston, North Dakota, is \$250 million. With an IRR of 21%- and 5-year payback, this project on its own merits is a crucial investment for the state of North Dakota, aligned with the intent of the Clean Sustainable Energy Authority's mission.

**Objectives:**

Finalize, execute, and deliver.

	Key Deliverables	Funds	Results
1	<b>Field Validation – Technology and Commercial</b>	\$4.0 M	The critical objective is to demonstrate technical viability in the field (in multiple stages and scopes), to receive the commercial assurances provided by performance guarantees from technology providers.
2	<b>Initial Detail Design</b>	\$6.0 M	The critical objective is the completion of Initial Detailed Design to finalize technology vendors and identify the procurement of specialized technology and long-lead items as a prerequisite for objective 3.
3	<b>Procurement of Specialized Equipment</b>	\$100.0 M	The critical objective is to secure specialized and long-lead item equipment to meet overall timeline. The objective will require early funds to complete “Issue for Purchase” (IFP) technical packages with vendors and make initial downpayments on equipment.
4	<b>Detailed Engineering Plan</b>	\$8.5 M	The critical objective is to continue detailed engineering in parallel to early construction in preparation for equipment installation and process start-up.
5	<b>Construction &amp; Plant Start-up</b>	\$ 131.5 M	The critical objective is to execute engineering plans of all construction activities required from onsite mobilization through construction completion and pre-commissioning for a seamless implementation of the full-scale facility.

- Indicates Grant Funds
- Indicates Loan Funds

**Expected Results:**

The primary result is to complete the construction and start-up of the Wellspring Hydro Chlor-alkali facility by Q4 2025.

Key Deliverables	Results
<p><b>Validation of Technology in the Field</b></p>	<p>Technology validation of a field trial designed to create high-quality salt from Bakken produced water based on the proposed Wellspring Hydro process. This will yield performance guarantees with the technology provider and final assurances in the proposed process.</p>
<p><b>Lithium Extraction</b></p>	<p>As a component of the field trial process and Initial Detailed Design, Wellspring Hydro will be able to develop the lithium extraction process of the “mother liquor” stream. There are multiple technology providers that have completed initial feasibility and will progress to Equipment proposals.</p>
<p><b>Production of High Value Commodity Products</b></p>	<p>Wellspring Hydro’s project will produce commercially essential commodity products Caustic Soda and Hydrochloric Acid. Both products have current demand in industrial and energy sectors and future demand in the support of clean sustainable energy (Carbon Capture, Oil &amp; Gas production, and lithium extraction).</p>
<p><b>Sustainable Use of Produced Water Waste</b></p>	<p>40+% reduction in produced water that enters the plant will be realized, along with the creation of all process fresh water needs from the treated condensate stream off the crystallizer. Value is created from what is currently wasted.</p>
<p><b>Financial Impact</b></p>	<p>The business is projected to have a year one of \$82.6 M revenue and support fifty-three full-time employees. The current unleveraged financial returns yield a 21.7% IRR and \$170.0 M NPV. Year 1 EBIDTA is expected to be \$54.0 M with steady performance within +/- 5% consistency through year 5 EBIDTA at \$53.8 M. The full-rate state tax on product sales is expected to be ~\$5.5 M per year.</p>

 Indicates Grant Funds

 Indicates Loan Funds

**Duration:**

The detailed design, construction and start-up is expected to take 24-26 months after the Financial Investment Decision, planned for September 2023.

**Critical Milestones**

Milestone	Milestone Date
FEL-3/DD Kick-off Meeting	15 Feb 23
FEL-3 Complete	15 Jun 23
Financial Investment Decision (FID)	01 Sep 23
Field Validation – Technology and Commercial	01 Nov 23
Initial Detailed Design	01 Dec 23
Procurement of Specialized Equipment	01 Jan 24
Detail Design Complete	23 Jun 24
Construction Mobilization	04 Jan 24
All Major Equipment	03 Oct 24
Mechanical Completion	05 Sep 25
Start-Up	31 Oct 25

Grant funds will be allocated to Field Validation – Technology and Commercial and Initial Detailed Design, expected to be completed by December 1<sup>st</sup>, 2023. The timeline for these grant deliverables is expected to be 5-6 months total from funding.

Loan funds will be allocated on procurement of specialized equipment, expected to begin immediately after funding through January 1<sup>st</sup>, 2024. The prerequisite for the procurement process is the completion of initial detailed design, led by Hargrove Engineers.



## Total Project Cost:

Capital Estimates	Cost in USD
Technical and Commercial Viability	\$4,000,000.00
Front-End Engineering & Design	\$6,000,000.00
Working Capital	\$3,694,040.00
Upfront Land & Development	\$1,506,550.00
Labor	\$17,016,249.86
Material	\$6,665,618.00
Indirect Labor/Construction Equipment	\$3,101,831.00
Subcontract	\$32,065,894.00
Material Sales Tax	\$533,250.00
Freight-Equipment	\$1,074,214.00
Contractor's Mark-Up	\$666,562.00
Process & E/I Equipment - SWD	\$8,000,000.00
Process & E/I Equipment - Front-End	\$30,000,000.00
Process & E/I Equipment - Chlor-Alkali	\$60,036,505.00
Detailed Engineering	\$8,500,000.00
Procurement & Start-up Support	\$2,675,328.00
CM Services	\$5,350,658.00
Home Office & Contingency	\$60,000,000.00
<b>Total</b>	<b>\$250,886,700</b>

 Indicates Grant Funds

 Indicates Loan Funds

**Participants:** Identified partners for execution of Grant and Loan request. Additional partner information is available in the Business Plan, and specific technology partners are outlined in resources.

- Wellspring Hydro – Management Team - Williston, ND
- Hargrove Engineers & Constructors – Birmingham, AL
- Tormod Operators – Birmingham, AL
- Mastec Infrastructure - Coral Gables, FL
- FCI Constructors – Denver, CO
- InDemand – Bismarck, ND
- Produced Water Partner(s)
- Salt Crystallizer Partner(s)
- Lithium Extraction Partner(s)

## PROJECT DESCRIPTION

### Objectives:

Wellspring Hydro (WSH) intends to build a modern chlor-alkali plant in Williston, North Dakota which will use crystallized sodium chloride salt deriving from the Williston Basin oilfield brine (i.e., produced water); creating high quality sodium chloride salt and water from an oilfield waste stream to feed a chlor-alkali process will be a first of its kind.

Wellspring Hydro's cost to build and install a new greenfield 150 STPD membrane plant in Williston, North Dakota, is \$250 million.

Finalize, execute, and deliver.

1. Field Validation – Technology and Commercial
  - a. Wellspring Hydro will complete final technical and commercial viability of the front-end process through field trial demonstrations in parallel with detailed design. This process has been validated through four independent bench-scale tests performed in 2021, 2022 and 2023. Commercial viability will require the selected technology in the field to align with vendor processes to provide performance guarantees for the required specifications.
  - b. The critical objective is to demonstrate technical viability in the field (in multiple stages and scopes), to receive the commercial assurances provided by performance guarantees from technology providers. This will include final salt crystallization bids with multiple vendors, who have completed technical evaluations.
  - c. Further development and confirmation testing with Lithium partner to focus on mother liquor lithium extraction of up to two hundred tons per year.
2. Initial Detailed Design
  - a. From the Financial Investment Decision (FID), Wellspring Hydro will begin Front-End Engineering Design with Hargrove to perform the detailed engineering sufficient to produce procurement and construction documents for the supply of fabrication, construction installation, materials and equipment and the full construction and start-up of the plant.
  - b. The critical objective is the completion of Initial Detailed Design to finalize technology vendors and identify the procurement of specialized technology and long-lead items as a prerequisite for objective 3.
3. Procurement of Specialized and Long-lead Equipment
  - a. Hargrove and Associates Purchasing Department will provide procurement support services for the Project. Hargrove will be responsible for the procurement of all major equipment, minor equipment, tagged instruments, fabricated materials.
  - b. As a part of FEL-3 process, Wellspring Hydro and Hargrove have identified a bidder list, completed technical packages an Engineering Requisition Worksheet (ERW) for engineered equipment and issued Requests for Quotation (RFQ). The bids have been received and analyzed for technical and commercial consideration. These costs are utilized in the final cost estimate for FEL-3.

