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April 23, 2024

California Energy Commission
Attn: Lon Payne
Docket Unit MS-4, Docket No. 23-OPT-01
715 P Street
Sacramento, CA 95814

Reference: Fountain Wind Project Wildfire Supplemental Information and Response to CAL FIRE Records of Conversation

Dear Mr. Payne,

On behalf of Fountain Wind, LLC (Applicant), I am writing to provide supplemental information and responses to the recently docketed wildfire-related Records of Conversation (ROCs), TNs 254899, 254837, and 254875, between the California Energy Commission (CEC) and Staff Chief of Tactical Air Operations Jake Sjolund and Unit Chief Sean O'Hara, representatives of Shasta County Fire Department and CAL FIRE, regarding the Fountain Wind Project (Project).

Pyroanalysis' consulting staff, consisting of highly regarded fire experts,[1] have evaluated the comments made during the interviews by CEC staff with Chief O'Hara, which we do not believe reflected an official CAL FIRE position, and were not intended to be taken as an official position. Pyroanalysis, on behalf of the Applicant, requests that CAL FIRE and Shasta County Fire Department are afforded the opportunity to provide formal written responses that represent the Department's official stance on these issues rather than relying on informal telephone interviews.

The responses in this letter nonetheless explain why, in our expert opinion, statements made in the docketed synopses of CEC staff telephone interviews with both Chiefs are not supported by the evidence in the record and do not accurately represent the Project's impact on wildfire risk, which we continue to believe are mitigable.

In particular, we are concerned that conclusions made about the project's impacts to fire risk and fire services contained in the CEC's synopsis of the interview with Chief Sean O'Hara conflict with statements made by Shasta County's previous Fire Chief, Bret Gouvea, as well as with conclusions within Shasta County's 2021 EIR for the Fountain Wind Project and the 2008 EIR for the Hatchet Ridge Wind Project. These EIRs determined that the risk of these projects triggering a wildfire was less than significant with mitigation. The former Fire Chief was satisfied with the multi-pronged mitigation strategy to be imposed as conditions of approval on the Project. We believe the CEC's EIR should reach the same conclusion as Shasta County's own documents, as neither the Project, its mitigation, nor surrounding circumstances have changed such as to merit a conclusion of **anything other than less than significant with mitigation** when it comes to wildfire-related impacts. Not only

[1] Resumes provided as an attachment to TN 253505

do we believe that wildfire risk should be less than significant with mitigation, but our previous analysis has demonstrated that the project will significantly decrease the threat posed by the spread of wildfire, as compared to baseline conditions. It is for this reason that we believe the project will be a net benefit to fire protection in the area.

Indeed, wind turbine fire detection and suppression technologies have only improved since 2021, and drastically improved since 2008. Since 2021, moreover, the Project size has been reduced from 72 turbines to 48 turbines, further reducing fire risk. Substantial evidence supports a conclusion that the Project would result in an impact conclusion of less than significant with mitigation with respect to wildfire and fire services—the same conclusion that Shasta County itself reached in its own CEQA analyses for this Project.

We appreciate this opportunity to provide further information about how the Project's planned features and activities will significantly *reduce* fire risk when compared to existing base-line conditions. This document includes a discussion of relevant wildfire-related Conditions of Approval (COAs) included in Shasta County's 2021 staff report for the Project and recommended by Shasta County's prior Fire Chief.[2] The Applicant has committed to implementing these COAs for the Project. The information in this document also relies on the analysis and conclusions presented in our previous assessment, *Fountain Wind Project Impacts on Fire Behavior and Aerial Firefighting* (Project Fire Technical Report).[3]

As you review our responses below, please consider the following facts about the Project's impact on wildfire, which are supported by substantial evidence already set forth in the docket:

1. In its 2021 EIR,[4] in consultation with the Shasta County Fire / CAL FIRE Unit Chief at the time, Bret Gouvea, Shasta County concluded that the Project's impact on wildfire risk would be **less than significant with mitigation.** Specifically:

   > "Therefore, the implementation of Mitigation Measures 3.16-2b and 3.16-2c would reduce the risk of such an ignition spreading wildfire and/or wildfire-related pollution to surrounding communities. With the implementation of Mitigation Measure 3.16-2a, Mitigation Measure 3.16-2b, and Mitigation Measure 3.16-2c, impacts would be **less than significant**."

   The 2021 Staff Report includes thirty-four COAs recommended by the Shasta County Fire Department and Fire Chief (COAs 77 through 111) that, if implemented, would mitigate wildfire risk to a less than significant level. Other wildfire-related COAs include 45, 104, 106, 110. None of these conditions required fire hydrants throughout the project site, a perimeter fire break or a new fire station. As stated previously, we do not believe that any discussion of those conditions by local fire officials was intended to be understood or construed as CAL FIRE's formal position on the project. We would encourage the CEC to solicit formal written

[2] TN 248293-2
[3] TN 253505
[4] TN 248288-18; p. 3.16-17

comments from CAL FIRE to ensure the record reflects the agency's actual position on this project. In sum, the Applicant continues to commit to implementing the previously recommended measures for the Project supporting a conclusion of no significant impact with mitigation.

In its 2008 EIR for the Hatchet Ridge Wind Project, Shasta County likewise concluded that the 44-turbine project would result in a wildfire-related impact of less than significant with mitigation.[5] The accuracy of this conclusion has been borne out: **there have been no fire-related incidents at the Hatchet Ridge Wind Project since it went into operation 13+ years ago.** Appendix D to the Hatchet Ridge Wind Project Final EIR[6] included mitigation measures to reduce fire risks which were recommended by the Shasta County Fire Warden at the time. These included creation of a 30-foot clear zone around each turbine, plus an additional 70-foot shaded fuel break zone (COA #7.29); "water storage facilities of not less than 5,000 gallons… for firefighting purposes in strategic locations within the site" (id); and a fire prevention plan (id).

Fountain Wind, LLC has committed to implementing wildfire-related conditions and mitigations which would significantly exceed the requirements for the Hatchet Ridge Wind Project and match those recommended in 2021 for the Fountain Wind Project. These measures include the creation of a 2.5-acre cleared area around each turbine; the installation of up to three 5,000-gallon fire tanks throughout the project site, in locations recommended by fire authorities; and preparation of a Project-specific Fire Prevention Plan. In our expert opinion, these mitigation measures are more than adequate; fire hydrants, a perimeter fuel break and a new fire station are not warranted.

It also bears pointing out that Shasta County published a Shasta County Fire Department Master Plan[7] (2020-2025) during the time that Shasta County was evaluating wildfire risks for this Project. Despite this, the Plan made no mention of this Project or Hatchet Ridge Wind Project as being of particular concern from a wildfire perspective and did not assert that either project would create service shortfalls or conflicts with aerial firefighting activities.

