# ATTACHMENT N: FIRE PROTECTION PLAN

April 29, 2024

# **FIRE PROTECTION PLAN**

# Goldeneye Energy Storage Project Goldeneye Energy Storage, LLC

PREPARED BY:

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#### INTRODUCTION

The project is titled Goldeneye Energy Storage Project and is located in Skagit County, Washington. The Goldeneye project encompasses the design and construction of a 200 MW Battery Energy Storage System (BESS) to support the local electric utility. This system will help the utility to maintain reliable services during periods of high electrical demand. Furthermore, Goldeneye will help the utility in its goal to achieve 100% clean energy in the future.

#### 1. SITE LOCATION

a. Description

The Goldeneye project is located in Sedro-Woolley, WA on 25080 Minkler Road in the Skagit County. There are 10 Fire Departments in Sedro-Woolley. First Responders are still TBD. Following are links to key Fire Departments in Skagit County. See also Reference Sketch with mapped FIRE DEPARTMENT LOCATIONS.

- i. Skagit County Fire Marshal's webpage: <u>https://www.skagitcounty.net/departments/firemarshal/main.htm</u> [skagitcounty.net]
- ii. Sedro-Wooley Fire Departments.

Sedro Woolley Fire Department 220 Munro Street Sedro-Woolley Fire Department 325 Metcalf Street Skagit County Fire District 6 28406 East Gilligan Creek Road Skagit County Fire Protection District 16 - Day Creek 31693 South Skagit Highway Skagit County Fire Protection District 8 - Headquarters Sedro Woolley 20464 Prairie Road (Phone 360.724.4703) Skagit County Fire Protection District 8 - Prairie Road 3212 Washington 9

- b. The site is in a residential area currently served by city water which will be the supply for the BESS site fire protection system. To get the required pressure and capacity from the city water source at Minkler Road, the project will consist of replacing undersized portions of the existing fire water line under Minkler Road from the intersection of Fruitdale Road to the North East corner of the planned BESS project. This replacement work can be seen in the Attachments on drawings C3-1 and C3-2.
- c. Site Location Drawings

Reference and Project drawings are listed at the end of this document. These Project drawings include a CAD general arrangement plan and sketches which are overlays on Google Earth views of the existing site to show location of the project with respect to current conditions. Site layouts have been done in



compliance with the current Skagit County code requirements (2018 IFC code). Where the current code is silent on an issue, the 2021 IFC code has been used for a design basis.

i. See project drawings C3-1 and C3-2, GOLDENEYE BESS PROJECT, 200MW/800MWH BESS, PRELIMINARY FIRE PROTECTION PLAN for site location layout details.

#### 2. SITE DETAILS

- a. BESS 200 MW Equipment
  - i. This modular configuration is not occupied by personnel. Enclosures are all rated for outdoor weather exposure.
  - ii. Safety has been maximized in this design as each unit is independent of the other units in the centipede chain. This provides maximum limitation of a fire incident in any module from spreading throughout the BESS chain.
  - iii. Batteries are Lithium Iron Phosphate (LFP) or equivalent which is considered the safest lithium-ion chemistry available today.
  - iv. Goldeneye's Remote Operations Center (ROC) monitors in real time all conditions down to each cell level (voltage and temperature) for the performance. The Project's Alert Management System automatically initiates the mitigation measures to deal with an alert condition within a cell / module if it occurs.
  - v. The BESS system is composed of two module groups.
    - 1. The East Group contains Control Enclosure where the ROC will reside for alarm annunciation for both East and West BESS groups. Entrances No. 1 and No. 2 provide access to this group.
    - 2. The West Group has its Fire Protection system independent of the East Group except for the ROC panel which is located at the East Group Control Enclosure. Entrance No. 3 provides access to this group.
- b. Site Control Enclosure
  - i. The only structure on the site will be the Site Control Enclosure that is located at the south end of Entrance No. 2 in the East BESS Group.
  - ii. The First Responders HMI will be mounted near Entrance 1 in the East BESS yard for First Responders to get the detailed alarm information on the module(s) triggering the remote alarm (East Group or West Group).
- c. Security
  - i. The entire BESS project will be enclosed with a security perimeter fence. One separate security perimeter for each BESS Group.
  - ii. Access into each BESS area will be from Minkler Road through either of two gates on each group perimeter fence. Each gate will be equipped with a Knox lock or Knox box as directed by the AHJ.



