

August 31<sup>st</sup>, 2025



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

**Re: Project titled “Unlocking Lithium Carbonate in Produced Water for Battery Grade Li<sub>2</sub>CO<sub>3</sub> for in-state Cathode Manufacturing”**

Renewable Energy Program,

Triple 8 LLC dba Wellspring Hydro (WSH) is submitting this application for grant funds under Renewable Energy Program. Wellspring Hydro through a strategic joint venture with technology company LibertyStream Infrastructure Partners (LSI) has utilized a unique feedstock from oilfield brines (a.k.a. produced water) that presently is disposed of down class II SWD wells. Wellspring Hydro and LibertyStream's work produced a 10x concentration scale up of LiCl (lithium chloride) feedstock for the creation of Li<sub>2</sub>CO<sub>3</sub> (Lithium carbonate) a critical commercial precursor for battery cathode material.

Following the successful completion of the field trial and LiCl validation, Wellspring and LibertyStream met with Packet Digital along with seven other domestic battery cell and industrial lithium derivatives purchasers. At the request of these companies, specifically Packet Digital, Wellspring and LibertyStream will now progress the project to the next phase of Li<sub>2</sub>CO<sub>3</sub> production for product technical validation.

The focus of this project is to build on the renewable component of a sustainable lithium extraction process utilizing DLE and now the refining step, creating bulk Li<sub>2</sub>CO<sub>3</sub> from the field to provide technically validated 99.5% lithium carbonate samples. Wellspring Hydro will complete this project with LibertyStream from commercial and pilot scale plant outputs as well as perform extensive 3<sup>rd</sup> party testing. While this is the focus of the project, it will also serve as a confirmation and screening step to ensure that the highest return waters and processes are validated for North Dakota:

- Utilized existing skills and infrastructure
  - Testing for highest yield waters
  - Pretreatment testing and mass balance output
- Localized supply chain from import dependency
  - Provide samples to Packet Digital, UND and 3<sup>rd</sup> party labs
- Reduced environmental impact through sustainable lithium mining
  - Reduce mining related emissions and excessive freshwater usage
- Job creation to new production opportunities
  - 45 direct lithium related jobs and 3x related support roles

We are requesting \$500,000 in support from the Renewable Energy Program. In return, Triple 8 LLC commits to matching \$500,000 in equity funds already raised through joint venture partnership.

If you have any questions or require additional information, please do not hesitate to contact Mat Hirst 303-346-3496 or mat@wellspringhydro.com.

Mat Hirst, COO

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
<input checked="" type="checkbox"/>	\$100 Application Fee
<input checked="" type="checkbox"/>	Tax Liability Statement
<input checked="" type="checkbox"/>	Letters of Support (If Applicable)
<input checked="" type="checkbox"/>	Other Appendices (If Applicable)

When the package is completed, send an electronic version to the Industrial Commission at [ndicgrants@nd.gov](mailto:ndicgrants@nd.gov). Send payment to:

North Dakota Industrial Commission  
Attention: Renewable Energy Program  
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:  
<https://www.ndic.nd.gov/renewable-energy-program/rep-applicant-council-information>

Questions can be addressed by calling 701-328-3722.



## Renewable Energy Program

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### North Dakota Industrial Commission

## Application

**Project Title:** Unlocking Lithium Carbonate in Produced Water for Battery Grade Li<sub>2</sub>CO<sub>3</sub> for in-state Cathode Manufacturing

**Applicant:** Triple 8, LLC Dba Wellspring Hydro

**Principal Investigator:** Mat Hirst

**Date of Application:** August 31, 2025

**Amount of Request:** \$500,000

**Total Amount of Proposed Project:** \$1,000,000

**Duration of Project:** 9 Months

**Point of Contact (POC):** Mat Hirst

**POC Telephone:** (303) 345-3496

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

**POC Address:** 13927 Western Way

Williston, ND 58801

## TABLE OF CONTENTS

*Please use this table to fill in the correct corresponding page number.*

<b>Abstract</b>	<b>5</b>
<b>Project Description</b>	<b>6</b>
<b>Standards of Success</b>	<b>12</b>
<b>Background/Qualifications</b>	<b>16</b>
<b>Management</b>	<b>17</b>
<b>Timetable</b>	<b>18</b>
<b>Budget</b>	<b>19</b>
<b>Confidential Information</b>	<b>20</b>
<b>Patents/Rights to Technical Data</b>	<b>21</b>
<b>State Programs and Incentives</b>	<b>23</b>
<b>Appendix</b>	<b>24</b>

## ABSTRACT

### **Objective:**

The Wellspring Hydro lithium project aims to establish a sustainable direct lithium extraction (DLE) process using waste produced water from North Dakota oilfields. A field trial was completed onsite in North Dakota with a technology partner who has tested Bakken formation water and is currently running a commercial operation in West Texas.