2. In its 2021 EIR,[8] Shasta County concluded that the Project would **not** result in the need for new off-site firefighting infrastructure or additional personnel:

> "The Project and Alternatives 1 and 2 **would result in no impact relating to the maintenance of acceptable performance objectives for fire protection services because they would not require the construction of new or physical alteration of existing governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire**

[5] TN 255609; p. 23-25
[6] https://www.shastacounty.gov/sites/default/files/fileattachments/planning/page/3372/12_appendix_d.pdf
[7] TN 255608
[8] TN 248288-18; p. 3.1-22

> **protection**. . . . Further, increases in long-term demand for fire protection services typically are associated with substantial increases in population, which would not occur as a result of the Project. See Section 3.1.3.6, Population and Housing, Growth Inducement. Because no new or modified fire protection facilities would be required, the Project would result in no impact relating to the construction of new or modification of existing governmental fire protection facilities."

Shasta County reached the same conclusion with respect to the Hatchet Ridge Wind Project,[9] specifically that Impact Public Services (PS)-2 ("Increased demand for fire and emergency medical services") would be **less than significant and require no mitigation.**

With respect to the Fountain Wind Project, we believe there is no basis to conclude that circumstances have changed such that the Project by itself would trigger the need for the construction of new infrastructure (such as new fire stations) for fire protection. For another, recently approved industrial project (discussed in more detail below in Response to ROC 2, Question 3), Shasta County determined that that the project's contribution to regional property taxes would offset its cumulative contribution to the demand for fire protection services. The same is true for Fountain Wind.

3. Our analysis, which to our knowledge has not been rebutted, shows that because of fuel breaks and increased access to the Project site, the Project will *reduce* wildfire risk compared to baseline conditions by enhancing immediate access through the new and improved road systems, creating shaded fuel breaks, and removing vegetation within the 2.5 acres surrounding each turbine. **In other words, it is our expert opinion that the Project would have a *net benefit* to fire protection and mitigation efforts in the area over baseline conditions.** In our report, we say:

   > "development projects on private lands—which include fire access road systems, shaded fuel breaks on ridgelines, water storage tanks, fire protection equipment, and on-site staff capable of early fire detection and notification—should be encouraged and welcomed as an enhancement to public safety."

4. As stated by Chief O'Hara in ROC 1, in the 13+ years since the adjacent Hatchet Ridge Wind Project has been operational, there have been **no incidents requiring fire suppression actions** by Shasta County Fire Department or CAL FIRE. Furthermore, the turbines to be installed on the Fountain Wind site will have more advanced fire detection and suppression systems than the turbines installed at the Hatchet Ridge Wind Project. Technology has drastically improved since the Hatchet Ridge Project was constructed, and the Fountain Wind Project will implement state of the art fire detection and suppression systems.

The following sections of this document contain responses prepared by Pyroanalysis to each ROC, organized by docket number. Our review of the synopses of the interview with Chief O'Hara and Staff

[9] TN 255609; p. 3.11-5

Chief of Tactical Air Operations Jake Sjolund leads us to suspect that at least some of the questions put forth by the CEC elicited subjective responses that were not intended to reflect official CAL FIRE positions. Questions regarding fuel reduction and water sources are complex and require objective responses based on requirements outlined in the California Fire Code, Shasta County Fire Safe Regulations, State Minimum Fire Safe Regulations and the Public Resource Code. Likewise, determining the need for additional fire department staffing should be conducted similarly. As stated previously, Pyroanalysis, on behalf of the Applicant, requests that CAL FIRE and Shasta County Fire Department are afforded the opportunity to provide formal written responses that represent the Department's official stance on these issues rather than relying on informal telephone interviews. Specifically, we respectfully ask that CAL FIRE and Shasta County Fire provide official written positions specific to the following subjects under their jurisdictional authority:

TN 254899 – Impacts of Project Related to Wildfire, Firefighting, and Aerial Firefighting Capability, Record of Conversation #1 (ROC 1) Dated 11/01/2023

- Question #3 – Clarify the minimum 500 feet of horizontal and vertical setback from a tower. Our research shows that the CALFIRE response during the recorded informal conversation is not consistent with language in the CALFIRE 8300 Aviation Handbook, specifically aircraft operating under 14 CFR Part 137.49.
- Question #3 – Clarify CAL FIRE’s ability to execute aerial firefighting over and around the project site, particularly with helicopters.
- Question #7 – Clarify the request for vegetation clearance of 1.5 fuel length around structures as compared to the Applicant’s agree upon 2.5 acres (186 ft radius) clearance around turbines and requirements provided in Public Resource Code (PRC) 4291 for other structures.
- Question #8 – Clarify the number and type of water sources required for fire protection related to 1) the wind turbines and 2) the construction of the Operations and Maintenace building. Specifically, provide standards or code references for the water source requirements for this project.
- Question #9 – Clarify the statement regarding the need for a fuel break around the project site and the criteria used to make that determination.

TN 254837 - ROC with Shasta County Fire Chief, Record of Conversation (ROC 2) Dated 01/25/2025

- Question #1, #3, #10— Clarify whether CAL FIRE or the Shasta County Fire Department requires additional fire facilities and staffing for the Fountain Wind Project and what criteria were used to determine any additions.
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TN 254875 - Questions on Information Pertinent to CalFire Contained in Applicant Wildfire Technical Report, Record of Conversation (ROC 3) Dated 2/20/2024

- Question #1—See above request regarding water sources for fire protection.
- Question #4—See above request regarding proposed fuel break around the project site.

Reference: Fountain Wind Project Wildfire Supplemental Information and Response to CAL FIRE Records of Conversation

Very Sincerely,

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Attachment 1: Pyroanalysis' Responses to Chief O'Hara's Statements in CEC's Records of Conversation
Attachment 2: Figures 1 and 2

Cc: CAL FIRE Unit Chief Sean O'Hara (sean.ohara@fire.ca.gov)
CAL FIRE Region Chief George Morris III (george.morrisIII@fire.ca.gov)

Attachment 1: Pyroanalysis' Responses to Chief O'Hara's Statements in CEC's Records of Conversation

The following section contains Pyroanalysis' responses to each ROC, organized by docket number. Throughout these ROCs, the CEC refers to Chief O'Hara as CAL FIRE Unit Chief. However, **there is an important distinction between Chief O'Hara's role as CAL FIRE Unit Chief and his role as Fire Chief of Shasta County.** As the CAL FIRE Unit Chief of the Shasta-Trinity Unit, Chief O'Hara serves as a representative of the State of California, which has primary financial responsibility for preventing and suppressing wildfires within all State Responsibility Areas. Through a cooperative fire protection agreement with Shasta County, the Shasta-Trinity Unit provides full-service fire protection in the unincorporated areas of Shasta County. By this agreement, Chief O'Hara is, in addition to his role as CAL FIRE Unit Chief, designated as the Shasta County Fire Warden. The Shasta County Fire Warden is responsible for managing and administering the functions and duties of the county fire department, which includes the application of the County's Fire Safety Standards and California Fire Code. The fire protection agreement between CAL FIRE and Shasta County creates a situation where Chief O'Hara functions as representative of both CAL FIRE and Shasta County.