- iii. A QR code will be posted at each facility entrance to enable the First Responders to access critical, essential information via their mobile devices to safely and accurately focus their efforts on the initiating event. Information accessed will represent the AHJ recommendations to best support the First Responder needs.
- iv. Area lighting and communications are to meet code and AHJ requirements.
- d. Traffic Flow
  - i. Access into each BESS farm is by either of two gates in the perimeter fence.
  - ii. Roadways within each BESS Group site provide access to all modules for maintenance, normal operations, and emergency response.
  - iii. Roadway layout is per 2018 IFC requirements.
- e. Staffing
  - i. The BESS site will normally be unattended.
  - ii. Incident alarms will be automatic to local and remote designated First Responders.
- 3. SAFETY
  - a. Process Safety
    - i. Primary approach to ensuring a safe operating plant consists of the following:
      - 1. Safe process design
      - 2. Safe operating procedures
      - 3. Safe and effective training program.
    - ii. The Goldeneye team is committed to a safe plant operation in accordance with applicable code requirements for siting, materials of construction and safety.
    - iii. Each BESS module has its own comprehensive package of explosion prevention, fire safety features (hydrogen gas detection, active HVAC, fireproof insulation, and optional clean agent fire suppression.)
    - iv. Large-scale testing of equipment will be done to simulate complete failure of all active safety measures during an intentionally induced fire. Satisfactory results will be provided during Building Permit review that show fire does not propagate from one BESS unit to another and that explosion risk in adjacent units exposed to the fire is effectively mitigated.
    - v. Fires will not propagate from one module to another or to surrounding areas. When following code required setbacks for the system installation, and even in areas without access to water, modules can be



safely installed without risk of multiple modules burning down should a fire consume one unit.

- vi. All modules come standard with heat and smoke detectors that automatically trigger the Fire Safety System (FSS) to take action and notify the local fire authority.
- b. Process Hazards
  - Thermal run away. The primary hazard associated with the modules is the uncontrolled combustion of explosive gases from cell(s) in thermal runaway, NOT large-scale fire caused by cells in thermal runaway. These are mitigated through keeping the explosive concentrations of gas below an explosive level through active ventilation, gas detectors, fire suppression, and ground fault detection, all in real time.
  - ii. Voltage and temperature in each cell are monitored in real time. This information is monitored by the ROC and is shown on the First Responders HMI (see below and 3a above).
- c. First Responders
  - First responder site incident information is provided by two FACU panels. First FACU is just inside Entrance No. 1 where incident location is provided. Second Master Panel is installed outside the Control Enclosure on the south end of Entrance No. 2 in the East BESS Group. This HMI will show status of heat, gas, smoke, fire suppression and communications for each module. This is in addition to alarms and strobes for each segment chain.
  - ii. Primary emphasis for the plant Fire Protection system is external exposure protection of adjacent equipment if a fire occurs. Fire hydrants have been provided throughout the BESS for First Responders to provide water streams to surrounding equipment or structures. Hose stations are to be located per direction of the AHJ.
  - iii. Plant First Response team will be small with primary role to be provided by regional Fire Authority personnel.
  - iv. Emergency Contact List has been established for all personnel critical to an incident response.
  - v. Prior to receiving a Certificate of Occupancy (CoO), the project will arrange a manufacturer-led safety training with the First Responder team, and then semi-annually after that date, or upon adoption of a new Fire Code, whichever is more frequent.