Wellspring Hydro has invested in a pilot-scale lithium carbonate production unit as the next critical step following the successful lithium extraction field trials. Producing lithium carbonate at the pilot scale will generate bulk sample volumes suitable for testing, qualification, and pre-commercial validation by potential end users, including battery manufacturers and cathode suppliers. This investment reflects Wellspring's strategic commitment to accelerating commercialization, de-risking full-scale development, and enabling early customer validation of U.S.-produced battery-grade lithium.

Wellspring Hydro requests the financial support of the Renewable Energy Program to complete the next step of commercialization including site specific lithium extraction qualification and associated high value 3rd party testing. A major emphasis will be on lithium refining validation and samples creation with a purpose to prove the capability to meet the required quality and quantity of Lithium Carbonate for customers again validated by high value 3rd party lab testing. Packet Digital is the primary focus of validation to ensure Wellspring Hydro can meet their short and long-term product requirements for the battery cell manufacturing facility, much of this validation work will be performed in conjunction with UND and cathode cell manufacturers. This output will create a full life-cycle lithium ecosystem inside North Dakota from lithium extraction to battery manufacturing, with the potential to make the state a key player in the evolving and expanding energy market.

### **Expected Results:**

The output of this project will result in Lithium Carbonate in Produced Water for Battery Grade  $\text{Li}_2\text{CO}_3$  for in-state Cathode Manufacturing.

### **Duration:**

This project will be focused over 9 months, aligned to the timing of the Refining Unit installation in North Dakota and Packet Digital's requirement for product in 2H 2026.

### **Total Project Cost:**

Total of \$1,000,000 project cost. Wellspring Hydro is requesting \$500,000 from the Renewable Grant to support the scope.

### **Participants:**

The project will be managed by Wellspring Hydro and LibertyStream's management teams. The project will also actively involve Packet Digital with collaboration on Lithium Carbonate validation.

## PROJECT DESCRIPTION

### Objectives:

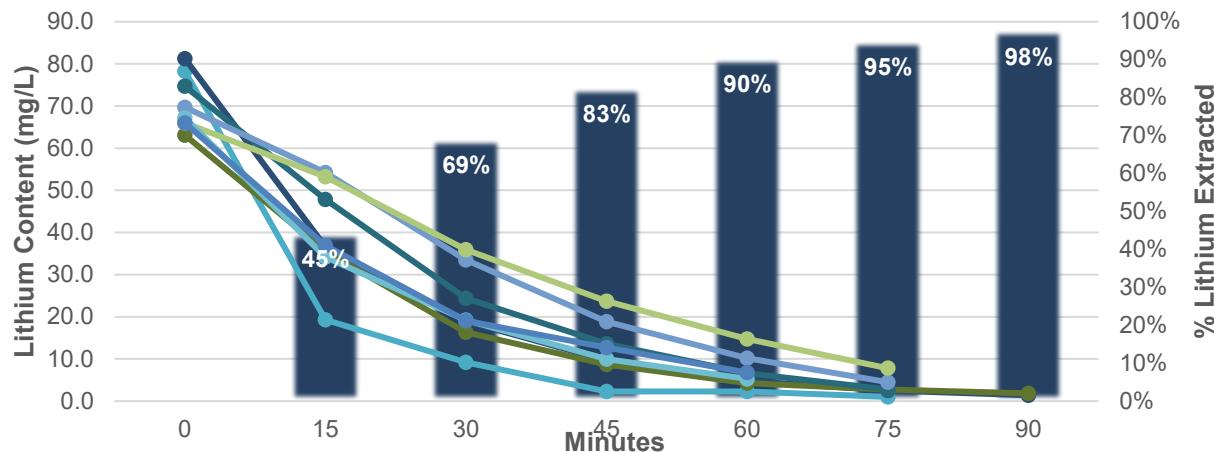
The Wellspring Hydro lithium project aims to establish a sustainable direct lithium extraction (DLE) process using produced water from North Dakota oilfields. A field trial was completed onsite in North Dakota with technology partner LibertyStream who has tested Bakken formation water and is currently running a commercial operation in West Texas.

The field trial processed raw untreated produced water to demonstrate the feasibility of lithium extraction from produced water streams. The success of this DLE pilot test had a significant impact on the scalability of lithium production in North Dakota, positioning it to become a significant producer in North America. The field trial was supported by the Renewable Energy Program funding for the following:

- Produced water lithium extraction onsite at a saltwater disposal for a 30-day field trial in 2025.
- Proprietary equipment and IX Media designed for oilfield produced water.
- Laboratory testing for validation of DLE system and IX Media performance.