Notably, it is the context in which Chief O'Hara speaks which indicates which role he represents. For example, when Chief O'Hara is expressing opinions related to the County's Fire Safety Standards and California Fire Code, i.e., fuel breaks, water adequacy, hydrants, and response times, he is speaking as a representative of the County. When he is speaking about aerial firefighting, he is expressing opinions about functions that are under CAL FIRE's jurisdiction. **It is for this reason that our responses below differentiate between Chief O'Hara's two roles (as indicated by "CAL FIRE Answer" and "Shasta County Fire Department Answer"). As noted above, however, we believe Chief O'Hara's responses do not necessarily, and were not intended to, reflect an official position on behalf of either agency.**

TN 254899 - Impacts of Project Related to Wildfire, Firefighting, and Aerial Firefighting Capability, Record of Conversation #1 (ROC 1) Dated 11/01/2023

CEC ROC 1 Question 1: Does CAL FIRE have standard operational and safety guidelines for aerial firefighting activities and equipment?

> **CAL FIRE Answer**: Yes. Staff would have to do a public records request to get copies. These are general guidelines.

Pyroanalysis Response, ROC 1, Question 1: The CAL FIRE 8300 Aviation Handbook holds all policies, operating standards and guidelines for the CAL FIRE aviation program. The CAL FIRE Aviation Program is the aviation regulatory authority which oversees all aspects of the operation of CAL FIRE-owned and hired aerial resources. The CAL FIRE aviation program develops, maintains, and enforces all CAL FIRE aviation policy and procedures.

CEC ROC 1 Question 2: Does the applicant providing CAL FIRE with maps and GIS data for wind turbine tower locations remove all impediments to aerial firefighting at and near the site as suggested by the applicant?

> **CAL FIRE Answer:** The wind tower locations would be added to local and national hazard maps. CAL FIRE pointed out that this does not remove the impediment to aerial firefighting, it just identifies them.

Pyroanalysis Response, ROC 1, Question 2: As stated in the Project Fire Technical Report, it is normal for firefighting aircraft to experience a variety of topographical challenges and aerial hazards when suppressing wildfires. This is why CAL FIRE maintains a diverse fleet of aircraft, such as helicopters, large air tankers, and small fixed-wing planes. Aircraft diversity is an essential component of effective firefighting operations. Different types of aircraft each have unique capabilities that can be tailored to specific tasks within a firefighting mission. For example, helicopters can maneuver in tight spaces and deliver precise water or retardant drops in areas not accessible with fixed-wing aircraft.

Substantial evidence has been submitted showing that aerial firefighting is still possible in and around the Project site. Specifically:

- Pages 15 through 21 of the Project Fire Technical Report, prepared by highly experienced aerial firefighting experts, comprehensively outline how aerial firefighting resources will be used to safely and effectively operate in and around the Fountain Wind Project. Figure 14, on page 21 of the report, clearly shows the numerous areas where fixed-wing aircraft, including Large Airtankers, may be used in combination with helicopters to quickly contain a fire within the project site. In addition, expert review of aerial firefighting capabilities on or near the project site concluded that, "The immediate access provided by the road systems into the wind farm, the fuel modification created by the road and shaded fuel breaks, and 2.5 acres of vegetation removed around the turbines far outweigh any restrictions that the project may have on the use of air resources." (page 24)

- Page 17 and 18 of Applicant Presentation at the CEC's November 28, 2023, informational meeting and accompanying oral testimony of John Messina[10] provides that the Project does not create a "no-fly" zone, and firefighting aircraft could operate within the corridors created by the turbine layout. Furthermore, the increased access, fuel reduction along roads and structures, and additional water sources would far outweigh any limitations to firefighting aircraft.

- As part of Shasta County's CEQA proceedings for this Project, Shasta County Fire Chief Bret Gouvea stated that "aerial hazards do pose a safety concern for aerial firefighters; however, they are something we must work around on a daily basis.... Whether its power lines, antenna towers, windmills, cell towers or cable/wires spanning a drainage, the key to working in this environment is knowledge of their existence."[11]

[10] TN 253463
[11] TN 252187; p. 11

CEC ROC 1, Question 3: The applicant has indicated in a data response that CAL FIRE would be able to effectively use their "full suite of aerial firefighting assets, including air tankers and helicopters" along and within the perimeters of the project site. Is this an accurate statement? Additionally, the current wind turbine locations are in rows with distances between the rows varying from 0.4 to 1.3 miles (Please see attached map). The applicant has indicated that the current footprint of the Project would allow access by fixed wing and rotary firefighting equipment. Is this a valid statement?

> **CAL FIRE Answer:** CAL FIRE noted that fire conditions, smoke, and tower spacing would determine the ability to use aerial assets at the project site. Smoke and terrain would be a large impediment to using aerial assets near wind turbines. CAL FIRE indicated that based on the project layout there are a few areas within the project boundaries that aerial resources could be used, primarily in the northern part of the site and along the perimeter. Northwest-southeast flight lines between most of the wind turbine's alignments would not be feasible due to the concentration and placement of the wind turbines. The wind turbines are not in long straight parallel alignments but are instead mostly in short straight sub-parallel alignments. Outside of the project boundary the full suite of aerial assets would be available.

Pyroanalysis Response, ROC 1, Question 3: The response to this question by CALFIRE addresses limitations of fixed-wing aircraft but does not acknowledge the standard practice of using helicopters in situations where aircraft must be nimble, i.e., between turbine strings. As noted above the response to ROC 1, Question 2, CAL FIRE maintains a diversity of aircraft because aerial firefighters commonly respond to wildfires in environments with aerial obstacles. The response also does not mention that a combination of different types of firefighting resources are required to be successful in suppressing wildfires. Aircraft are not the sole solution. In addition, the 2.5 acres of fuel reduction around the turbine would assist in minimizing the need for aircraft to operate near the turbines. The new access roads constructed by this Project will provide unprecedented access to the Project site for firefighting vehicles. In addition, the Project would create a system of shaded fuel breaks which, together with the access roads, will result in a landscape that is much more fire-resistant than current conditions. The benefits of these new landscape features will far outweigh the limitations to fix-wing aircraft caused by the presence of the turbines.