- c. The critical objective is to award specialized and long-lead item equipment to meet overall timeline. The objective will require early funds to complete “Issue for Purchase” (IFP) technical packages with vendors and make initial downpayments on equipment.
- 4. Detailed Engineering Plan
  - a. Following Initial Detailed Design phase and in parallel of the procurement plan, Hargrove will continue to provide engineering services as required by the construction work to clarify or revise the engineering documents provided for the construction of the project. Hargrove will provide information requested to assist the contractors in the construction of the project and the coordination of their activities, including 3-D Model review assistance at the site.
  - b. Detailed discipline engineering will continue for 10 months post FEED Phase and to achieve the engineering construction release dates.
  - c. The critical objective is to continue detailed engineering in parallel to early construction in preparation for equipment installation and process start-up.
- 5. Construction & Plant Start-up
  - a. Wellspring Hydro will work with Hargrove (Engineering and Design) and Mastec (Construction Management) to formulate the contract documents for the construction contracts per the project contracting strategy. Hargrove will assist by providing technical and construction management support during the duration of project through mechanical completion.
  - b. Wellspring Hydro will formulate the Project Completion Plan and will assist with planning QA/QC functions to assure incremental acceptance of the plant and coordination with the start-up team. Wellspring Hydro will utilize Mastec to fulfill its construction obligations. Wellspring Hydro will manage all construction activities required to complete the work to the point of being ready for commissioning.
  - c. The critical objective is to execute engineering plans of all construction activities required from onsite mobilization through construction completion and pre-commissioning for a seamless implementation of the full-scale facility.

**Methodology:**

Modern Chlor-Alkali technology includes sophisticated membrane cells to split apart the NaCl molecule via electrochemical reactions. The salt and water streams fed to the membrane cells must be highly purified to operate efficiently. Hargrove Engineering has designed and managed multiple chlor-alkali plant projects and will coordinate the overall project design for the entire Wellspring Hydro facility.

- 1. Field Validation – Technology and Commercial
  - a. Field testing is an important progression from the successful bench scale tests to show consistency and longitudinal analysis in various stages.
  - b. The key methodology steps include:
    - i. Stage 1 – In field testing of produced water over 60-day initial scope. Key success criteria would be longitudinal analysis over time to quantify any unknown constituent in the water and selection of optimum pre-treatment chemistry.

- ii. Stage 2 – Full scale commercial trial to create salt out of produced water with mobile crystallizer of selected technology provider. Key success criteria would be to confirm ability to meet consistent high-quality salt specification, while evaluating corrosion and scale impact to equipment.
  - iii. Through field trial validation, Wellspring Hydro will finalize the process to bid on the Salt Crystallizer technology with a vendor that can meet both commercial and technical requirements to meet company and investor objectives. Based on multiple bench scale validation, the critical focus is the commercial commitments that can be offered through a field trial and performance guarantees.
  - iv. Lithium Extraction – Wellspring Hydro will qualify multiple lithium extraction vendors to select a technology partner for Detailed Design. Multiple vendors have verified their capability through bench scale results with the mother liquor output.
- 2. Initial Detailed Design
  - a. Once the Wellspring Hydro Executive Leadership has approved the project, the next step will be to commence initial detailed design in order to perform enough engineering to develop design to a point in which various quantities can be established. Each system will be assigned to a system engineer who will be responsible for the entire design of the respective system.
  - b. The key methodology steps include design criteria, P&ID's, specifications, installation details and other discipline focus areas:
    - i. A kick-off meeting for the initial detailed design phase will be held to establish the path forward for the project.
    - ii. Once the heat & material balance has been validated and process requirements confirmed, the next effort will be developing the P&IDs to approval level.
    - iii. For expediency purposes major process equipment will be committed and procured during the initial detailed design phase of the project. This will mitigate project cost risk and impact on schedule to improve the overall engineering productivity (**Highlighted in objective 3 – procurement of specialized equipment**).
    - iv. The schedule is based on a quick turnaround of the approved P&IDs to commence detail design post IFA (Issued for Approval) as early as practical and solidify the equipment layout.
- 3. Procurement of Specialized Equipment
  - a. Hargrove will provide procurement assistance services for Wellspring Hydro. Each chlor-alkali unit operation is based on proven technology supplied by experienced and respected technology suppliers.
  - b. The key methodology steps include:
    - i. Upon receipt of a Wellspring Hydro approved Award Recommendation, Hargrove will enter the proposed purchase order and issue purchase order.
    - ii. The Engineers will be responsible for revising the RFQ technical package to an "Issue for Purchase" (IFP) technical package. This represents the final agreed upon purchase specifications and will be made a part of the purchase order.

- iii. Purchase orders will require additional engineering support from vendors and require downpayments on equipment to expedite delivery schedule.
  - iv. Hargrove will expedite receipt of the vendor data from the supplier based on the Vendor Data Requirements established by the originating Engineer.
  - v. The Engineers will review and approve all vendor data for the items they originate regarding compliance with the requirements of the design.
  - vi. Hargrove will expedite delivery of the equipment and materials.
4. Detailed Engineering Plan
- a. As the project progresses, Detailed Engineering will be an ongoing effort to support the installation and completion of the process. The system engineer will continue to “own” the P&ID and is responsible for the specification of all equipment, and coordination of all supporting discipline tasks necessary for the complete definition and documentation of the system. The system engineer is also responsible for the expenditure of resources (engineering manhours, budgeted dollars for materials, etc.) associated with those systems under his or her control.
  - b. The methodology of the Detailed Design will include:
    - i. Development of equipment specifications will be in parallel in certain cases with approval of P&ID’s and will commence upon client approval of all P&ID’s.
    - ii. Detailed discipline engineering continues for 10 months post FEED Phase and to achieve the engineering construction release dates procurement PO dates as listed in the estimate basis will need to be committed during this phase of the project.
5. Construction & Plant Start-up
- a. Wellspring Hydro and Hargrove will formulate the contract documents for the construction contracts per the project contracting strategy. Wellspring Hydro will administer these contracts as construction manager by providing technical and construction management support during the duration of project through mechanical completion.
  - b. The basic methodology steps to execution will be in five basic phases:
    - i. “Enabling civil work”—piling, underground piping & electrical.
    - ii. “Get out of the ground:” Foundations, slabs, development.
    - iii. “Install the equipment:” Steel erection, equipment erection.
    - iv. “Bulk installation:” Piping, electrical and instrument work.
    - v. “Project completion:” Testing, checkout, turnover by system.

## Anticipated Results:

### Validation of Technology in the Field

In the first objective, Wellspring Hydro will complete final validation of a process to use crystallized sodium chloride salt deriving from the Williston Basin oilfield brine (i.e., produced water); creating high quality sodium chloride salt and water from an oilfield waste stream to feed a chlor-alkali process. The field test will be creating sodium chloride salt with Bakken produced water in the field, further validating the multiple bench scale tests completed in 2020.

- Technology validation of creating high-quality salt from Bakken produced water that will yield performance guarantees with the technology provider and final assurances in the proposed process. The output of the field trial and vendor selection will ensure that Wellspring Hydro will be positioned for commercial assurances.

### Lithium Extraction

As a component of the field trial process and Front-End Engineering & Design, Wellspring Hydro will be able to develop the lithium extraction process of the “mother liquor” stream. There are multiple technology providers that have completed initial feasibility and will progress to Equipment proposals. After Wellspring Hydro recovers salt and water from the produced water the lithium present in the produced water will be concentrated, making it a high potential feedstock to a lithium recovery process.

- Wellspring Hydro is seeking a process patent for removing salt from waste oilfield produced water which in turn concentrates the feed brine into a “mother liquor” stream. This concentrated mother liquor creates ideal feedstock as it increases the lithium by a factor of up to four times. This concentration allows for even more efficient extraction by Wellspring Hydro and its partner over the standard brine process. Due to this concentration upgrade, the potential for up to 3.5 tons of lithium extraction per week is achievable and will yield nearly 4M in accretive revenue and 91,000,000 gallons of water saved.

### Production of High Value Commodity Products

Wellspring Hydro’s project will produce commercially essential commodity products Caustic Soda and Hydrochloric Acid. Both products have current demand in industrial and energy sectors and future demand in the support of clean sustainable energy (Carbon Capture, Oil & Gas production, and lithium extraction). The primary focus of the plant will be to produce and sell caustic soda (at 50% and 25% NaOH concentration), hydrochloric acid (at 35% HCl concentration). All products are currently imported into North Dakota with limited regional production. All products will meet industry standards.