The North Dakota field trial was conducted in June and July 2025 to validate lithium extraction performance of the proprietary IX Media under real-world operating conditions. The trial successfully met all expectations, consistently achieving greater than 95% lithium extraction across all DLE runs using raw untreated Bakken produced water. These results confirmed the technical viability and reliability of the process at field scale, marking a critical milestone on the path toward commercial deployment.

Based on the optimized field DLE runs, Wellspring Hydro and LibertyStream were able to extract between 90-99%. The graph below represents % lithium extracted and the changes over time.



The proprietary DLE equipment and IX (ion exchange) media performance onsite confirmed:

- The Williston Basin produced water responds similarly under laboratory, pilot plant and site conditions.
- Lithium extraction performance is consistent with comparable efficiencies.
- On-site DLE has been validated as operationally feasible and effective in the Williston Basin.

Wellspring Hydro has invested in a pilot-scale lithium carbonate production refining unit as the next critical step following the successful lithium extraction field trials. Producing lithium carbonate at the pilot scale will generate bulk sample volumes suitable for testing, qualification, and pre-commercial validation by potential end users, including battery cathode suppliers and manufacturers. This investment reflects Wellspring's strategic commitment to accelerating commercialization, de-risking full-scale development, and enabling early customer validation of U.S.-produced battery-grade lithium.

LibertyStream Infrastructure Partners and Wellspring Hydro completed a rigorous vendor selection process to identify a qualified third-party engineering and fabrication firm capable of designing and building a modular lithium carbonate production unit. The selection focused on vendors with proven experience in lithium processing, modular plant construction, and the ability to deliver high-purity lithium carbonate suitable for end-user sampling and validation. Ultimately, ENCO Machinery was selected as the vendor due to their track record in lithium projects around the world and their expertise in developing a modular cost-effective design.

To ensure the unit was tailored to its process needs, Wellspring Hydro and LibertyStream supplied lithium chloride feedstock—produced from its proprietary Direct Lithium Extraction technology—to the vendor early in the design phase. This allowed the engineering team to perform bench-scale testing and process modeling, enabling them to:

- Accurately size precipitation and filtration systems,
- Optimize for impurity removal based on brine chemistry,
- And ensure the final lithium carbonate product could meet targeted purity specifications.

The design effort prioritized field-deployable, modular architecture to allow for staged deployment—beginning with pilot-scale operations and ultimately integration with scaled commercial operations. Enco Machinery has also provided quotes on Lithium Carbonate units for annual carbonate production of 100 tons, 500 tons and 1,500 tons. Upon successful implementation of the pilot-scale (which will be used for commercial production with smaller customers) in the field, there will be an opportunity to utilize this technology for commercial operations. This custom-engineered unit serves as a key bridge between successful lithium extraction trials and commercial-scale lithium carbonate production in 2026.

Wellspring Hydro requests the financial support of the Renewable Energy Program to complete the next step of commercialization including site specific lithium extraction qualification and associated high value 3rd party testing. A major emphasis will be on lithium refining validation and samples creation with a purpose to prove the capability to meet the required quality and quantity of Lithium Carbonate for customers again validated by high value 3rd party lab testing. Packet Digital is the primary focus of validation to ensure Wellspring Hydro can meet their short and long-term product requirements for the battery cell manufacturing facility, much of this validation work will be performed in conjunction with UND and cathode cell manufacturers. This output will create a full life-cycle lithium ecosystem inside North Dakota from lithium extraction to battery manufacturing, with the potential to make the state a key player in the evolving and expanding energy market.

## **Methodology:**

The Methodology of this project will progress the lithium extraction and refining process for customers;

1. Site Specific Lithium Extraction Qualification – Content, Pre-Treatment, and Defined Process.
  - a. This scope would begin with Lithium testing and qualifications at identified partner sites to ensure the commercialization roadmap meets offtake needs. The process will include significant amount of testing (utilizing 3<sup>rd</sup> party water labs) to confirm lithium content in selected sites. Wellspring Hydro would plan to develop a site-specific overview of water content and validate the pretreatment testing required to extract lithium chloride. At the current stage, Wellspring Hydro has had initial partnership negotiations with 4 different midstream operators that handle over 200,000 BBL per day. This has the potential to yield over 4,000 tons of Lithium Carbonate per year.
2. Lithium Refining Validation – Onsite Development, 3<sup>rd</sup> party Testing, and Equipment.
  - a. This scope will focus on the customization of the Lithium Refining Unit to produce >99.5% Lithium Carbonate with a focus on Packet Digital's product specification. While >99.5% Lithium Carbonate is the standard for battery grade, the detail in the remaining 0.5% of the product can be critical in a customer's product. Wellspring Hydro will aim to meet Packet Digital's specifications in the field to provide product for the test cells in 2026. Additionally, Wellspring Hydro will have the product validated by a 3<sup>rd</sup> party Cathode manufacturer to prove the process is sustainable and creates validation for other offtake customers.