CEC ROC 1, Question 4: Would CAL FIRE be able to do any retardant/water dropping over and adjacent to the project site? If yes, what types of aerial equipment would CAL FIRE be able to use at and near the project site?

> **CAL FIRE Answer:** CAL FIRE would be able to drop retardant over the site, however the height they would need to fly to avoid the towers would make retardant dropping ineffective. The higher retardant is dropped from, the less effective it is because it spreads and dissipates as it drops. CAL FIRE prefers retardant to water dropping in large fires as water dissipates and evaporates more easily when dropped. Helicopters could use local water sources to drop water in the area due to a wildfire. In the event of a wildfire, the Incident Command would work with the Air Tactical Group as related to

aerial firefighting for the wildfire incident. The Air Tactical Group supervisor would be in control of aerial assets during a wildfire and would determine the safety and ability to use aerial assets in the area, including terrain and fire conditions. Further, CAL FIRE is concerned about the shut-off of the turbines during a wildfire and how and who would verify that the turbines have been shut off during a wildfire; they would not want to send aerial assets into the area unless there is positive confirmation that the towers have been shut off.

Pyroanalysis Response, ROC 1, Question 4: The Project facility will have redundant backup systems that will allow the operator to shut down turbine operation either onsite or from a remote location upon discovery of a fire through the turbine's own smoke and heat detection systems or after receiving notice from CAL FIRE. The Remote Operations Control Center (ROCC) will receive notice that the shutdown has occurred and can take immediate steps to contact and coordinate with local emergency response. Operations staff at the ROCC will also be able to shut off the turbines at CAL FIRE's request, i.e., if an offsite wildfire requires aerial support and turbines should be shut off as a safety precaution. The ROCC will be staffed 24 hours per day, 365 days per year. The 24-hour contact numbers for ROCC staff will be included in the Project-specific Fire Prevention Plan and shared with CAL FIRE and the Shasta County Fire Department prior to commencement of operations. Onsite staff will work during normal business hours five days per week and would be available on-call outside these hours.

We agree with CALFIRE's assessment that dropping retardant directly over the wind turbines would be less effective due to the greater height the aircraft would be required to maintain due to the presence of the turbines. However, the Project is designed such that wind turbines are placed in a linear fashion along ridgelines, thereby creating flight corridors between the tower strings.[12] These corridors range in width from 1,400 ft to more than 5,700 ft, which is wide enough to accommodate firefighting aircraft, including retardant- delivering aircraft, at the effective drop altitude. In areas where fixed-wing aircraft are unable to operate due to proximity to a turbine, CAL FIRE can substitute those aircrafts with helicopters to maintain aerial firefighting capacity.

CEC ROC 1, Question 5: Would CAL FIRE firefighters be able to use/have access to ground-based fire-retardant spraying equipment? If so, what type of equipment does this include and how effective is it compared to aerial firefighting?

CAL FIRE Answer: CAL FIRE does not usually use ground-based fire-retardant systems. They do not keep any ground-based fire-retardant systems in the area and therefore use of them would not be timely as it would take days to retrieve and set up the equipment.

Pyroanalysis Response, ROC 1, Question 5: CAL FIRE has access to ground-based retardant systems through the CAL FIRE Hired Equipment Program. These systems are not

[12] TN 248288-18; p. 20

typically ordered for an initial response or short duration fire but can be part of the suppression tactic used for larger, longer-duration fires.

CEC ROC 1, Question 6: Based on a previous CEC conversation with Jake Sjolund, CAL FIRE Staff Chief of Tactical Air Operations, staff understood that CAL FIRE would not fly any aerial equipment closer than 500 feet from a structure due to potential wind issues, firefighting planes would have to stay 2000 feet away from wind turbine structures, and firefighting planes would be limited to parallel runs outside of a buffer zone from the project. Please verify required/needed setback distances for aerial firefighting equipment from project structures. Would these set back distances vary by type of aerial equipment (i.e., large tankers, smaller tankers, helicopters, other types of water dropping planes, etc.)?

> **CAL FIRE Answer:** A 2,000-foot setback does not exist. Setback distances for CAL FIRE aerial assets are a minimum of 500 feet horizontally or vertically from a structure, i.e., an aerial asset must be at least 500 feet horizontally from a tower and/or 500 feet above a tower. However, depending on fire conditions these setback distances could be increased.

Pyroanalysis Response, ROC 1, Question 6: This response conflicts with CAL FIRE's fixed-wing flight standards, which are found in CAL FIRE's 8300 Aviation Handbook. These standards do not include a minimum setback for firefighting aircraft operations from structures. This response may also have been made without full knowledge of wind turbine shutdown capabilities. CAL FIRE fixed-wing flight operations are conducted in accordance with 14 CFR Part 137.49 ("Operations Over Other Than Congested Areas."), which reads, "Notwithstanding part 91 of this chapter, during the actual dispensing operation, including approaches, departures, and turnarounds reasonably necessary for the operation, an aircraft may be operated over other than congested areas below 500 feet above the surface and closer than 500 feet to persons, vessels, vehicles, and structures if the operations are conducted without creating a hazard to persons or property on the surface."

Flight operations in congested areas are conducted in the same manner. Thus, CAL FIRE standards do not require a 500-foot setback from structures for firefighting aircraft. Once firefighting aircraft arrive over a fire, a risk assessment conducted by the pilots and Air Tactical Group Supervisor will determine the actual separation distance from a hazard, which may be more or less than 500 feet.

CEC ROC 1, Question 7: The applicant would clear all vegetation along access roads at the O&M facility, switching station and substation, and for a 15-foot diameter ring around the turbine towers; only taller, typically woody vegetation would be trimmed or mowed from the overhead transmission and collector line corridors, and buried utility corridors. Would the cleared access roads and tower perimeter act as sufficient fire breaks to slow down fires or aid in firefighting despite the continued presence of flashy fuels and woody vegetation near to and between structures?

> **Shasta County Fire Department Answer:** The roads would be helpful as fire breaks if maintained with brush removed from both sides. CAL FIRE also mentioned that the roads need to meet County Emergency Access requirements. It is CAL FIRE's opinion that the greater clearance the better and that structures would need at least a 100-foot clearance. CAL FIRE mentioned a rule of 1.5 fuel length clearance and noted that would likely be approximately 200 feet clearcut around the towers for fire safety.

Pyroanalysis Response, ROC 1, Question 7: The Applicant will clear up to 2.5 acres, which equates to a diameter of 186 feet, surrounding each turbine and maintain that cleared space throughout the life of the Project. These cleared areas are greater than CAL FIRE's minimum recommendation of 100 feet.[13] The pine trees surrounding the project site are 30 to 35 feet high. If the Applicant were to use a distance of 1.5 the height of the surrounding vegetation to conduct fuel clearance, the radius of the cleared area would be 53 feet rather than 186 feet. As a result, the Applicant has agreed to maintain a cleared area around each turbine which significantly exceeds Public Resource Code Section 4291 requirements and the "1.5 the fuel height" rule of thumb.