- Caustic Soda - Caustic soda will be sold locally and regionally for use in various heavy industries such as refineries, power stations, pulp mills and for carbon capture projects. Wellspring Hydro’s products, specifically caustic soda, will be consumed in local and regional sustainable-clean-energy projects and designed to capture or sequester carbon from power generation. Wellspring Hydro will be a key chemical supplier to the burgeoning CCS/CCUS (Carbon Capture and Storage/Carbon Capture, Utilization and Storage) industry in North Dakota and surrounding

states. Project Tundra at Milton R. Young station and Coal Creek Station will require substantial amounts of NaOH (caustic soda) to scrub sulfur dioxide (SO<sub>2</sub>) to zero. This need is driven by the Amine CO<sub>2</sub> removal technology employed in large scale carbon capture such as those at power stations that utilize coal with sulfur content. Currently all Caustic Soda is imported into the State at a premium. Wellspring Hydro will be able to supply all the States projected needs.

- Hydrochloric Acid - The hydrochloric acid will be sold predominately into the local and regional oil and gas industry; other consumers include food processing and steel manufacturing industries in neighboring states. In North Dakota there is a significant opportunity to develop production enhancement acidification of existing wellbores and well recompletions to maximize the Williston Basins oil output. Many current producers utilize large acid jobs to open calcium carbonate scaled perforations and liners that restrict production. These large acid production enhancement jobs are limited by cost and availability of HCl. WSH can help provide stability to production enhancement support the oil and gas industry through consistent supply.
- Optional Calcium Chloride Addition – Wellspring Hydro is also evaluating the production of a third product of liquid calcium chloride (35% CaCl<sub>2</sub>). This proven process reacts hydrochloric acid with limestone, which would allow the business to maximize operating rates and diversify the product portfolio. Liquid calcium chloride has a strong regional demand in the Upper Midwest US and Canada for dust control and snow removal/de-icing.

#### Sustainable Use of Produced Water Waste

The execution of this project will solidify a sustainable business model built on the use of produced water waste, as defined as the Wellspring Hydro original opportunity statement.

- Through a circular economy model, 10,000 BBL per day will be used as feedstock to the salt recovery system and the Chlor-alkali facility to make products. The current disposal zone of the Dakota formation is experiencing over pressurization in certain areas, this challenge will continue as infield development of the Williston Basin continues. Wellspring Hydro offers an environmentally useful solution to simple injections.
- With an initial scope of 10,000 BBL per day, Wellspring Hydro has a vision to use technology developments for the opportunity to expand the scope and utilize more produced water. Expansion opportunities could come in various scopes; from another full-scale facility to components of this process including lithium extraction, calcium chloride production from produced water and other emerging opportunities.

#### Financial Impact

The business is projected to have a year one of \$82.6 M revenue, split between HCL at \$30.9 M, Caustic at \$47.5 M, and produced water/other at \$4.2M. The production volumes and product price forecasts are (detailed in the Business Plan) are diversified into different markets both local and regional.

- The current unleveraged financial returns yield a 21.7% IRR and \$170.0 M NPV. Year 1 EBIDTA is projected to be \$54.0 M with steady performance within +/- 5% consistency through year 5 EBIDTA at \$53.8 M. This is based on a flat price forecast to represent a conservative approach and provide opportunity of long-term contract capability.

- The full-rate state tax on product sales is expected to be \$5.5 M per year. The facility will employ a total of fifty-three employees, forty-six employees to support the cost of product and seven employees supporting administrative and company operations.

**Facilities:**

The facility will include a pre-treatment, evaporator/crystallizer system, chlor-alkali electrolytic cells, caustic evaporator, a hydrochloric acid synthesizer, and a Saltwater Disposal (SWD) well, and all associated utility, storage and loading facilities for bulk shipments via truck and rail.

Specific process facilities include.

- Salt Crystallizer & Evaporator
- Primary Brine Treatment: Brine Precipitation and Filtration
- Secondary Brine Treatment
- Brine Electrolysis
- Anolyte Handling and Dichlorination
- Catholyte Handling
- Excess Hydrogen Generation
- Chlorine Cooling & Demisting
- Cell Hydrogen Cooling & Demisting
- Hydrochloric Acid Synthesis
- Caustic Evaporation
- Sodium Hypochlorite Bleach Production & Emergency Vent System
- Liquid Calcium Chloride Production (Optional)
- Utilities

General and functional facilities include.

- Administration Offices
- Onsite Laboratory
- Storage Facilities: Water, Salt, Caustic Soda, Hydrochloric Acid



**Resources:**

Subject matter experts will assist in engineering, design, implementation, and construction.

Subject Matter Expert Resources	
Hargrove Engineers	Palmer Lawrence
Mastec Infrastructure	SHECO
FCI Constructors	Dixie Engineering
InDemand	Bertrams
Ekato	Verantis
DrM	TennyCo
Marmon Industrial Water	Mersen
American Crane	CEJCO
Applebee Church	Voigt-Abernathy
Verantis	Flowserve

Other consultants or services to be used include electricity pricing experts and legal advisors for purchasing and sales agreements. Environmental consultants may also be required to assist during reviews with the North Dakota Department of Environmental Quality.

**Techniques to Be Used, Their Availability and Capability:**

Independent, credible third-party resources will be utilized as identified in earlier sections. The subject matter expert resources will license their technology and services as a part of the procurement process to be implemented in the Wellspring Hydro design.

The availability of specialty process equipment is a critical component of the schedule with lead times of equipment reaching 14-16 months due to market constraints on key materials. As outlined in the loan fund request, Wellspring Hydro will utilize funds to secure availability with early downpayments on key items.

**Environmental and Economic Impacts while Project is Underway:**

Wellspring Hydro is committed to avoiding accidents and unplanned occurrences that may result in injury to employees, interruption of production, or damage to equipment or property. This policy, applies to every task undertaken, is to take every action necessary in engineering, planning, assigning, and supervising all jobsite operations to establish and maintain safe and healthful working conditions on our projects and protect the public and the environment.

During the scope of this project, there must be interaction between the Wellspring Hydro, Hargrove, and the appropriate North Dakota regulatory agencies to communicate details about the plant design including specific plans to address environmental and safety concerns. Wellspring Hydro, Hargrove and Mastec will work together to interpret and communicate the permit requirements so that the regulatory

requirements are clearly and specifically understood by all the contractors. Williams County has taken an active role in establishing construction and operations phase employee counts along with traffic surveys and logistical needs.

Wellspring will employ up to 250 contractors at peak construction phase. Wellspring Hydro has communicated with local authorities and plans will begin months prior to peak phase to establish transportation logistics and housing requirements for the influx of staff required to accomplish construction in an efficient manner.

The Site Manager will work with the environmental department to develop procedures for isolation of the project site for storm water runoff, testing, pumping and disposal of storm water from excavations, and containment areas. Any temporary breach of containment structures will also be addressed to assure that no contamination will reach the storm water systems.

Fire water tank installment will be critical to establishment of the site for Wellspring Hydro. The size of the tank will be appropriate for the development of the site and will be filled prior to operational start up. If other companies are building in the area a coordinated effort will be made to build out and support a local fire staff and EMS plan with local community leaders which will cover the entirety of the site build out

#### **Ultimate Technological and Economic Impacts:**

This is a first of its kind process utilizing well known and understood chlor-alkali technology that has been available since the 1970's. While oilfield brine is becoming more commonly reused, recycled, and even crystallized to derive value driven products, to our knowledge there are no other chlor-alkali plants in the world that uses oilfield produced water as its feedstock for salt. We have patented a process to leverage this waste stream to create products which are used in the industry as well as create net new surface fresh water, water that did not exist as fresh water before. The new fresh water will be used exclusively by our plant as process water needs such as cooling, ultrapure brine, cathode dilution, and salt saturation.

The business is projected to have a year one of \$82.6 M revenue and support 53 full time employees. The current unleveraged financial returns yield a 21.7% IRR and \$170.0 M NPV. Year 1 EBIDTA is expected to be \$54.0 M with steady performance within +/- 5% consistency through year 5 EBIDTA at \$53.8 M. The full-rate state tax on product sales is expected to be ~\$5.5 M per year. There will be partnership opportunities as highlighted in the Standards of Success that could have an even larger initial Economic Impact.

#### **Why the Project is Needed:**

This plant will be designed to enable recovery of more valuable salts and elements. All products to be made by Wellspring Hydro are presently consumed by businesses and industries in North Dakota but are imported from other states. This project represents a new industry for North Dakota, creating sustainable jobs and tax revenues in the state.

The output will benefit North Dakota by proving out a new concept to recover salt from a waste stream from the oil and gas fields and using it to make valuable products which are used in the industry, i.e. hydrochloric acid, caustic soda, with the potential of calcium chloride and a small amount of sodium hypochlorite (bleach) required in the State and region. All these products are used to some extent in the oil and gas industry, excess production will be exported out of state, thus generating new income for the state. In addition to the valuable commodities that will be recovered, the current disposal zone of the Dakota formation is experiencing over pressurization in certain areas, this challenge will continue as development of the Williston Basin continues. Wellspring Hydro offers an environmentally useful solution to over pressurization.