## **Anticipated Results:**

The output of each scope in this project includes;

1. Site Specific Lithium Extraction Qualification – Content, Pre-Treatment, and Defined Process.
  - a. Database to qualify sites based on the water content, tenorm, and pretreatment plans. The deliverable will identify a detailed site qualification to help progress commercialization to economic discussions with potential partners. This process looks to yield >10 approved sites. Each site will have a database of qualified water samples (validated from multiple vendors) and a defined plan for pre-treatment and the process. Wellspring Hydro aims to have one defined process for all sites, with a potential for some customization based on the output of the database.
2. Lithium Refining Validation – Onsite Development, 3<sup>rd</sup> party Testing, and Equipment.
  - a. Meet Packet Digital's Lithium Carbonate specification, including through bulk samples prior to cell tests in 2026. This could also include support from North Dakota universities based on the working relationship with UND and NDSU.
  - b. Receive a 3<sup>rd</sup> party validation report from a cathode manufacturer to support the successful production of high-grade Lithium Carbonate.

**Facilities:**

Subject matter experts will assist in both scopes. The facilities required for this project include;

1. 10+ Saltwater Disposal Facilities in North Dakota
  - a. Details on the identified sites and midstream partners can be provided upon request.
2. Operation of onsite DLE and Refining Li<sub>2</sub>CO<sub>3</sub> facility
  - a. Field operations support, sampling and testing
  - b. Chemical reagents – Hydrochloric Acid, Caustic Soda
  - c. NMR reagents
3. Field lab equipment
  - a. Sampling equipment
  - b. Solid liquid separation bench testing equipment
  - c. Water testing equipment
    - i. ICP, IC, Spectrophotometer, associated reagents
4. Energy Labs – Water Analysis Laboratory - Billings, Montana
  - a. Water Analysis Testing and Tenorm
5. MVTL (Minnesota Valley Testing Laboratory) – Bismarck, North Dakota
  - a. Water Analysis
6. Creedence Energy – Williston, North Dakota
  - a. Water Analysis
7. IsoBrine - Water Analysis Laboratory – Calgary, Alberta
  - a. Water Analysis Testing and Tenorm
8. 3<sup>rd</sup> party Cathode Manufacturer
  - a. Wellspring Hydro is working with Packet Digital and other customers to receive proposals from cathode manufacturers to move forward with validation.

**Resources:**

Resources include experts from Wellspring Hydro, LibertyStream, Compass SWD, third party labs, other industry partners and specialized testing equipment to be acquired for rapid onsite and bench testing. Additionally, Wellspring Hydro will look to continue utilizing state universities for support in testing and validation. Along with these official management resources, this project will depend on insights and guidance from the NDIC, DEQ and other state entities support.

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

The techniques that will be utilized are primarily standard water testing for oil & gas and critical minerals. The third party labs referenced in Facilities and Resources will be critical to validate testing in addition to purchased in-house equipment. Wellspring Hydro and LibertyStream have built working relationships and confirmed availability for support during this project.

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

The project will include sampling, lab testing, and field testing. All testing will have very limited environmental and economic impact during the next six months with thorough safety and risk assessment work prior to implementation.

Field work will produce minimal waste that is approved for recombination and disposal in an approved class II SWD onsite. This process was used for the prior completed DLE trial and will be permitted with the NDIC and DEQ through a form 4.

A requested output from the DEQ is the mass balance of water and waste streams from all processes.

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

Wellspring Hydro will utilize LibertyStream's technology for a modular, field-deployable Direct Lithium Extraction (DLE) platform that enables:

- Rapid deployment at brownfield oil and gas sites across U.S. basins while adding significant value to oil & gas assets through new critical mineral value streams.
- Lower capital intensity and permitting complexity than traditional hard rock ore mined or solution/salar mined based lithium production. Field-deployable DLE platform is projected to save over 450,000 gallons per ton of lithium carbonate over old market production processes.
- Stepwise scale-up, allowing initial production within 6–12 months and expansion over time to meet growing demand.

This approach positions Wellspring Hydro and LibertyStream to provide a short-term and medium-term domestic supply solution, helping to bridge the multi-year development timelines of large mining operations. By targeting underutilized oilfield brines, Wellspring Hydro simultaneously creates a new resource stream while reducing environmental impact through co-location with existing infrastructure.