CEC ROC 1, Question 8: In the unlikely event that a fire was to occur due to a lightning strike or equipment failure in a wind turbine nacelle, which is ~500 feet high, and it was not fully extinguished by the nacelle's fire suppression system, how would CAL FIRE put out the fire to prevent it from spreading to the nearby forest?

> **Shasta County Fire Department Answer:** CAL FIRE noted that they would likely let the fire burn out and have personnel onsite to monitor it and put out any incidental fires triggered by embers. CAL FIRE noted that the planned onsite water tanks would not be very useful in firefighting as they would need to be refilled for continuous use, that there is no water supply in the area, and that a hydrant system would be more useful.

Pyroanalysis Response, ROC 1, Question 8: We agree that in the proposed situation CAL FIRE would likely allow the fire burn out and would extinguish incidental fires caused by embers. CAL FIRE uses aggressive fire response tactics, with the goal of keeping 95% of fires contained at 10 acres or less. CAL FIRE would employ a variety of methods to prevent or combat incidental fires caused by a turbine fire, including ground crews and aerial support. It is a common procedure for fire departments to assess and manage exposure risks to prevent the fire from spreading. In addition to CAL FIRE's response tactics, the Project would facilitate access by adding and improving roads, reducing fuel by clearing vegetation around turbines and along access routes, and adding water tanks for fire response, which will significantly reduce the potential of a turbine fire extending to the wildland.

As discussed below under Response to ROC 2, Question 5, an adequate water supply for firefighting would be available from at least three water tanks which will be installed onsite during construction and maintained throughout the life of the Project. In addition, a 10,000-gallon dip tank, designed for helicopters but also available for other uses, (i.e., refilling fire engines) is currently available onsite to provide water for fire protection, and will remain

[13] TN 248293-2; PDF p. 65

available for future firefighting use. Third, water for firefighting would be available from the new well and associated storage tank at the Operations and Maintenance facility. Finally, fire fighters commonly draw water for fire suppression from nearby surface waters. Surface water features exist on and near the Project site and could be available to refill engines and water tenders. Nearby water sources are identified on Figure 1.

Additionally, Shasta County maintains 17 water tenders as part of their fire response fleet. These water tenders are designed to provide water for firefighting throughout the rural county. It is standard procedure for water tenders to be assigned to fire incidents in the rural areas of the county to conduct water tender refill operations. This includes refilling fixed or portable water tanks at or near the fire, providing a continuous water supply for firefighting. Both the fixed 10,000- and 5,000-gallon tanks, the identified surface water sources, and the water storage tank provided with the addition of the Operations and Maintenance facility will be available for refill of 500-to-750-gallon fire engine water tanks and for water tender shuttle operations.

CEC ROC 1, Question 9: In the CAL FIRE testimony by Chief Gouvea during the County Appeal Hearing on October 26, 2021, he noted that CAL FIRE had little experience in aerial firefighting near wind farms in forested areas. Is this still true and do you feel that this would affect aerial firefighting activities and efficiency at and near the project site?

> **CAL FIRE Answer:** The local CAL FIRE does not have any experience with aerial firefighting near wind farms in forested areas. CAL FIRE noted that effective firefighting is a combination of all firefighting assets and removing assets (aerial firefighting, adequate water sources) hampers the effectiveness of firefighters. CAL FIRE discussed the importance of fuel breaks and noted that they would prefer to see a fuel break around the entire perimeter of the Project site to prevent the spread of fire from the project site or into the project site.

Pyroanalysis Response, ROC 1, Question 9: With respect to adequate water supply for fire fighting, see Response to ROC 1, Question 8, above.

With respect to aerial fire fighting, CAL FIRE's world-renowned aviation program responds to thousands of wildlands fires throughout California each year. These aircraft, along with highly skilled pilots, are strategically located throughout California at 14 air tanker bases and 10 CAL FIRE helitack bases. Every aircraft in CAL FIRE's fleet is available for statewide response. CAL FIRE's aviation program has extensive experience in firefighting in all of California's vegetation types. As stated in the Project Fire Technical Report, CAL FIRE considers a full range of potential aerial hazards in their use of aircraft to combat wildfire. The Project's turbines are an aerial hazard that CAL FIRE will take into account and work around, similar to other constraints that CAL FIRE is accustomed to working around for any wildland fire, regardless of vegetation type.

The Project Fire Technical Report provides evidence that the advantages of enhanced access via new roads and fuel modifications (new roads, shaded fuel breaks, and cleared areas within the project site, including around each turbine) implemented during construction will far

outweigh the limited restrictions on fixed-wing aircraft. A fuel break around the entire perimeter of the project site is not required in any fire code, has not been a condition of approval for other projects permitted in Shasta County, and was not required for the Hatchet Ridge Wind Project. According to the most recent version of the project description and responses to CEC's data requests, the project would introduce up to 667 acres of shaded fuel breaks throughout the project, and up to 510 acres of permanently cleared areas, including approximately 2.5 acres of cleared area around each turbine, all of which will aid CAL FIRE in the event of a wildfire.

TN 254837 - ROC with Shasta County Fire Chief, Record of Conversation (ROC 2) Dated 01/25/2025

CEC ROC 2, Question 1: If the project were to be approved and built, is your current full-time and volunteer firefighter staffing at the stations that would respond to this Project up to your standards?

Shasta County Fire Department / CAL FIRE Answer: This is a 2-part answer. If only structures were involved (including turbines), the answer is NO because the County Stations would respond from one or two stations and they are understaffed.

If it's a structure and wildland fire during the normal fire season, YES because the CalFire stations would respond, and they are fully staffed and equipped during the 9-month fire season. This would include 6 stations, each with 5 paid staff and 1 or 2 volunteers and a full complement of equipment including dozers, water tenders, and aircraft.

a. Which station(s) would respond?

   Shasta County Fire Department Answer: Structure only, Stations 71 (Montgomery Creek) and 30 (Oak Run). Structure + Wildland, Stations 74, 75, 14, 19, 34, & 35.

b. What would be the estimated response times for fire, EMS, and rescue?

   Shasta County Fire Department Answer: Between 15 and 30 minutes depending on the station first responding; ~15 minutes from Station 75 and 30 minutes from Station 74.