Wellspring Hydro will systematically manage our power, water, and carbon footprint to underpin North Dakota's goals as a multi-resource energy policy state. Our products support more efficient oil production, lower carbon capture costs, and resource attainment of previous waste streams. Overall Wellspring Hydro's proven concept may be utilized again as North Dakota's petrochemical industry grows.

1. Local Production of key products
2. Sustainable Produced Water Source
3. Lithium Production

## STANDARDS OF SUCCESS

Various standards of success will be identified and employed to solve the technical hurdles herein. These standards examine both the technical and commercial aspects of the project while adding depth and outlining value.

### **Reduced Environmental Impacts**

Oil and gas operations in the Williston Basin dispose of 1.5 - 1.8 million barrels (63-75 million gallons) of produced water per day. This is 25% more than all the industrial process water use in North Dakota. Wellspring Hydro's scope focuses on a portion of this current waste stream and our vision is to create valuable commodities and rare earth metals extraction through alternate water utilization.

Wellspring Hydro will separate salt and fresh water from produced water; the remaining concentrated stream (referred to as "mother liquor") will be sent to additional processes and eventually to SWD after all useful material can be economically derived. This process of crystallization, concentration and extraction will lead to a 40% reduction in produced water disposed and creation of net new freshwater, used as project process water.

The elevated concentration of remaining elements in the "mother liquor" such as lithium and magnesium along with other salts and metals, create potential for further value-added processing. Beyond the valuable commodity chemistries and essential elements, Wellspring Hydro being a first of its kind facility with healthy returns also sees itself as a champion for further process and product development in the areas of, Environmental Stewardship, Energy Efficiency, Sustainability, Economic Diversification, and Jobs Creation.

### **Increased Energy Efficiency**

Wellspring Hydro will be a key chemical supplier to the burgeoning CCS/CCUS (Carbon Capture and Storage/Carbon Capture, Utilization and Storage) industry in North Dakota and surrounding states. The Northern Plains are known for their vast coal reserves and critical baseload power generation, however changing climates both political and environmental related are now signaling the importance of CCS/CCUS. Technological advances, tax incentives, and attractive geologic CO2 target zones in North Dakota are leading to testing for storage zones and will soon place North Dakota on top as the world leader in carbon capture. To achieve the status of the world's leading carbon capture State, projects such as Project Tundra at Milton R. Young station and Coal Creek Station will require large amounts of NaOH (caustic soda) to scrub sulfur dioxide (SO2) to zero. This need is driven by the Amine CO2 removal technology employed in large scale carbon capture such as those at power stations that utilize coal with sulfur content. Currently all Caustic Soda is imported into the State at a premium. Wellspring Hydro will be able to supply all the States projected needs and will have 50% of its NaOH as a net export for the state to surrounding states.

Specific to the Wellspring Hydro plant, a large part of the power demand will interruptible, a benefit in managing and balancing North Dakota's electrical grid during periods of high demand. As of the

submission of this document, no less than four potential partner companies have expressed interest in striking deals for natural gas Co-Gen power generation to use stranded in-basin natural gas that may otherwise hamper oil production. Micro-grid wind, solar, heat pumps and battery backup are part of the office facility build out scope pending tax incentive confirmation and financial justification.

While Wellspring Hydro itself will have the ability to invest in a small carbon capture facility totaling up to 23,000 tons per year (as an added scope), it will not benefit from the Q45 tax credit initially due to size. Two potential partners have reached out to WSH to better understand potential carbon capture and fit. Both companies have expressed interest in “testing current technologies” in conjunction with the chlor-alkali facility.

### **Energy Sustainability**

Lithium extraction in North Dakota by Wellspring via Brine Extraction is attractive for the Williston Basin area and North Dakota for many reasons; it does not require the surface area needed when compared to traditional solution mining which demands large evaporation ponds. The potential for carbon neutrality is feasible with further partnerships focused on natural gas combustion stream aggregation or direct air capture (DAC) technologies of which Wellspring Hydro is engaged in multiple conversations with companies offering both. The water used in Wellspring hydro’s process is water that is recycled from the influent produced water stream. The process does not need the 500,000 gallons of water traditionally required to extract a single ton of lithium, Lastly, the process requires hydrochloric acid and caustic soda which Wellspring Hydro will produce at its plant. This synergistic effect further reduces the production cost of North Dakota lithium.

Wellspring Hydro’s patented process of removing salt from oilfield produced water waste concentrates the feed brine into a “mother liquor” stream. This concentrated mother liquor creates ideal feedstock as it increases the lithium by a factor of up to 4x. This concentration allows for even more efficient extraction by Wellspring Hydro and its partner over the standard brine process. Due to this concentration upgrade, the potential for up to 3.5 tons of lithium extraction per week is achievable and will yield up to \$4M in accretive revenue and 91,000,000 gallons of water saved. Lithium production in North Dakota will provide sustainable energy and local supply chain to meet the growing lithium demand – specifically in electric vehicles.

### **Value to North Dakota**

This project can lead to significant environmental, technological, and economic impacts to the state of North Dakota. Through the successful implementation of this project, Wellspring Hydro will help demonstrate the value of produced water from Oil & Gas operations while allowing for further innovative testing onsite. The ultimate standard of success would be to provide North Dakota with a key piece in a future petrochemical strategy.

## **Explanation of How the Public and Private Sector will make use of the Projects Results, and when, and in What Way**

By the end of 2025, carbon capture projects, oil and gas and other local industries will enjoy up to a 30% cost reduction and consistent supply of essential commodities. This is driven by a subsidized feedstock of produced water from oil and gas production and/or salt cavern development. Caustic soda (carbon capture, crude refining, bio refining, gasification water process treatment, power generation water treatment, lithium extraction), Hydrochloric Acid (oil and gas operations, lithium extraction), and North Dakota Counties (Calcium Chloride – dust control, oil and gas) will all benefit from Wellspring Hydro's strategic location, differentiated feedstock, and low operating cost in Western North Dakota. These products which are all purchased outside of North Dakota currently will immediately realize a large logistical cost savings over current suppliers who rely on rail and trucking to bring current products in from thousands of miles away. Caustic soda is essential in water treatment performed as a part of routine preventative maintenance at many industrial plants in North Dakota, however the largest use of caustic will be sulfur dioxide scrubbing at the planned carbon capture projects at Milton R. Young Station and Coal Creek Station power plants. These projects will together consume nearly half of Wellspring Hydro's caustic soda production. Current supply chains are not set up for this increase in use by North Dakota which would only lead to higher than projected operating costs or potential delays and shutdowns due to lack of consistent supply without Wellspring Hydro to fill the increased caustic need by these essential projects.

Currently oil and gas completions and operations are finding it difficult to locate consistent hydrochloric acid streams and most transloading companies are looking to bring in product from as far away as Texas where they must compete with the Permian Basin demand. This adds delays and significant cost increases due to long logistics routes and creates supply-demand constraints on the limited existing streams. Wellspring Hydro's plant would eliminate the need for North Dakota oil and gas producers to go outside the State for hydrochloric acid and furthermore would allow for North Dakota to become an exporter of HCl to the surrounding region.

Wellspring Hydro will evaluate an expansion into Calcium Chloride production, which has significant value to both the private and public sector. Like oil and gas operators, the counties in North Dakota purchase many commodity products that must be trucked or railed in from out of state. Magnesium Chloride ( $MgCl_2$ ) and Calcium Chloride ( $CaCl_2$ ) both come exclusively from out of state production. North Dakota and surrounding states (SD, MT, MN) utilize a high volume of these products for dust control. The annual consumption of calcium chloride for North Dakota is 5.6 thousand metric tons, and 18.1 thousand metric tons for the surrounding states. In addition, the US and Canada are large consumers of deicing products due to harsh winter conditions.  $CaCl_2$  outperforms  $MgCl_2$  and has a lower environmental impact. Wellspring Hydro has the operational flexibility to produce a large portion of the  $CaCl_2$  used by North Dakota and export to the surrounding states.

**How the project will enhance the research, development and technologies that reduce environmental impacts and increase sustainability of energy production and delivery of North Dakota’s energy resources.**

Wellspring Hydro will enhance the development and operations of technologies that reduce environmental impact by supplying crucial raw materials to processes used in carbon capture. Materials that will have the lowest environmental footprint of any commodities on the market. This is due to extremely short supply chains, a zero-emission production facility, and use of a current waste stream for a feedstock.