#### **Environmental Advantages:**

- 90–95% less land use than evaporation ponds
- Significantly lower water intensity than hard rock or brine mining
- Minimal surface disturbance, especially when co-located on brownfield sites

#### **Economic Benefits:**

- Potential for thousands of domestic jobs in lithium processing and battery manufacturing
- Revenue diversification and new investment in energy transition regions
- Unlocks distributed, regional lithium production hubs to support U.S. EV and storage mandates

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

Wellspring Hydro and LibertyStream have a transformative opportunity to strengthen the U.S. economy by unlocking a scalable, domestic supply of lithium—a critical mineral essential to the clean energy transition, electric vehicle (EV) growth, and battery storage infrastructure. Lithium demand in the U.S. is projected to increase by over 500% by 2035, yet the country remains heavily reliant on foreign sources, particularly from regions subject to geopolitical instability, trade restrictions, and environmental challenges. The result is a structural supply vulnerability that threatens the pace and security of U.S. electrification goals.

Based on this significant opportunity, this project is needed to validate and prove the capability to create high-grade lithium carbonate. The initial strategy was to focus on industrial lithium carbonate customers that had lower specifications for products. This project will serve as a bridge to early commercial

production, allowing the project to produce high-grade lithium carbonate for customer trials in 2026 while full-scale facilities are being constructed. This also allows for direct engagement with the entire market through sample provision, specification matching, and supply agreement discussions with validation of the highest form of product. This will position Wellspring Hydro to support Packet Digital's long-term Lithium Carbonate needs for battery manufacturing in the state.

The ability to bring lithium production online quickly, cleanly, and domestically supports multiple U.S. economic and strategic goals:

- Enhancing the resilience of U.S. supply chains for critical minerals.
- Reducing reliance on imports from geopolitically sensitive regions.
- Creating high-quality jobs in traditional energy states.
- Supporting domestic EV and battery manufacturing industries.

Through this scalable approach, Wellspring Hydro and LibertyStream will be positioned to be a key enabler of U.S. lithium independence, helping to meet near-term demand and catalyze long-term economic growth in clean energy technologies.

## STANDARDS OF SUCCESS

*Standards of Success should include: The measurable deliverables of the project that will determine whether it is a success; The value to North Dakota; An explanation of what parts of the public and private sector will likely make use of the project's results, and when and in what way; The potential that commercial use will be made of the project's results; How the project will enhance the education, research, development and marketing of North Dakota's renewable energy resources; How it will preserve existing jobs and create new ones; How it will otherwise satisfy the purposes established in the mission of the Program.*

### Measurable Deliverables

The key deliverables in this project include;

1. Site Specific Lithium Extraction Qualification
2. Sustainable Onsite Battery Grade Lithium Carbonate – Bulk Samples to Packet Digital
3. 3<sup>rd</sup> Party Validation Report – Cathode Manufacturer

### 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 can validate the Lithium Carbonate specifications required by Packet Digital and work to support other battery manufacturing in the state. This would create a full life-cycle inside North Dakota from lithium extraction to battery manufacturing, with the potential to make the state a key player in the evolving energy market.

Due to the massive success of Packet Digital and their current expansion into highly specialized cathode configurations and battery cell manufacturing for the DOD serving power source manufacturing for UAS (unmanned aircraft systems) they are the driving force for this partnership. However, this has led to discussions with 3 other leading battery cell manufacturers:

- Dakota Lithium
- Norsk Lithium
- Zopak Medical

Each of these manufactures are leaders in their respective spaces with desires to grow in the United States and specifically North Dakota. ND offers stable, reliable workforce, abundant manufacturing space, reliable workforce, abundant energy and unmatched state programs and incentives programs to support attracting new industries. The state's recent track record of bringing new ventures in has caught the attention of many domestic and international investors and industries desiring sustainable growth in a state willing to work with industry, regulatory bodies and the public to create growth opportunities that will lead to decades of stable work, and tax related revenues.

## **Reduced Environmental Impacts & Increased Energy Efficiency**

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 roughly 25% more than all the industrial process water used in North Dakota. This project reduces GHG emissions by:

- Displacing carbon-intensive foreign lithium supply chains (primarily from hard rock mines, salar mines and foreign refiners).
- Eliminating the need for evaporation ponds, commonly used in South American lithium extraction, which are fresh water, energy, and land intensive.
- Integrating with existing oilfield infrastructure, reducing land disturbance, transportation emissions, and new infrastructure development.

## **Energy Sustainability**

Lithium extraction in North Dakota through Wellspring Hydro is designed to minimize environmental impacts while supporting the domestic production of a critical mineral essential to the U.S. clean energy expansion. The development and operational approach reflect a strong commitment to environmental stewardship, regulatory compliance, and community alignment.