Pyroanalysis Response, ROC 2, Question 1: We believe the response to this question is taken out of context. CAL FIRE is the agency responsible for preventing and suppressing wildfires only on lands designated a State Responsibility Area (SRA) by the Board of Forestry and Fire Protection. All non-wildfire emergencies within SRA are the local jurisdiction's responsibility, in this case Shasta County Fire. However, due to the contractual relationship with Shasta County, CAL FIRE's assistance to the Shasta County Fire Department is not based upon fire type (i.e., structure fire vs. wildfire), but instead is related to when the fire occurs, specifically whether CALFIRE stations are staffed at the time. CAL FIRE stations are fully staffed during the fire season (usually April through December), when wildfires occur more regularly. During this time period, CAL FIRE and Shasta County Fire resources both

respond to any fire, regardless of type. CAL FIRE does staff a limited number of engines year-round to provide wildland fire response during the winter months.

In the event of non-wildfire emergencies outside of fire season at the project site, Shasta County Fire Department's response would be at the same level (i.e., the same number and type of resources such as fire engines and water tenders) and within the same timeframe as it is currently providing that area.

Neither the Shasta County Master Fire Plan (2020-2025) nor the Shasta County General Plan contain response time goals or standards. Therefore, it is difficult to conclude that responses to the project site would meet or exceed county response time standards. However, in its 2021 EIR for the Project, the County determined that the Project would result in **no impact** relating to the maintenance of acceptable performance objectives for fire protection services.

CEC ROC 2, Question 2: Which of all your stations would respond first to a hazmat spill or a rescue (including high angle rescue)?

> **Shasta County Fire Department Answer:** High angle rescue would not be provided. HazMat response is from a 6-County regional group, the Shasta Cascade Regional Hazardous Materials Team (SCRHMT) serving Shasta, Lassen, Tehama, Modoc, Trinity, and Siskiyou counties. The response time would be 1-2 hours.

Pyroanalysis Response, ROC 2, Question 2: Section 2.20.010 of the Shasta County Municipal Code delegates authority for search and rescue to the Shasta County Sheriff's Department. While the Shasta County Fire Department does not have statutory responsibility for rescue, they do assist the Sheriff Department's Search and Rescue team when requested. The mutual aid system would be used to request the appropriately trained first responders to conduct a rescue if the Shasta County Sheriff's Office or Fire Department does not have the ability to do it. The Applicant's employees are trained to perform high-angle rescues and have the primary responsibility for employee extrications in the event of a tower rescue incident.

CEC ROC 2, Question 3: If full staffing was achieved, would the existing physical infrastructure be adequate for your needs?

> **Shasta County Fire Department Answer:** NO, full county fire paid staffing would need capital improvements to house these additional staff; estimated cost is $5-8M for one new fire station (less costly than renovating or expanding an old existing station) and staffing costs for one station would be $1.7M per year. Two new paid-staff stations would be needed.

Pyroanalysis Response, ROC 2, Question 3: No evidence is provided that the Project would require the additional infrastructure and staffing mentioned in this response. Per Shasta County Fire Department/CAL FIRE, there have been no responses to fire emergencies at the nearby Hatchet Wind Project site (see below response to CEC ROC 2, Question 8). The

suggestion that the Project would trigger the need for a new fire station and new staffing conflicts with Shasta County's own conclusions for this Project in 2021. The County's EIR[14] concluded that the Project would have no impact on performance of fire protection services. Specifically:

> "The Project and Alternatives 1 and 2 **would result in no impact relating to the maintenance of acceptable performance objectives for fire protection services** because they would not require the construction of new or physical alteration of existing governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection…. Further, increases in long-term demand for fire protection services typically are associated with substantial increases in population, which would not occur as a result of the Project. See Section 3.1.3.6, Population and Housing, Growth Inducement. Because no new or modified fire protection facilities would be required, the Project would result in no impact relating to the construction of new or modification of existing governmental fire protection facilities."

Typically, the need to add a fire station within any jurisdiction is due to increased population or urban development, which lead to greater demand for emergency services. A fire department's service delivery and performance standards are usually identified within a comprehensive document called Standards of Cover (SOC), which details the level of service the department aims to provide to the community. It includes information such as a community risk assessment, response times, resource deployment, staffing levels, training requirements, and equipment needs. The SOC serves as a guideline for the fire department to effectively and efficiently deliver services to protect life, property, and the environment. Utilizing information developed in a SOC, fire departments typically prepare a Master Plan that outlines long-term strategic actions to guide the priorities and response actions of a fire department. Shasta County has approved a Master Fire Plan (2020-2025),[15] but this document does not contain service delivery or performance standards. **As such, it is not clear on what basis the Shasta County Fire Department is claiming that the addition of the Project would cause delivery or performance times to fall below standards, and Shasta County's own CEQA analysis determined that it would not do so.**

Shasta County's 2021 EIR, which included an assessment of fire risk and a discussion of existing fire services, concluded that the Project would not directly or indirectly induce substantial population growth and, therefore, would not be a significant contributor to the need for additional fire services resources. As noted above, the 2021 EIR concluded that the Project's contribution to wildfire risk would be less than significant with mitigation. All conditions of approval proposed by the Shasta County Fire Department in 2021 have been incorporated into the Project and can also be imposed by the CEC as conditions of approval.

[14] TN 248288-18; p. 3.1-22

[15] TN 255608

Additionally, a preliminary review of emergency incidents within similar wind energy projects in the State has shown minimal impact on emergency service. Subject matter experts reviewed the last 10 years of CAL FIRE's publicly available historical fire perimeter data and found that there has been one wildfire within the footprint of a wind energy project that met the fire history data collection criteria. The fire was within the Golden Hills Wind facility and its cause was reported from powerlines, not a turbine. Additional preliminary reviews were conducted by phone calls to jurisdictions providing emergencies services to various California wind energy projects. Authorities provided similar responses that they could not recall responding to an emergency due to a new energy generation wind turbine.

A determination that the Project's impact on fire department services can be adequately mitigated is consistent with recent approvals by Shasta County, including a 2023 approval for a large industrial project (Crystal Creek Aggregates expansion of existing mining operation[16]), which concluded that that project's contribution in increased property taxes would fund any cumulative impact on fire protection infrastructure. Similarly, per the *Fountain Wind Project Economic and Public Revenue Impact Study*,[17] the Project will contribute approximately $60,000,000 in property tax revenues over its 35-year useful life and $3,900,000 in sales tax revenues during construction. These taxes will contribute to the General Fund, which will fund additional capital facilities and staffing for fire protection.

CEC ROC 2, Question 4: What complement of engines, trucks, water tenders, EMS vehicles, Chief's trucks/cars exist at the responding stations? Your back-up stations? Automatic Aid or Mutual Aid from other departments for response or in-fill?

> **Shasta County Fire Department Answer:** Currently, all stations are adequately equipped with vehicles, including mutual aid and automatic aid fire jurisdictions.

Pyroanalysis Response, ROC 2, Question 4: No response required.