With its own facility, Wellspring Hydro will work to create a proposed test facility to implement and trial new and emerging technologies and processes. The focus of which would be threefold in a nonspecific order, first to reduce environmental impact, second to lower cost associated with WSH and adjacent projects, third to remain on the forefront of developments in the energy and commodity sectors.

To date Wellspring Hydro has discussed partnerships with companies covering.

### Partnership Requests (30 total)

- Lithium Extraction (6)
- Carbon Capture (4)
- Salt cavern development and support (3)
- Natural gas Co-Gen (4)
- Magnesium chloride production (2)
- Potash solution mining (1)
- Calcium chloride production (2)
- Customized commodity chemical blending (2)
- Water recycle and reuse for industrial process water supply(3)
- Water recycle for Ag reuse (1)
- Alternate SWD zone development (2)

It is important to remember the listed partnership opportunities will be completely stand-alone partnerships, JVs, or licensing opportunities. These will only represent the upside on the current business plan and financial outlook through combined synergies. The opportunities listed show the strategic nature of looking at our assets in North Dakota from a different vantage point which allows for the investigation of innovative ideas in a field environment following laboratory confirmation.

**How it will preserve existing jobs and create new ones.**

Wellspring Hydro will preserve existing jobs by supporting the oil and gas industry through lower costs, readily available commodities to ensure wells can be completed and produced at a \$/barrel that is in line with that of competing states. The Wellspring Hydro production plant will create fifty-three full-time high-paying jobs ranging from front office to production crews.

As detailed in the previous section, Wellspring Hydro's unique intersection of industrial process, commodities production, and oil and gas water reuse it will present an opportunity for further testing and expansion for innovation in an environmentally sustainable format due to the inherent natural assets in Northwestern North Dakota.



## BACKGROUND/QUALIFICATIONS

### Leadership Team

Wellspring Hydro management team is supported by industry and local resources to develop a robust business plan and positioned to execute with investment.



**Steve and Carla Kemp**, Founders, Wellspring Hydro.

- Steve and Carla are local entrepreneurs that founded Wellspring Hydro in 2016 and are based in Williston, ND. Steve and Carla have started multiple ventures in IT, real estate, and financial markets.



**Mark Watson**, CEO, Wellspring Hydro.

- Mark has over 13 years-experience in acquisitions/mergers, project management, and entrepreneurial start-ups. Mark, MBA, specializes in developing business plans, financial modeling, marketing analysis, and valuation/capital funding.



**Mat Hirst**, COO, Wellspring Hydro.

- Mat has over 16 years-experience in developing sales and operations teams in the oil and gas industry. Mat, based in Bismarck, ND, specializes in water technologies with expertise in executing sales strategies, people management, and driving operational efficiencies.



**Norm Christensen**, Technical Advisor, Wellspring Hydro.

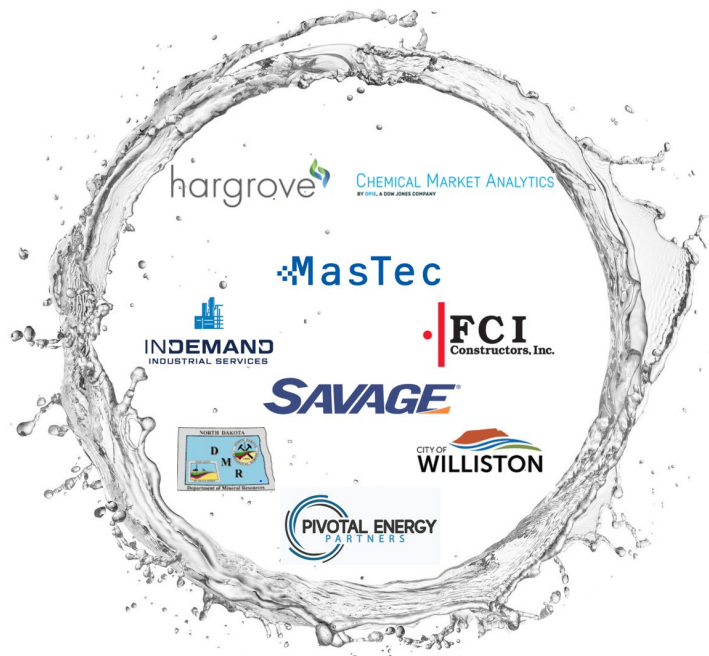
- Norm's career has spanned more than 40 years, including direct involvement in the chlor-alkali industry in both North and South America. A chemical engineer, Norm has held senior positions in both Fortune 100 and small companies in engineering, operations, sales and marketing and general management roles. Norm recently (2015) oversaw on the construction of a chlor-alkali facility in San Antonio, TX.

## Partners & Suppliers

Wellspring Hydro has worked with subject matter experts to validate components of the business plan from our engineering leads and local partners.

A few key leads from the project team consists of the following individuals:

- **Scott Cooper**, Project Lead, Hargrove Engineers + Constructors. Scott has thirty years of experience working in project management and design engineering. Has established project procedures, coordinates changes in scope, monitors and controls engineering activities, cost analysis, planning, scheduling, estimating, procurement of process equipment. Scott is the project lead for the Wellspring Hydro FEL-2 and upcoming FEL-3 projects.
- **Justin C Merritt**, P.E, Hargrove Engineers + Constructors. Justin has over eighteen years of experience in a variety of process industries, including chlor-alkali, petrochemicals, minerals processing, biofuels, and lithium. Project experience includes work on six chlor-alkali plants.
- **Amanda Hayes**, Process Engineer, Hargrove Engineers + Constructors. Amanda has over fifteen years of experience as a Process Engineer in the chemical industry. Experience in writing procedures, process safety management, root cause analysis, and process studies.
- **Bill Johnson**, Project Manager, Hargrove Engineers + Constructors. Bill has over twenty-five years of experience as a Process Engineer in the chemical industry. Experience in writing procedures, process safety management, root cause analysis, and process studies.
- **Chuck Carr**, VP Strategic Insights, Chemical Market Analytics (Formerly IHS Markit). Chuck serves as the group lead for consulting projects, primarily responsible for the sale and execution of consultant engagements in the Americas region.
- **Justin Anderson**, Director of Operations, Savage Services. Justin manages operations and business development for Savage Services in the North Dakota region. Justin has helped negotiate an LOI for a logistics and transload partnership, that includes capital investment.



## **MANAGEMENT**

Wellspring Hydro will operate a steering team consisting of the Wellspring Hydro management team, Hargrove project and engineer leads and Tormod operations group. The steering committee will meet monthly to review the strategic process of execution including project timeline, cost projections, regulatory approvals and other critical item highlighted by the working team.

### **Monthly Steering Team Meetings**

Executive Review with the steering team to evaluate progress and assess critical actions, risk register and schedule.

The project will be organized as an integrated team, containing representatives from both Wellspring Hydro, Mastec and Hargrove. The Activities of the project will be coordinated by a core Project Team, the main members of which will be: (full role descriptions available for reference in business plan)

### **Weekly Project Meetings**

During the kick-off meeting for Initial Detail Design, an agreement for the time, place and format of the weekly project meeting will be agreed upon. The purpose of this meeting is to maintain an open line of communication between all parties. These meetings will be transitioned to the field during the construction phase. The agenda will be as follows:

- Upcoming Safety Reviews
- Design Safety Concerns
- Calendar of Events
- Planned Field Trips
- Last Week Accomplishments
- Key Milestones for the Coming Week
- Outstanding Action Items
- Schedule
- Current week releases
- Events

### **Weekly Reports and Meetings**

The Project Manager will issue weekly progress reports which will describe the progress of Hargrove services and of other project participants and will evaluate the progress and performance of the project team against the project plan. The weekly meeting format will be changed to focus on issues that need attention and should publish meaningful and useful metrics that update everyone on progress versus plan.

Wellspring Hydro Steering Team			
Mark Watson			
Scott Cooper			
TBD - Investor Appointed Lead			
TBD - Third Party Industry Expert			
Engineering Stage		Construction Stage	
Role	Lead	Role	Lead
Operations Lead – Mat Hirst			
Wellspring Project Manager	TBD	Construction Manager	Mastec
Hargrove Process Principal	Scott Cooper	Site Manager	Mastec
Hargrove Project Engineer	Bill Johnson	Quality Manager	Mastec
Wellspring Process Lead	Norm Christensen	Field Materials Supervisor	Mastec
Wellspring Start-Up Manager	TBD	Controls Manager	Mastec

### Wellspring Hydro Operations Lead – Mat Hirst

Finalize the plant data by the development of the Engineering contractor’s data to include commissioning and other records required for the future operation of the plant. Identify system start-up requirements.