### 1. Project Location and Land Use

The locations utilized for lithium extraction are within an established oil and gas basin on previously established infrastructure. The project will leverage existing well pads, brine gathering systems, and midstream infrastructure to reduce the need for new surface disturbance.

This co-location strategy:

- Avoid greenfield development, preserving natural and undeveloped landscapes.
- Minimizes environmental permitting risk associated with land use and habitat disruption.
- Streamlines integration into existing utility and transportation corridors.

The project is being developed in close coordination with regional operating partners that have deep permitting experience in the basin and a strong track record of regulatory compliance.

### 2. Regulatory Alignment and Permitting

This process has been designed and executed in full alignment with local, state, and federal regulatory frameworks applicable to produced water handling, lithium extraction, and chemical use. Based on its location and operating partner's experience. Wellspring Hydro has worked closely with the NDIC and DEQ through the previous field trial and future development plans.

All required permits for water withdrawal, disposal, and facility operations are being pursued in accordance with state environmental and oilfield agencies.

- The project is not intended to require new mineral rights acquisition or changes to land use designation.
- Chemical storage and handling practices will meet or exceed OSHA, EPA (RCRA), and state environmental protection standards.

- Air emissions, if any, will fall under minor source thresholds and be permitted accordingly.

Early regulatory engagement has confirmed that the project fits within the existing permitting pathways and does not present novel compliance issues based on its low-impact design and use of legacy infrastructure.

### 3. Water Use and Management

The proprietary DLE process uses a closed-loop system that extracts lithium from brine without requiring additional water withdrawals. This aligns with current produced water management and regulatory approvals surrounding Saltwater Disposal assets. Environmental benefits include:

- Limited freshwater usage or diversion from natural water bodies.
- Rejection or compliant disposal of processed brine using existing permitted systems.
- Reduction in long-term water disposal volumes by generating value from waste streams.

This approach supports responsible water stewardship and reduces strain on regional water resources.

### 4. Air Quality and Energy Consumption

The project is designed for low emissions and energy efficiency:

- It avoids high-temperature processing and emissions-intensive refining.
- It is designed to run on grid or renewable power sources depending on site availability.
- No evaporation ponds or gas combustion are required for the lithium extraction process.

These features significantly reduce the project's carbon footprint compared to conventional lithium production.

**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 validating a new lithium mining process that is step change in efficiency and sustainability. This project is strategically built upon the existing infrastructure and fluid handling practices of the U.S. oil and gas sector. A key feature of this legacy infrastructure is the co-production of large volumes of saline water—commonly known as “produced water”—as a byproduct of oil and natural gas extraction. This water is not only abundant but chemically suitable for lithium extraction in many U.S. basins, making it a uniquely American opportunity to derive critical minerals from existing industrial flows. This project will be integrated directly into this midstream system. By partnering with companies that control high-volume brine flows and existing SWD assets, the project can:

- Access a consistent, aggregated brine supply without developing new wells or sourcing water externally;
- Avoid land disturbance and permit complexity by utilizing existing pad sites and fluid routing systems;
- Implement lithium extraction prior to disposal, recovering value from a waste stream with minimal additional environmental impact.

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

Wellspring Hydro and LibertyStream sees a unique opportunity to create high-skillset jobs with expansion of lithium extraction and refining in North Dakota. All deployed units will involve fully automated operations, with field operators managing by exception across multiple units. Additionally, LibertyStream is planning to invest in Media manufacturing in North Dakota for all operations that will create more specialized jobs. The larger impact will be on the adjacent jobs created by expansion including electrical, welding, equipment, and facilities local expertise.

The burgeoning lithium industry has been documented to support an average of three associated support roles for every one directly connected lithium job. While still early and numbers are yet to fully be determined, the greater North Dakota Lithium Ecosystem could support nearly 50 new positions leading to 150 support related roles outside of the lithium industry in North Dakota.

The impact of lithium carbonate production in North Dakota will create incremental value to the produced water waste of oil and gas. Through partnerships, there will be an economic impact to oil & gas with significant growth potential on managing produced water in the future.

## **BACKGROUND/QUALIFICATIONS**

### **Wellspring Hydro**

Wellspring Hydro is a locally founded North Dakota company with a mission to unlock the full potential of produced water. The company was originally founded on Steve Kemp's vision of recovering Lithium from produced water. After preliminary research, Wellspring Hydro focused on executing a business plan to turn Bakken produced water into valuable resources by utilizing salt recovered from the brine to create caustic soda, hydrochloric acid, and other valuable products.

#### **MARK WATSON - CHIEF EXECUTIVE OFFICER**

Mark has over 15 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. Mark's industry and operational experience include chemical and water treatment across the globe.