CEC ROC 2, Question 5: What is the source of water for your tenders and engines?

> **Shasta County Fire Department Answer:** Once empty when out on a call, tenders and engines would be refilled from natural sources such as creeks, ponds, lakes, and rivers.
>
> a. Is a supplemental source needed in order to adequately serve this Project if built?
>
> **Answer:** Yes

Pyroanalysis Response, ROC 2, Question 5: As discussed in the response to ROC 1 Question 8, the Project includes installation of up to three, 5,000-gallon water tanks in addition

[16] https://www.shastacounty.gov/planning/page/crystal-creek-aggregate-revised-project-2020
[17] TN 250344

to the existing 10,000-gallon dip tank on the site. The dip tank was designed for use by helicopters but can be accessed by other firefighting apparatus. In addition, a new well will be installed at the Operations and Maintenance (O&M) building. Fire protection for the building will include on-site water storage held in an NFPA-compliant water tank with a volume appropriate for the building design. The onsite water tanks would be available to supplement numerous nearby surface waters (see Figures 1 and 2 for surface water source locations), and will be available for use in any fire operations on or near the project site. The proposed O&M building will be built in conformance with California Fire and Building Codes as well as applicable Shasta County ordinances and constructed of Type 2B (non-combustible) building materials. The Project will conform to all requirements of the California Fire Code, adopted Shasta County ordinances, and the Shasta County Development Standards related to fire-flow and water supply, and installation of a fire hydrant(s), if required by Shasta County Fire Department, for construction of the O&M building.

Additionally, as stated in the response to ROC 1, Question 8, Shasta County maintains 17 water tenders as part of their fire response fleet. These water tenders are designed to provide water for firefighting throughout the rural county. It is standard procedure for water tenders to be assigned to fire incidents in the rural areas of the county to conduct water tender refill operations. This includes refilling fixed or portable water tanks at or near the fire, providing a continuous water supply for firefighting. Both the fixed 10,000- and 5,000-gallon tanks, the identified surface water sources, and the water storage tank provided with the addition of the O&M facility will be available for refill of 500-to-750-gallon fire engine water tanks and for water tender shuttle operations.

CEC ROC 2, Question 6: I am sure you are aware that the Applicant's initial proposed water source (for firefighting and other uses) is no longer available and the use of groundwater may be problematic. Do you feel that Fountain Wind's proposal for having two 10,000-gal water "dip" tanks for firefighting – one on-site the other off-site on the north site of Hwy-299 - is adequate?

> **Shasta County Fire Department/CAL FIRE Answer:** NO, because the proposed provision of two dip tanks would only be used by helicopters. The site must have a dedicated fire water source and flow requirement dependent upon the number of structures and the level of any human occupancy in these structures, as per the California Fire Code. Water tanks on the site may be necessary or Chief O'Hara could not support this project.

Pyroanalysis Response, ROC 2, Question 6: The CEC's characterization of the Applicant's proposal "for having two 10,000-gal water 'dip' tanks for firefighting" is an incorrect description of the proposed onsite water storage. The CEC is referencing the 10,000-gallon helicopter dip tank that currently exists onsite. This tank was installed by the current property owner and will continue to be managed by the property owner during construction and operations of the Project and can be used by equipment and apparatus other than helicopters to source water. Up to three, new 5,000-gallon tanks, and a water storage tank that would supply the O&M building and be connected to a new well, will be installed onsite and would be available for

immediate refill during a fire incident response with water tender relay operations, as is standard practice for Shasta County Fire Department is rural areas.

CEC ROC 2, Question 7: Do you have familiarity with the fire detection and suppression systems on the proposed turbines? Are you aware of any success or failure rates of fire suppression by these types of turbines?

> **Shasta County Fire Department Answer: NO to both, however, Chief O'Hara did** discuss with the Applicant his concern that if a photo-activation fire detection method is used in the turbines, a near-to-moderate distant (even 30 miles distant) wildland fire could result in particulates in the air at this project's location and activate all the fire suppression systems of all turbines. This would be unacceptable as the fire suppression systems would then be non-functionable in the event of a turbine fire. The system would have to be shut down in this case. Chief O'Hara mentioned that the Applicant was researching this matter and will respond back to him.

Pyroanalysis Response, ROC 2, Question 7: The Applicant responded to an informal request for information from CEC staff by email on February 15, 2024. That response is repeated here:

> A question has been raised whether a wildfire many miles away could, due to smoke detected by the smoke detectors in the system, activate the fire suppression system within the turbine and thus render the system ineffective to suppress a fire in the turbine itself. The answer is no.
>
> The Smoke Detection system has two stages: alerts and alarms. Per TN# 252187, the intent of the Smoke Detection system is to alert the turbine safety system of any smoke in the nacelle or tower base with sensors in the transformer compartment, in the main electrical cabinets, above the switchgear, and above the disc brake and to react accordingly. If enough smoke seeps in from a fire external to the nacelle/turbine, then the Smoke Detection system will trigger an alert. However, by itself, an alert does not activate the fire suppression system. As explained further below, to activate the system to suppress a fire, there must also be heat or flame detected in addition to smoke. Per TN# TN250341 any alerts generated by the Fire Suppression system would be investigated as quickly as possible by the site operations and maintenance team but alerts do not, by themselves, activate the system.
>
> To further explain, the Detection System within the turbine will consist of arc flash detectors, smoke detectors, and heat detectors. An arc detector is utilized to detect fires that start in the electrical area of a wind turbine and can disconnect the source of power in less than 100 milliseconds. A light flash from an arc is sufficient to shut down the wind turbine immediately and remove the energy source. The Detection System has a number of intelligent fire detectors, which contain optical smoke and thermistor temperature sensors, throughout the nacelle and tower. To prevent incorrect alarms, the detectors operate in a mode, in which smoke and a flame/heat must be sensed to start an alarm. An alarm results in the automatic activation of the fire suppression

system including a wind turbine shutdown, which is controlled through the project SCADA. While the smoke from a distant wildfire could generate an alert if it infiltrates the nacelle/turbine, there would be no flame/heat and therefore no “fire-in-the-making” condition within the turbine which would trigger an alarm and the automatic fire suppression system response.

Furthermore, the fire Detection System uses a dedicated, stand-alone controller that will operate even if the wind turbine controller is not in operation. This fire protection controller controls the different detector types, alarms, and warnings and is programmed to automatically relay the appropriate notifications and reactive procedures.

CEC ROC 2, Question 8: Turning to the existing Hatchet Wind Project, have you had any calls to respond to a fire, hazmat spill, or rescue at that location?

> **Shasta County Fire Department/CAL FIRE Answer:** Chief O’Hara could not recall any except perhaps an Emergency Medical Services (EMS) call.