#### 4. FIRE PROTECTION DESIGN BASIS



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- vi. All modules come standard with heat and smoke detectors that automatically trigger the Fire Safety System (FSS) to take action and notify the local fire authority.
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  - iii. Plant First Response team will be small with primary role to be provided by regional Fire Authority personnel.
  - iv. Emergency Contact List has been established for all personnel critical to an incident response.
  - v. Prior to receiving a Certificate of Occupancy (CoO), the project will arrange a manufacturer-led safety training with the First Responder team, and then biennially after that date, or upon adoption of a new Fire Code, whichever is more frequent.

#### 4. FIRE PROTECTION DESIGN BASIS



- a. System Types
  - i. External hydrants with monitor nozzles are provided for fire exposure protection. These are manually controlled. Use of these hydrants will occur by First Responders to an automatic local and remote signal when an incident is detected.
  - ii. Each module has internal module fire protection in noted 3.c.i above.
- b. System Performance
  - i. Water supply is to be sized for two hydrants simultaneous operation. Flow test required to determine available supply main pressure and capacity.
  - ii. Hydrant hose nozzles are to be able to deliver 250 gpm per nozzle.

#### 5. FIRE PROTECTION SYSTEM COMPONENTS

- a. General
  - i. In the event of a fire, fire protection systems on site will be engaged to suppress the fire and also protect adjacent equipment or structures from being engaged in the fire.
  - ii. Manual Systems:
    - 1. Exposure protection will be done by hydrant monitors located around the perimeter boundary of the plant site.
    - 2. Fire responders will provide hose streams from these monitors to protect equipment nearby a fire incident.
  - iii. Water Supply
    - 1. Adequate water supply is critical to the fire protection system (volume, duration, pressure, flow).
  - iv. Exposure Protection
    - 1. Basic fire protection concept is to provide exposure protection for equipment adjacent to a fire incident.
    - 2. This is a manual protection scheme. Responders to maintain safe distances from any fire location.
  - v. Automatic Protection
    - 1. This is limited to internal module systems installed in each BESS module.
  - vi. Alarms
    - 1. Alarm signal is required to remote First Responder for comprehensive fire event control.
    - 2. Knox Box / Lock must be available at the first responder entrance to the plant site.
  - vii. Incident Response



- 1. Plant will have minimal responders available to handle a fire incident. Plant Personnel will be trained in monitor usage and safe response practices.
- 2. Skagit County with Sedro-Woolley Fire Authorities will determine who shall be considered the prime responder to a fire event at the plant.
- b. Water Supply
  - i. The public water system is assumed to be located on Minkler Road.
  - ii. Tie-ins are to be made to the existing main. Nearest hydrant flow tests are to be done as part of the permit design process.
  - iii. Flow is to be suitable to two (2) hydrants use in an incident response.
- c. Water Distribution
  - i. Underground mains
    - 1. Use ductile iron where piping passes under foundations (5 ft either side)
    - 2. Metallic piping or components shall be properly protected from galvanic corrosion.
    - 3. Materials, installation, and sizing to meet 2018 IFC requirements.
  - ii. Hydrants & Monitor Nozzles
    - 1. Provide bollards around hydrants, PIV, section valves where traffic may present a damage hazard.
    - 2. Locate hydrants to maximize water coverage from two locations simultaneously.
- d. Automatic Protection Systems
  - i. BESS
    - 1. See Section 3 above.
  - ii. Types
    - 1. See also Section 2.a above
    - Alarms from each module automatic protection system shall be visible at the HMI control panel to be located at the Control Building.
    - 3. Coordinate designs with AHJ and site insuring authorities.
- e. Miscellaneous
  - i. Fire Extinguishers
    - 1. Provide as necessary to meet code requirements
    - 2. Adequate number of portable fire extinguishers of pressurized water, dry chemical powder, or Carbon dioxide type shall be



provided in at the control building. These extinguishers will be used during the early phases of fire to prevent its spread and costly damage.

ii. Hose Stations

Provide as necessary to meet AHJ and code requirements.

f. Knox Box / Lock

Provide at each security access gate (3 locations) in accordance with AHJ requirements.