#### **MAT HIRST - CHIEF OPERATING OFFICER**

Mat has over 18 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. Mat spent over 15 years focused on treating Bakken produced water and developed the ARROW (Applied Reuse Recycle of Oilfield Water) facility in Denver, CO.

### **LibertyStream Infrastructure Partners**

LibertyStream is a lithium development and technology company aiming to be one of North America's first commercial producers of lithium carbonates from oilfield brine. Our strategy is to generate value for shareholders by leveraging management's hydrocarbon experience to deploy our proprietary DLE technology directly into existing oil and gas infrastructure, thereby reducing capital costs, lowering risks and supporting the world's clean energy transition. With four differentiating pillars, and a proprietary DLE technology and process, LibertyStream's innovative approach to development is focused on generating the highest lithium recoveries with lowest costs, positioning us for future commercialization. We are committed to operating efficiently and with transparency across all areas of the business staying sharply focused on creating long-term, sustainable shareholder value. Investors and/or other interested parties may sign up for updates about the Company's continued progress on its website: <https://LibertyStream.com/>.

#### **ALEX WYLIE - CHIEF EXECUTIVE OFFICER**

Alex brings over 20 years of executive and entrepreneurial experience in energy, water, and industrial services. He has held senior roles in both publicly traded and private companies and led the transition of Volt Lithium into LibertyStream. His leadership has been instrumental in shaping the company's U.S. growth strategy, midstream partnerships, and capital market engagement. Alex's experience spans oilfield development, infrastructure finance, and clean tech commercialization.

## MANAGEMENT

The Wellspring Hydro and LibertyStream team plan to have a weekly frequency to discuss project details, review action items and assign outstanding tasks. The meeting will consist of Mark Watson (CEO Wellspring Hydro), Mat Hirst (COO Wellspring Hydro), and Alex Wylie (CEO LibertyStream.)

### **Management Process:**

1. Bi-Weekly Wellspring Hydro and LibertyStream
2. Monthly Project Call – Wellspring Hydro, LibertyStream, Packet Digital.
3. Completion of status reports to Renewable Energy Program

### **Significant Milestones:**

These critical milestones will ensure the project meets the timeline expectations and anticipated results, with time to address any issues or challenges.

1. First Status Report
  - a. Tasks Completed –Site Specific Lithium Extraction Qualification Interim Feedback
2. Second Status Report
  - a. Tasks Completed – Site Specific Lithium Extraction Qualification Deliverable, Initial Scope 2 - Lithium Refining Validation
3. Final Status Report
  - a. Tasks Completed – Final Report with all Deliverables
  - b. The key deliverables in this project include;
    - i. Site Specific Lithium Extraction Qualification
    - ii. Sustainable Onsite Battery Grade Lithium Carbonate – Bulk Samples to Packet Digital
    - iii. 3<sup>rd</sup> Party Validation Report – Cathode Manufacturer

## **TIMETABLE**

Wellspring Hydro plans to begin the project immediately upon reward. The timeline set follows a 9-month outlook with a start of January 1, 2026. This timeline is aligned with the installation of the lithium carbonate refining unit in North Dakota and Packet Digital's test cell build out in 2026.

### **Key Timelines**

Project Start – January 1<sup>st</sup>

First Status Report – April 1<sup>st</sup>

Second Status Report – July 1<sup>st</sup>

Project Completion – September 30<sup>th</sup>

## BUDGET

Project Expense	Associated Expense	NDIC's Share	Applicant's Share (Cash)	Applicant's Share (In-Kind)	Other	Project Sponsor's Share
Scope 1 - Site Specific Lithium quantity confirmation		\$145,000				\$145,000
Scope 2 - Lithium Refining Validation		\$355,000				\$355,000
<b>Total</b>		<b>\$500,000</b>				<b>\$500,000</b>

### Wellspring Hydro Match

LibertyStream Infrastructure Partners will invest \$500,000 USD to match this grant request and prioritize the development of lithium refining for high-grade lithium carbonate.

Funds – Blue Represents Scope 1, Orange Represents Scope 2.