### Wellspring Hydro Project Manager – TBD

Accountable to the Steering Committee; acquire, direct, and control all the resources required to implement the project from development through to beneficial manufacture so that the business intent, as expressed in the Project Proposal or subsequent amendments, can be achieved.

### Hargrove Project Principal – Scott Cooper

Accountable to the Wellspring Hydro Project Manager, the role holder will be responsible for the provision of Hargrove resources to deliver the project scope of work.

### **Hargrove Project Engineering Manager – Bill Johnson**

Accountable to the Hargrove Project Principal, and responding to the Wellspring Hydro Project Manager, the role holder will be responsible for the coordination of design activities to meet the project time, cost, and quality targets.

### **Wellspring Hydro Process – Norm Christensen**

Responsible for the production review of process packages including PFDs, P&IDs, equipment data sheets and process description.

### **Wellspring Hydro Start-up Manager – TBD**

Define and implement a start - up plan, detailing Plant Systems, procedures, resources, and responsibilities for all stages of plant turnaround and commissioning by setting and monitoring measures of performance in order to achieve the agreed schedule.

### **Construction Manager – Mastec**

Mastec will utilize its construction management organization to fulfill its construction obligations. Mastec will manage all construction activities required to complete the work to the point of being ready for commissioning.

### **Site Manager - Mastec**

The site manager will report to the project manager on the project and will coordinate all functions with the Wellspring Hydro Operations Manager for all construction-related matters. The site manager will be responsible for:

### **Quality Manager - Mastec**

The Project Quality Manager will perform or cause to be performed those inspections required by the project specifications. He will also review and approve the Quality Plans of all the subcontractors and audit the quality control records of the contractors (e.g., welder certifications).

### **Field Materials Supervisor - Mastec**

The field materials supervisor will be responsible for all field procurement-related activities including receiving, inspecting, and warehousing all engineered items at the site. Field purchasing of bulks will be performed by the individual trade contractors.

### **Controls Manager - Mastec**

During construction, the project controls manager will be responsible for coordinating cost, planning, and scheduling activities of all subcontractors to provide the management tools for controlling construction cost and schedule. Reporting will be provided to Wellspring Hydro which will be appropriate to the form of contracts and as determined the project controls plan.

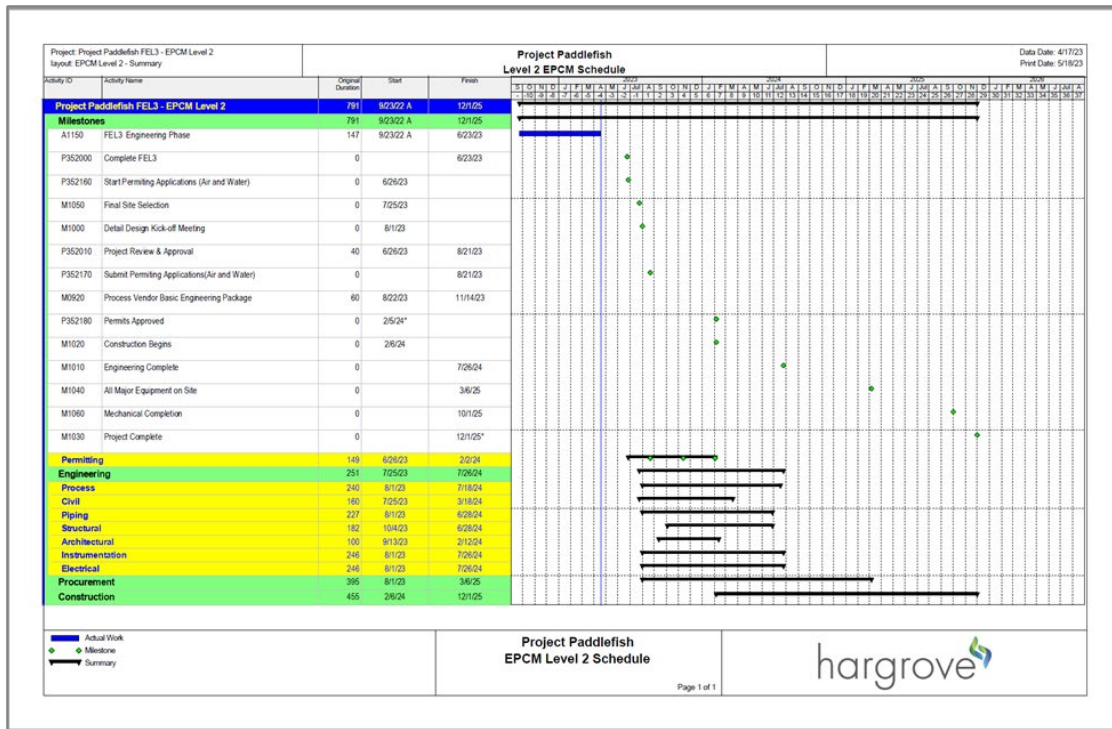
## TIMETABLE

The timeline is based cumulative outlook for the FEL-3 study, market research study and the combined output analysis.

### Critical Milestones:

Milestone	Milestone Date
FEL-3/DD Kick Off Meeting	15 Feb 23
FEL-3 Complete	15 Jun 23
Financial Investment Decision (FID)	01 Sep 23
Field Validation – Technology and Commercial	01 Nov 23
Initial Detailed Design	01 Dec 23
Procurement of Specialized Equipment	01 Jan 24
Detail Design Complete	23 Jun 24
Construction Mobilization	04 Jan 24
All Major Equipment	03 Oct 24
Mechanical Completion	05 Sep 25
Start-Up	31 Oct 25

### Full Project Timeline:



## BUDGET

As referenced in the management section, Wellspring Hydro will have monthly updates on cost/budget reports in addition to the criteria set by the CSEA process.

Project Associated Expense	NDIC's Share	Applicant's Share (Cash)	Applicant's Share (In-Kind)	Applicant's Equity Investment	Total
Technical and Commercial Viability	\$2,000,000*			\$2,000,000	\$4,000,000
Initial Detailed Design	\$3,000,000*	-	-	\$3,000,000	\$6,000,000
Process Equipment	\$50,000,000**			\$50,000,000	\$100,000,000
Detailed Design				\$8,500,000	\$8,500,000
Chlor-Alkali Facility				\$131,386,700	\$230,386,700
<b>Total</b>	<b>\$55,000,000</b>	<b>-</b>	<b>-</b>	<b>\$5,000,000</b>	<b>\$250,886,700</b>

\*Designates grant fund budget - \$5,000,000 USD

- Technical and Commercial Viability - \$5,000,000 USD
  - Consultants and Technical Support - \$506,550 USD
  - Stage 1 Field Trial - \$650,000 USD
  - Stage 2 Field Trial - \$3,843,350 USD
- Initial Detailed Design - \$5,000,000 USD
  - Quoted by Hargrove as first 6 months of detailed design for required engineering and technical support to make procurement decisions.

\*\* Designates loan fund budget - \$50,000,000 USD

- Specialized Process Equipment - \$50,000,000 USD

## CONFIDENTIAL INFORMATION

A person or entity may file a request with the Commission to have material(s) designated as confidential. By law, the request is confidential. The request for confidentiality should be strictly limited to information that meets the criteria to be identified as trade secrets or commercial, financial, or proprietary information. The Commission shall examine the request and determine whether the information meets the criteria. Until such time as the Commission meets and reviews the request for confidentiality, the portions of the application for which confidentiality is being requested shall be held, on a provisional basis, as confidential.

If the confidentiality request is denied, the Commission shall notify the requester and the requester may ask for the return of the information and the request within 10 days of the notice. If no return is sought, the information and request are public record.

Note: Information wished to be considered as confidential should be placed in separate appendices along with the confidentiality request. The appendices must be clearly labeled as confidential. If you plan to request confidentiality for **reports** if the proposal is successful, a request must still be provided.

To request confidentiality, please use the template available at <http://www.nd.gov/ndic/CSEA-app-doc-infopage.htm>.

Wellspring Hydro has submitted for the attached Business Plan as confidential information by CSEA and the state of North Dakota. This document holds confidential and proprietary information around the research, development, and execution of the novel Wellspring Hydro project.



## **PATENTS/RIGHTS TO TECHNICAL DATA**

*Any patents or rights that the applicant wishes to reserve must be identified in the application. If this does not apply to your proposal, please note that below.*

This is a first of its kind process utilizing well known and understood technology that has been around since the 1970's. As included in the CSEA Grant scope from December 2021, Wellspring Hydro will complete the process patent application with the results of the FEL-3 defined engineering and design study. This process patent will illustrate a process to leverage this waste stream to create products which are used in the industry as well as create net new fresh surface water. This process is expected to begin in June 2023.