- g. Control & Communication System
  - iv. Control Panels
    - 1. Main Fire Protection Alarm / Operations panel will be located in the Control Building.
    - 2. Annunciation Panel will also be located in the Control Building.
    - 3. Remote FACU Panel will be located just inside Entrance No. 1. This will provide first responders information on incident response location.
  - v. Alarms
    - 1. Alarms for a fire event are to be audible throughout each BESS group simultaneously.
    - 2. Alarm signal to be annunciated in the main FP Panel which is to be located at the Control Building.
    - 3. Remote alarm is to be sent to First Responders for their action to respond to the plant incident.
  - vi. Remote Signaling
    - 1. Shall be sent to First Responders for response to Plant event.
    - 2. Details to be coordinated with AHJ.
  - vii. Instrumentation:
    - 1. Additional instrumentation not required at this time.
- h. Commissioning Plan

viii. Contractor shall provide the Commissioning Plan.

- ix. Details of the Commissioning Plan shall include:
  - 1. Means & Methods
  - 2. Plans & Specs
  - 3. Activity descriptions & procedures
  - 4. Documenting procedures
  - 5. Testing requirements
  - 6. Guidelines & format
  - 7. Training plan



- 8. Signoff
- i. Emergency Planning & Preparedness
  - x. Contractor shall coordinate the EPP.
  - xi. EPP shall meet the WA State and Skagit County Fire Code requirements.
  - xii. Coordinate with Plant and AHJ for plan details.
- 6. REVIEWS & APPROVALS
  - a. Preliminary Design Review (AHJ) and Consultation (AHJ team)
  - b. Pre-construction (Before IFC)
  - c. Commissioning
  - d. Operational
    - i. Field Inspection required
- 7. FP SYSTEM DESIGN
  - a. Preliminary Design

POWER Engineers will provide a design concept document that will be used for Bidding the Detailed Fire Protection System design by contractors properly certified for FP work in the Goldeneye Project location.

- b. Final Design
  - i. All work to be done in compliance with all applicable codes.
  - ii. Obtain all necessary approvals from AHJ, Fire District, and site insurer project reps.
  - iii. Participate in regular project team meetings and provide regular status updates in accordance with the POWER PM project plan.
  - iv. Utilize PM systems for document management, procurement, and provide scheduling updates as requested in MS Project format.
  - v. All materials selected for use shall have been certified by UL, FM, or approved regulatory authority.
  - vi. Contractor shall provide a PVF schedule for approval covering all equipment supplied as part of the overall FP System. PVF shall include both ductile iron and approved non-metallic piping with fittings for the underground water distribution system. Schedule shall include all relevant manufacturer information for procurement by Goldeneye.
  - vii. Provide submittals in format as requested for all equipment and materials supplied as part of the project. Information shall include critical spares parts listing, operation and maintenance instructions, drawings (mechanical and electrical), and performance warranty information.



- viii. Finalize design and prepare construction documents for all FP systems. This shall include:
  - 1. Components General:
    - Water storage and distribution systems
  - Alarm systems (local & remote to control room) Coordination with all process related design to eliminate conflicts in routing FP systems.
  - 3. Sprinkler system design for wet pipe systems. (Not Required)
  - 4. Clean Agent total flooding fire suppression systems where designated. (Not Required)
  - ix. Obtain all necessary permits for construction, inspections, and operation.
  - x. Prepare Pre-Startup Inspection and Testing plan prior to Commissioning.
    - 1. Testing must be coordinated with all other activities on-site.
    - All piping and valves, after installation will be tested hydraulically at a pressure of 16kg/cm<sup>2</sup> for a period of 30 minutes to check against leak tightness.
    - 3. All manually operated valves/gates shall be operated throughout 100% of the travel and these should function without any trouble whatsoever, to the satisfaction of Goldeneye. Design, construction, erection, testing and trial operation of piping, valves, strainers, hydrant valves, hoses, nozzles, branch pipes, hose boxes, expansion joints etc. shall be included.
- xi. Prepare Commissioning Plan and implement the plan after AHJ and Skagit County approval for the completed system.
- xii. Provide Training materials and on-site training for all shift leads on the completed FP system. Allow 8 hours per shift for classroom and "hands on" training.