Category	Description	Cost
Lithium Testing & Qualifications	<ul style="list-style-type: none"> <li>• Sampling time, travel, and equipment</li> <li>• 3rd party water analysis</li> <li>• Tenorm testing</li> <li>• Water concentration &amp; Li heat map</li> </ul>	\$90,000 USD
Pretreatment testing of water to allow for effective LiCl extraction and refining	<ul style="list-style-type: none"> <li>• Solid/liquid technology downselect*</li> <li>• 3rd party water analysis</li> <li>• Tenorm testing</li> <li>• Mass balance engineering work</li> </ul>	\$150,000 USD
Preconcentration of LiCl	<ul style="list-style-type: none"> <li>• Testing to understand concentration LiCl</li> </ul>	\$50,000 USD
Lithium Carbonate Onsite Development	<ul style="list-style-type: none"> <li>• Electrical tie in/onsite power generation – 50K</li> <li>• Onsite operations of 10 Ton refining unit to generate validation</li> </ul>	\$300,000 USD
Lithium Carbonate Validation	<ul style="list-style-type: none"> <li>• 3rd party testing validation</li> <li>• Tenorm testing</li> <li>• Samples, Shipping</li> </ul>	\$160,000 USD
Testing Equipment (ICP)	<ul style="list-style-type: none"> <li>• Internal water analysis, lithium validation, testing</li> </ul>	\$250,000 USD
<b>Total</b>		<b>\$1,000,000 USD</b>

\*Solid/liquid technology downselect includes; Chemical program validation, DAF performance validation, Incline plate performance validation, MBC performance validation, Wemco performance validation, Gunbarrel performance validation, Oxidizers performance testing, Filtration performance validation and downselect.

## CONFIDENTIAL INFORMATION

Confidential information is not included in this application.

	Permian			Bakken		
Volume of water per day (bbls)	100,000	500,000	2,000,000	100,000	500,000	2,000,000
Annual Production (tonnes)	825.90	4,129.60	16,518.40	2,119.90	10,599.30	42,397.30
Cash Flow	\$13,578,224.20	\$67,891,121.00	\$271,564,484.10	\$34,850,775.50	\$174,253,877.30	\$697,015,509.20

Table - Lithium Value of Basins



Picture – “left to right” - Raw Bakken Water, IX Media, DLE Effluent, DLE Eluate, Li<sub>2</sub>CO<sub>3</sub> (powdered Lithium Carbonate)

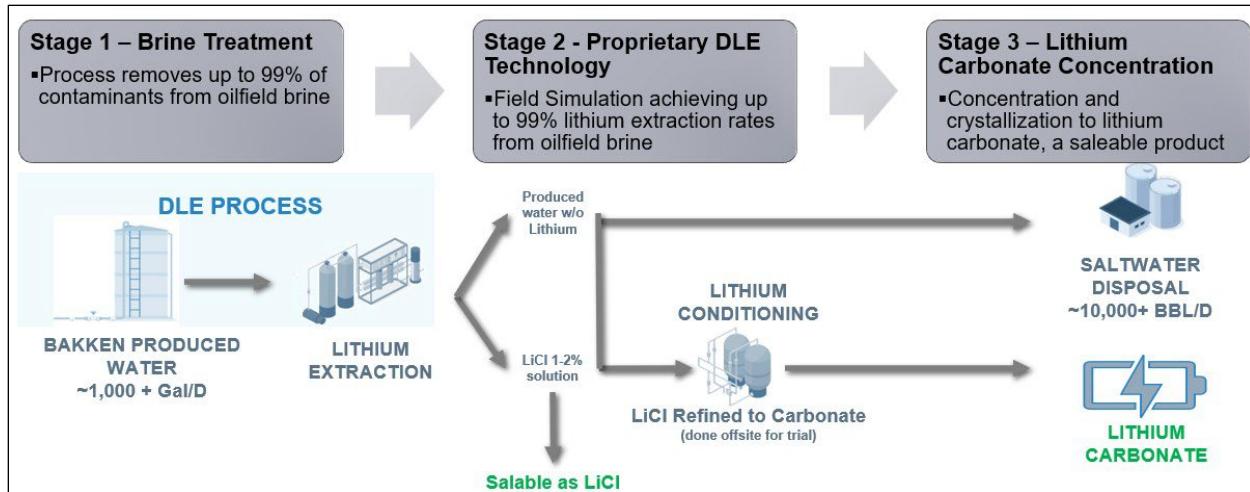


Figure - High Level Process Flow

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

*All technical data from this project will be shared with the Renewable Energy Program and North Dakota Industrial Commission. The data will be owned by Wellspring Hydro and LibertyStream.*

## STATE PROGRAMS AND INCENTIVES

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 research and development into unlocking the full potential of produced water.

<b>Agreement</b>	<b>Company/Division</b>	<b>Investment</b>	<b>Commentary</b>
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	CSEA	\$1,000,000	CSEA grant for FEL-3 engineering funds for chlor-alkali development
Grant	Renewable Energy Program	\$500,000	Investment into the extraction of lithium chloride from raw water.
Grant	CSEA	\$5,000,000	Investment into field validation and development of lithium extraction from produced water.
Loan	CSEA	\$2,500,000	Investment into field validation and develop of lithium extraction from produced water.
<b>Total Investment</b>		<b>\$10,335,000 USD</b>	