## STATE PROGRAMS AND INCENTIVES

*Any programs or incentives from the State that the applicant has participated in within the last five years should be listed below, along with the timeframe and value.*

Wellspring Hydro has a long-standing partnership with North Dakota from the original concept stage supported by UND, NDIC and City of Williston. The support from the state has allowed Wellspring Hydro to fund the research and development into this novel process (patent pending).

Agreement	Company/Division	Investment	Commentary
Research Grant	NDIC	\$110,000	Concept support with UND partnership starting in 2016
Grant Match	City of Williston Star Fund	\$225,000	Investment into Concept Stage and FEL-2 Engineering with development in Trenton
Promissory Note	ND Dev Fund	\$250,000	Investment into successful FEL-2 engineering and design work in 2020
Promissory Note	ND Dev Fund	\$750,000	Investment into commercial and technical development, highlighted by Veolia Pilot Lab
Grant	NDIC – CSEA Fund	\$1,000,000	CSEA Grant awarded in December 2021 for FEL-3 engineering & design
<b>Total Investment</b>		<b>\$2,335,000 USD</b>	

\*Promissory notes and grant detail can be provided upon request.

# APPENDIX



# Tax Liability Statement



STATE OF NORTH DAKOTA  
**OFFICE OF STATE TAX COMMISSIONER**  
BRIAN KROSHUS, COMMISSIONER

May 15, 2023

Ref: L1420911744

TRIPLE 8 LLC  
WELLSPRING HYDRO  
PO BOX 884  
WILLISTON ND 58802-0884

I, Brittany Herberholz, Supervisor of Tax Registration for the North Dakota Office of State Tax Commissioner, certify that the records in the North Dakota Office of State Tax Commissioner do not show any indebtedness owed to the State of North Dakota by TRIPLE 8 LLC, with respect to income taxes, sales and use taxes, or any other taxes collected by and payable to the Tax Commissioner's office. This company is, therefore, in good standing with the North Dakota Office of State Tax Commissioner. This certification does not include ad valorem property taxes collected by the respective county treasurers.

Dated this May 15, 2023 at Bismarck, North Dakota.

Brittany Herberholz  
Supervisor, Tax Registration

TAX.ND.GOV | TAXINFO@ND.GOV  
600 E. BOULEVARD AVE., DEPT. 127 | BISMARCK, ND 58505-0599  
PHONE: 701-328-7088 | TTY: 800-366-6888



## Primary Sector Certification



July 15, 2020

Steve Kemp  
Wellspring Hydro  
PO Box 884  
Williston, ND 58802

Dear Steve:

Thank you for your application for primary-sector certification by the North Dakota Department of Commerce, Economic Development & Finance Division. We have reviewed your application and determined that ED&F can certify your company, **Wellspring Hydro**, as primary sector and a new wealth creator in the economy of North Dakota. This certification is valid for **four years** from today's date (expires 7/14/2024).

Most of North Dakota's economic development programs, tools and incentives are targeted toward primary-sector clients. You may be requested to provide a copy of this primary-sector certification letter when you apply for certain economic development incentive and funding programs.

This certification does not guarantee the receipt of any North Dakota business incentive. For example, there are additional qualification criteria for the Seed Capital Investment and Agricultural Business Investment personal income tax credits, and it is critical that investments **NOT** be made prior to the business receiving certification for these two credits. If you are pursuing certification for investment tax credits and need to know the criteria required for qualification, contact Joe Cicha 701-328-7283.

This certification is not the application process for the North Dakota New Jobs Training Program administered by Job Service North Dakota. To apply for the North Dakota New Jobs Training Program, you must contact Job Service North Dakota for the required application forms. Application forms for other programs that require primary sector certification are available from the agency administering the program.

Also, companies and individuals pursuing the investment tax credit incentive are reminded there is a cap on available dollars. Please visit with the ND Office of the Tax Commissioner regarding the remaining balance for investment tax credits. The credits are available on a first-come-first-serve basis until the law-defined cap is met.

North Dakota appreciates your contribution to the citizens and economy of our state. If there is anything further we can do to assist your company, please contact us at 701-328-5300.

Sincerely,

A handwritten signature in black ink, appearing to read "James Leiman", written over a horizontal line.

James Leiman, Director  
Economic Development & Finance Division

1600 E Century Avenue, Suite 2 | P.O. Box 2057 | Bismarck, ND 58502-2057

PHONE: 701-328-5300 | TOLL-FREE: 1-866-4DAKOTA | ND RELAY TTY: 1-800-366-6888 | VOICE: 1-800-366-6889 | NDCommerce.com

## Letter of Support – City of Williston 1



May 17, 2023

Clean Sustainable Energy Authority  
600 East Boulevard Ave  
Bismarck, ND 58505

Subject: Letter of Recommendation for Wellspring Hydro's Chlor Alkali and Lithium Mining Project

Dear Members of the Clean Sustainable Energy Authority,

I am writing on behalf of the City of Williston to express our robust support for the May 2023 Application for Clean Sustainable Energy Authority submitted by Wellspring Hydro for their Chlor Alkali and Lithium mining project.

As a city that thrives on the energy sector, we understand the crucial importance of innovation, sustainability, and diversification for the longevity and prosperity of our regional economy. We firmly believe that Wellspring Hydro's project will be a cornerstone in this context, providing a sustainable and cost-effective solution that is crucial for the continuation of traditional oil and gas operations.

Wellspring Hydro's pioneering approach to Chlor Alkali and Lithium mining promises not only to secure a dependable supply of hydrochloric acid, which is fundamental for well completion, but also to ensure a consistent provision of caustic soda, which has wide-ranging industrial applications. By driving down the costs of these key resources, the project could significantly enhance operational efficiency and cost-effectiveness within our industry.

Furthermore, the emphasis on Lithium mining echoes the global shift towards clean energy. As Lithium is a key component in the production of batteries for electric vehicles and renewable energy storage systems, the project's potential to strengthen the domestic Lithium supply chain aligns with our aim to diversify and fortify our regional economy, while reducing dependence on foreign resources.

[www.cityofwilliston.com](http://www.cityofwilliston.com)

T. 701-713-3800  
F. 701-577-8880

22 East Broadway  
Mailing Address: PO Box 1306 Williston, ND 58802

## Letter of Support – City of Williston 2

May 17, 2023

Page Two

The City of Williston is therefore proud to endorse Wellspring Hydro's Chlor Alkali and Lithium mining project. We are convinced that their innovative approach, coupled with their commitment to sustainability and economic diversification, will make a lasting and positive impact on our region and the broader energy industry. We strongly recommend that the Clean Sustainable Energy Authority approve their May 2023 application and extend the necessary support for this transformative project.

Thank you for considering our recommendation. Please do not hesitate to contact us if you need any further information or clarification.

Sincerely,



Shawn Wenko  
Interim City Administrator

[www.cityofwilliston.com](http://www.cityofwilliston.com)

T. 701-713-3800  
F. 701-577-8880

22 East Broadway  
Mailing Address: PO Box 1306 Williston, ND 58802

## Letter of Support – UND

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COLLEGE OF ENGINEERING & MINES

UND.edu

Office of the Dean  
Upson II, Room 165  
243 Centennial Dr Stop 8155  
Grand Forks, ND 58202-8155  
Phone: 701.777.3411  
Fax: 701.777.4838  
Website: engineering.UND.edu

May 19<sup>th</sup>, 2023

To Whom it May Concern

Re: Letter of Support for Wellspring Hydro to the Clean Sustainable Energy Authority

This letter provides support for Wellspring Hydro's continued effort to build a chlor-alkali plant in North Dakota that will convert produced water from the Bakken into commodity chemicals with high market potential in North Dakota and the surrounding region. The proposed plant provides an excellent alternative to disposing of the produced waters while simultaneously producing feedstock chemicals that can be used to support the continued development of the oil industry in the state. The electric power industry and the transportation sector also represent significant market opportunities. We have explored several treatment options for produced water, including the chlor-alkali option. As a subcontractor in the preliminary work done in conjunction with Barr Engineering, we performed a variety of bench-scale tests and modeling efforts to help determine both the technical and economic viability of the approach proposed by Wellspring. Through this team effort, a process scheme was developed that used proven technology to produce caustic soda and hydrochloric acid as the primary products, taking advantage of the high sodium chloride level in the Bakken brines. The results of the feasibility study performed under the Barr Engineering contract have demonstrated the technology represents a good investment opportunity.