#### 8. CONSTRUCTION

- a. County construction fire permits
  - The Skagit County Fire District administers fire protection services for the facility Permits are issued by AHJ. Typical permit requirements exist for reviews and approvals to operate per FD Prevention Services Division Fee Schedule
- b. County Construction Fee Schedules.

Fee schedule for reviews and permits are posted on the County and City web sites.



## 9. EMERGENCY CONTACT LIST

#### BESS System Personnel Emergency Phone Numbers

NAME	POSITION	TELEPHONE
TBD1	Operations Manager	
TBD2	Safety Manager	
TBD3	Environmental Manager	
TBD4		

#### State and County Emergency Phone Numbers

NAME	POSITION	TELEPHONE
	County Fire District #8	
	Sedro-Woolley Fire	
	District #	
	Sedro-Woolley Fire	
	District #	
	Police	
	Sheriff	
	Highway Patrol	

#### Hospital(s) Emergency Phone Numbers

LOCAL HOSPITAL	LOCATION	TELEPHONE
Primary		
Secondary		

#### Other Emergency Phone Numbers

<u></u>		
NAME	POSITION	TELEPHONE



Public Works	
Utility	
Insurer	



DRAWINGS (Goldeneye Project)

- 1. C3-1 GOLDENEYE BESS PROJECT 200MW/800MWH BESS, PRELIMINARY FIRE PROTECTION PLAN
- 2. C3-2 GOLDENEYE BESS PROJECT 200MW/800MWH BESS, PRELIMINARY FIRE PROTECTION PLAN DETAILS

**REFERENCE INFORMATION (Washington State)** 

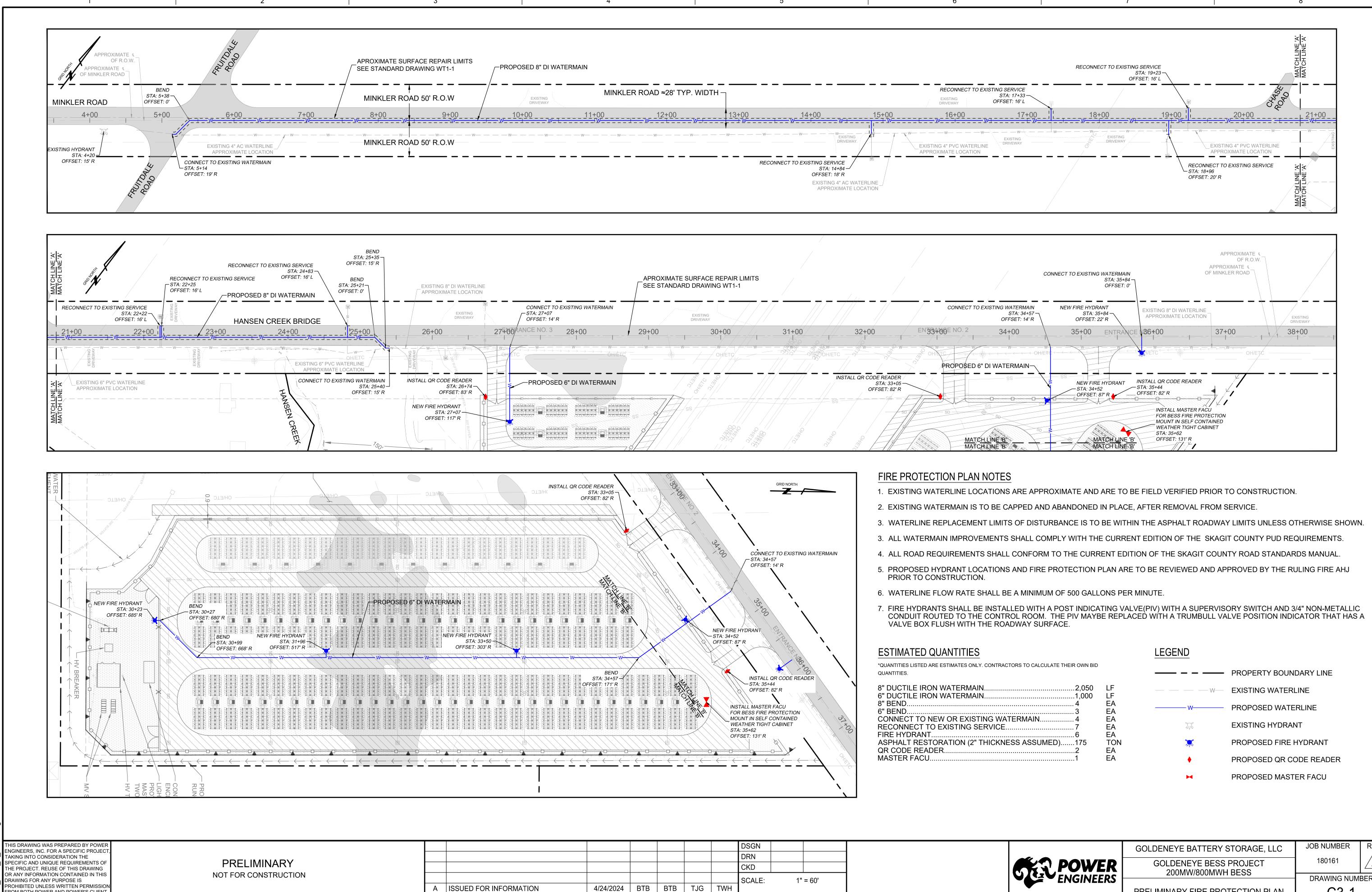
1. WASHINGTON STATE FIRE CODE (BASED ON THE 2018 IFC)