We applaud Wellspring Hydro for their pending completion of the FEL-3 study that now provides the detailed information needed by Wellspring to raise the capital required to build the plant. The plant will provide a lower-cost option for dealing with the produced water than the current disposal methods, with the added advantage of improved public perception availed by reducing the amount of deep-well injection required. The HCl can be used locally, and likely be made available to the industry at a price lower than that currently paid as Wellspring will avoid the premiums attached to the current supply due to trainload, rail, and distribution fees from the current suppliers. The recovered salts also provide opportunities for additional product development, such as caustic soda to be used in carbon capture at our critical coal fired power plants, calcium chloride for dust control, and lithium recovery to be used in battery production.

I am happy to provide my endorsement to their business plan as it represents a good opportunity for the State of North Dakota and a good investment opportunity.

Sincerely,

DocuSigned by:

00FF8379D080464

Daniel Laudal, Ph.D.  
Executive Director  
College of Engineering & Mines Research Institute  
University of North Dakota  
[daniel.laudal@und.edu](mailto:daniel.laudal@und.edu)

The University of North Dakota is an equal opportunity / affirmative action institute.



## Letter of Support – Commerce



May 19, 2023

Subject: Letter of Support for Wellspring Hydro's Chlor Alkali and Lithium Mining Project

Dear Members of the Clean Sustainable Energy Authority,

I am writing to express the North Dakota Department of Commerce's support for Wellspring Hydro's Chlor Alkali and Lithium mining project in their Application to the Clean Sustainable Energy Authority. Wellspring Hydro has demonstrated an impressive commitment to innovation within a mature industry, paving the way for economic growth and environmental sustainability. By manufacturing traditionally imported products locally, Wellspring Hydro will contribute to the generation of net new revenue for the State of North Dakota. Specifically, the production of Hydrochloric Acid (a key commodity in the oil industry) and Caustic Soda (a critical commodity in carbon capture) will help keep two key parts of the energy industry in North Dakota competitive.

Wellspring Hydro's project encompasses the mining of Lithium from produced water. As the demand for Lithium continues to soar within the renewable energy sector, this aspect of the project uniquely bridges the traditional oil and gas industry with the emerging renewable energy sphere. It presents an extraordinary opportunity for North Dakota to establish its relevance and prominence in the renewable energy landscape.

The North Dakota Department of Commerce fully recognizes the significance and potential impact of Wellspring Hydro's Chlor Alkali and Lithium mining project. We believe that this venture is well aligned with our state's vision for economic diversification, job creation, and sustainable practices. The project addresses supply constraints, contributes to the local economy, and fosters collaboration between different sectors.

Sincerely,

A handwritten signature in black ink that reads "Richard Garman".

Richard Garman, Director  
Economic Development & Finance Division  
North Dakota Department of Commerce

1600 E Century Avenue, Suite 6 | P.O. Box 2057 | Bismarck, ND 58502  
PHONE: 701-328-5300 | TOLL FREE: 1-866-4DAKOTA | ND RELAY TTY: 1-800-366-6888 | VOICE: 1-800-366-6889 |  
NDCommerce.com

## Letter of Support – Pivotal

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Pivotal Energy Partners Inc.  
Suite 510, 736 – 6<sup>th</sup> Avenue SW  
Calgary, AB T2P 3T7  
Pivotalenergy.ca

May 16, 2023,

Dear Members of the Clean Sustainable Energy Authority,

I am writing to express Pivotal Energy Partners enthusiastic support for the May 2023 Application for Clean Sustainable Energy Authority submitted by Wellspring Hydro for their Chlor Alkali and Lithium mining project in Northwest North Dakota. As an innovative energy company, we recognize the significance of this project and its potential to transform and support both traditional oil and gas operations as well as the clean energy sector.

One of the most compelling aspects of Wellspring Hydro's project is their innovative approach to resource utilization. Pivotal is a trusted midstream company that strategically bridges the logistical and financial gap between our partners and the target marketplace for their products. Through a cooperative, transparent approach, we work with our partners to increase netbacks, lower operating costs, and maximize margins. We strive to provide partnerships that are fueled by an unparalleled level of trust and transparency in all that we do. We have intentionally designed our services to provide a model that is flexible and adds value in a safe and economical manner. Our fully scalable, modular facilities are built to meet capacity demand for our partners. We have aligned with industry-leading technology developers to further optimize our services for our partners.

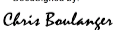
Pivotal is also dedicated to the highest environmental protection and safety standards throughout all levels of our organization. This level of commitment ensures a workplace that protects the health and safety of our employees, contractors, and the communities in which we operate.

We see Wellspring Hydro as a potential partner for future projects of our own and strongly feel that they fit in with many of our core initiatives. Local manufacturing will create opportunities to increase plant netbacks while lowering local logistics, operating cost in North Dakota remain attractive due to lower energy costs and inexpensive land. The environmental components of Wellspring are game changers as they allow for the beneficial use of a current waste stream and the potential to generate lithium for the renewable energy sector. Water consumption will be significantly lower than current mining operations and near zero when the plant is running optimally.

Pivotal is proud to endorse Wellspring Hydro's Chlor Alkali and Lithium mining project. We believe that their innovative approach and dedication to sustainability, coupled with our collaboration, will make a lasting and positive impact on the energy industry. We strongly encourage the Clean Sustainable Energy Authority to approve their May 2023 application and provide the necessary support for this transformative project.

Thank you for considering our recommendation. Please do not hesitate to contact us if you require any additional information or clarification.

Sincerely,

DocuSigned by:  
  
Chris Boulanger, President – Pivotal Energy Partners USA

## Letter of Support – OneCor



May 16, 2023,

Dear Members of the Clean Sustainable Energy Authority,

OneCor Services would like to show our support for the Wellspring Hydro project to build a chlor alkali facility in Northwest North Dakota. The need for local industrial commodity chemicals manufactured in a sustainable manner that cuts down significantly on logistical cost will help continue the extensive development of the Williston Basin.

At OneCor Service we are a Williston, ND based company with offices in Watford City, ND, Odessa, TX, and San Antonio, TX. We pride ourselves as community members who are a premium provider of several crucial services that support the oil and gas industry. Including Hydrochloric acid supply, logistics, and custom blending, Geoprobe Drilling, Environmental services, Weed Control and Pressure pumping.

A challenging and oftentimes limiting factor that all services companies experience in the Williston Basin are limited availability of products and significantly higher logistical costs when compared with other basins that we operate in. This has a trickle-down effect that touches every component of the drilling, completions and production life cycle in the oil and gas production. Hydrochloric acid typically must go through several other companies to arrive in basin at which point the end uses sees a premium to their P&L. Innovations which Wellspring Hydro are working towards will allow ND operators to achieve reduced operating costs due to lower priced in basin logistics.

There are also many ways OneCor sees Wellspring Hydro impacting our local economy by bringing in up to 55 high paying jobs, 80M in annual revenue as an exporter of low carbon chemicals manufacturing. This all leads to greater recognition on a global scale for the innovation we see every day in North Dakota.

In summary, we at OneCor strongly support Wellspring Hydro and their goal of utilizing Williston Basin waste salt water to supply an innovative chlor alkali facility and extract lithium.

Thank you for considering our recommendation. Please do not hesitate to contact us if you require any additional information or clarification.

Sincerely,

Tom Bachmeier

A handwritten signature in black ink, appearing to read "Tom Bachmeier".

Chief Executive Officer

## Letter of Support – Cerilon



NDV-2010-LTR-0001  
2023-MAY-18

**Clean Sustainable Energy Authority**  
14033 - 49 Street NW  
Williston, ND, 58801

Dear Members of the Clean Sustainable Energy Authority,

I am writing to express Cerilon Inc.'s support for Wellspring Hydro's innovative Chlor Alkali and Lithium Mining Project. As a company deeply embedded in the energy sector, we understand the pressing need for sustainable practices, and believe in the potential of their project.

At Cerilon, we support the numerous benefits that Wellspring Hydro's project offers, specifically the production of caustic soda, an important chemical in our operations. By securing a stable and cost-effective supply of this chemical, the Cerilon GTL project will enhance production efficiency and drive down operational costs. The Wellspring Hydro's Project aligns with our commitment to sustainably obtain essential production materials in an environmentally conscious manner.

By endorsing this project, we align ourselves with Wellspring Hydro's vision for a diversified, robust, and sustainable regional economy. We urge the Clean Sustainable Energy Authority to recognize the potential of this project and provide it with the necessary support and approval.

Sincerely,

A handwritten signature in dark ink, appearing to read "Nico Duursema", is positioned above the printed name.

**Nico Duursema**  
Chief Executive Officer

**CERILON INC.**  
First Canadian Centre  
350 - 7 Avenue SW, Suite 2900  
Calgary, Alberta, Canada T2P 3N9

+1.403.264.8044  
info@cerilon.com  
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