REFERENCE INFORMATION (Skagit County)

- 1. Title 17 FIRE CODE (Updated October 21,2022)
- 2. Skagit County Fire Protection Districts map
- 3. Sketch: FIRE DEPARTMENT LOCATIONS
- 4. Sketch: BESS SITE APPROXIMATE LOCATION

CODES (IFC)

- 1. 2018 International Fire Code (current adoption by Skagit County)
- 2. 2021 International Fire Code
- 3. 2020 NFPA Standard for the Installation of Stationary Energy Storage Systems



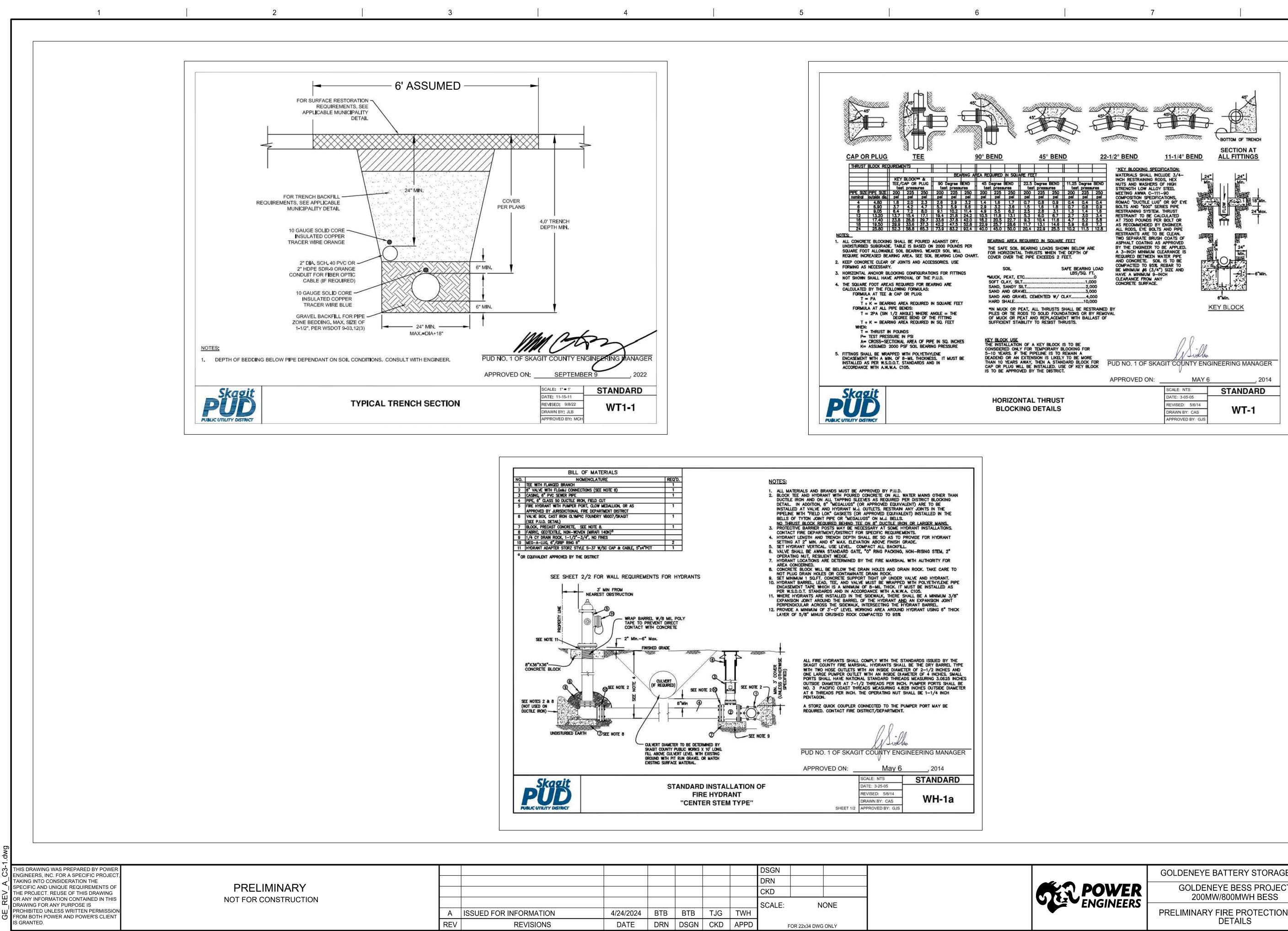
FROM BOTH POWER AND POWER'S CLIENT S GRANTED.



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						DRN		
						CKD		
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FOR INFORMATION	4/24/2024	BTB	BTB	TJG	TWH			
REVISIONS	DATE	DRN	DSGN	CKD	APPD	FC	OR 22x34 DW	G ONLY

		JUDE READER	
	PROPOSED MAS	STER FACU	
	GOLDENEYE BATTERY STORAGE, LLC	JOB NUMBER	REV
POWER	GOLDENEYE BESS PROJECT 200MW/800MWH BESS	180161	
ENGINEERS		DRAWING NUM	BER
	PRELIMINARY FIRE PROTECTION PLAN	C3-1	



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					CKD		
					SCALE:		NONE
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GOLDENEYE BATTERY STORAGE, LLC	JOB NUMBER	RE\
GOLDENEYE BESS PROJECT 200MW/800MWH BESS	180161	A
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PRELIMINARY FIRE PROTECTION PLAN DETAILS	C3-2	

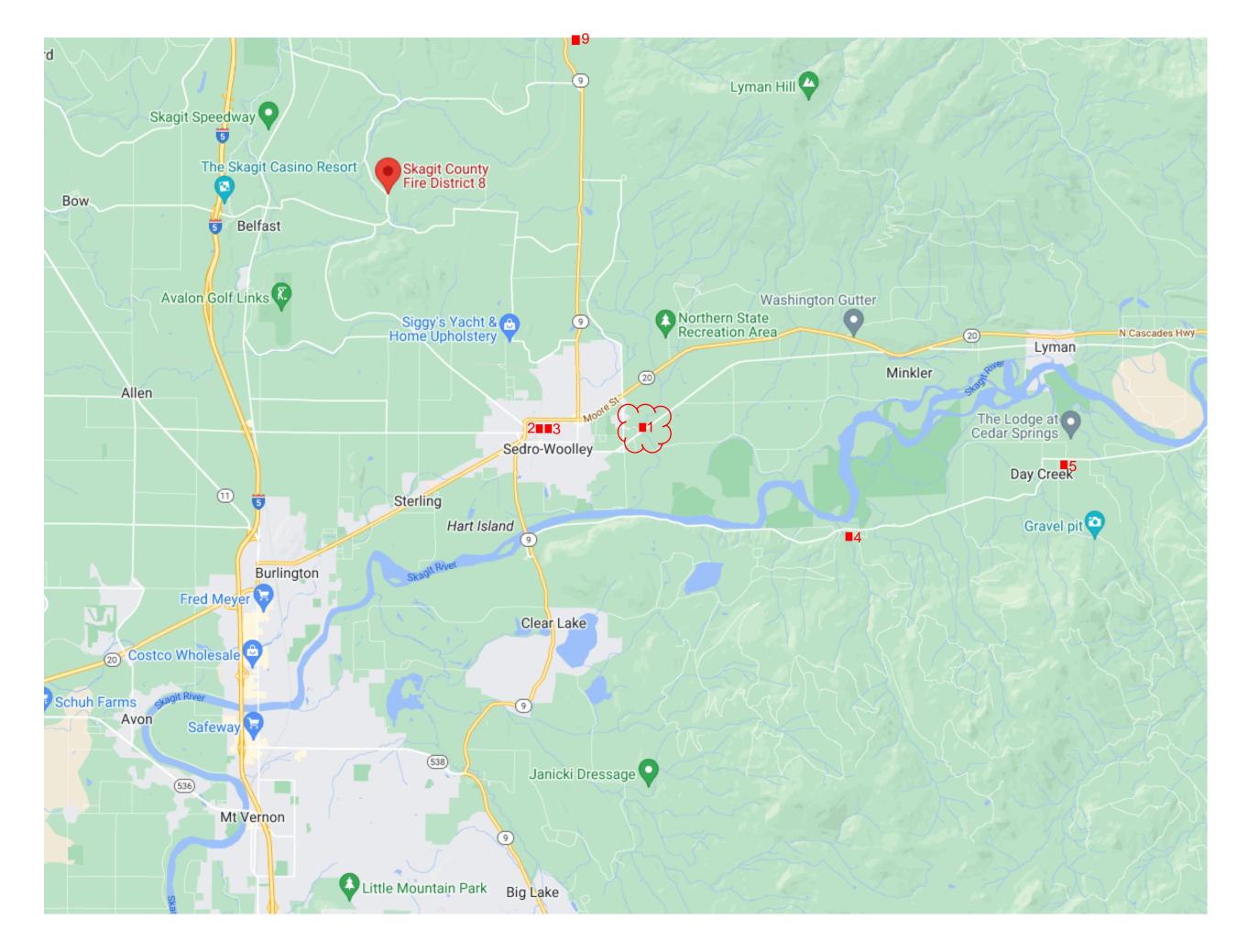
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## **APPROXIMATE LOCATION**

25080 MINKLER ROAD CITY OF SEDRO-WOOLLEY COUNTY OF SKAGIT STATE OF WASHINGTON

PARCEL ID: 40030 PARCEL ZONING: Ag-NRL STREET SETBACK: 35' INTERIOR SETBACK: 15' REAR SETBACK: 35'



#### FIRE DEPARTMENT LOCATIONS

- 1 = 25080 Minkler Road
- 2 = 220 Munro Street
- 3 = 325 Metcalf Street
- 4 = 28406 East Gilligan Creek Rd
- 5 = 31693 S Skagit Hwy
- 6 =
- 7 =
- 8 =
- 9 = 3212 Washington 9