Pyroanalysis Response, ROC 2, Question 8: The Hatchet Ridge Wind Project has been operating without incident for 13+ years. In addition, no evidence has been submitted from any source that the Project turbines would increase the risk of wildfire.

CEC ROC 2, Question 9: Have any of the wildfires in your jurisdiction threatened the Hatchet Ridge Wind Project?

> **CALFIRE Answer:** NO. There have been fires in the “area” and the department has used the fire roads built by the project to get closer to those fires but no fires have threatened the Hatchet Ridge Wind Project.

Pyroanalysis Response, ROC 2, Question 9: The Applicant agrees that the Hatchet Wind Project has operated without incident for more than 13 years. Just as CAL FIRE has used the roads built for the Hatchet Ridge Wind Project to respond to fires originating outside the area, so would CAL FIRE use the roads that are proposed as part of this Project. In 2012, a lightning-caused fire started on the west side of the Hatchet Wind Project site, approximately 0.25 mile from the turbines, and burned 12 acres. CAL FIRE used the project’s road system to access the fire and CAL FIRE aircraft effectively operated within the project area.

CEC ROC 2, Question 10: As staff, I am required to propose mitigation if I identify an impact that requires mitigation. Given your experience and position, I am asking for your frank assessment of what impacts to your ability to respond to emergencies might be presented by the construction and operation of this Project. Please offer your assessment on all impacts and potential impacts, including draw-down of equipment and staff.

Shasta County Fire Department Answer: Full staffing at one or two stations is needed. (See discussion in above question #3.)

Pyroanalysis Response, ROC 2, Question 10: As discussed in Pyroanalysis Response to ROC 2, Question 3, no evidence has been submitted that the Project by itself would trigger the need for additional staffing by the Shasta County Fire Department. Shasta County's 2021 EIR for the Project reached the opposite conclusion. Per Shasta County Fire Department/CAL FIRE, there have been no calls to respond to a fire at the nearby Hatchet Wind Project site (see above response to CEC ROC 2, Question 8).

CEC ROC 2, Question 11 Reference Information: I am also required to assess the "cumulative impact" of adding this Project to others that have either been approved or are in the planning stage. I have identified four energy-related projects plus the one existing project (Hatchet Ridge) that could possibly cause a cumulative impact to your Department. These four other projects are:

- The Anderson River Battery Energy Storage System
- The Crossroads 2 Battery Energy Storage System near Montgomery Creek
- The Meadow Ridge-2 solar PV and battery energy storage system somewhere near Round Mountain
- The Burney-Hat Creek bio energy gasification project somewhere near Burney

a. Do you have any comments from your professional perspective on the above proposed projects individually, or in combination with the proposed Fountain Wind project?

Shasta County Fire Department Answer: Chief O'Hara was aware of these projects and stated that generally, as the County grows, fire/EMS/rescue services will have to grow to meet the needs of these and other types of growth.

b. Specifically, do you have any concerns with battery energy storage facilities, or a facility that would combine battery energy storage + wind generation?

Shasta County Fire Department Answer: The fire department has no experience with battery energy storage facilities and thus might need training.

c. Does your command region have any experience with responding to battery energy storge systems, solar PV generating systems, or gasification projects?

Shasta County Fire Department Answer: The fire department has no experience with these facilities and thus might need training.

Pyroanalysis Response, ROC 2, Question 11: No response required. The Project does not include a battery energy storage system and is not a solar PV or energy gasification project.

CEC ROC 2, Question 12: One additional issue was discussed, that being the Shasta County Government budget for FY 2023-24 showing only 3 Full-time Equivalents (FTE) for the Fire Department. I asked what this meant.

> **Shasta County Fire Department Answer:** Chief O'Hara explained that the contract with CalFire is not considered a County FTE and that the three positions are for a Fire Marshall, an Inspector, and a Parts Storekeeper.

Pyroanalysis Response, ROC 2, Question 12: No response required.

TN 254875 - Questions on Information Pertinent to CalFire Contained in Applicant Wildfire Technical Report, Record of Conversation (ROC 3) Dated 2/20/2024

CEC ROC 3, Question 1 Reference Information: Water sources for aerial firefighting are identified in the technical report as several nearby air attack bases, two dip tanks, and local water features such as rivers, lakes, and reservoirs (shown in Figure 10 in the technical report). The report identifies a 10,000-gallon dip tank at the site, however current information form the Applicant indicates three 5000-gallon water tanks will be located throughout the site and most likely filled by trucked in non-potable water. These tanks are not identified as dip tanks. Water for operation of the wind farm will likely be provided by a bedrock well (estimated with a maximum pumping rate of 10 gallons per minute [gpm]) and/or trucked-in; refilling of the water tanks will not be a timely/quick operation. The Applicant states the site will meet Shasta County's fire standards for buildings on the site which include minimum water storage to meet the fire flow requirements.

CEC ROC 3, Question 1: Does CAL FIRE feel that there are adequate water resources for aerial and ground-based firefighting activities at and near the wind farm? If not, what additional resources would be useful for aerial or ground-based firefighting?

> **Shasta County Fire Department Answer:** No. The 5000-gallon tanks would only provide a few fill ups of the average fire engine tank which holds 500-1000 gallons. If no other sources of water are available onsite it would need to be trucked in by water tender trucks with average volumes of 3500 gallons or drafted from a local water source/feature. The Chief indicated that if the tanks are gravity fed then they are not adequate for firefighting use. He would prefer to see a hydrant system installed on the project site and has discussed and requested this during a meeting with the Applicant. The required adequate fire flow for the buildings would be calculated by Shasta County Fire for final building design and permitting.

Pyroanalysis Response, ROC 3, Question 1: The Project will meet all California Fire Code, adopted Shasta County ordinances, and Development Standards related to fire water storage and fire-flow requirements, and will fully comply with Section 6.43 of the Shasta County Fire Safety standards, including those standards that address fire protection water requirements for projects without a central water system.

The CEC is referencing the 10,000-gallon helicopter dip tank that currently exists at the project site. This tank can be used by equipment and apparatus other than helicopters to source water. Up to three new 5,000-gallon tanks, and a water storage tank that would supply the O&M building and be connected to a new well, will also be installed onsite and can be used for ground-based firefighting operations. All onsite tanks and water sources as shown in Figure 1 and 2 will be available for immediate refill during a fire incident response with water tender relay operations, as is standard practice for Shasta County Fire Department. Figure 2 shows locations of nearby perennial surface waters also available for fire response.

The final number of tanks and their volumes would be confirmed in consultation with CAL FIRE. Pertinent COAs from Shasta County's 2021 Staff Report for the Project, to which the Applicant has committed to implementing, include COAs 82 (buildings shall be in compliance with Section 6.43 of the Shasta County Fire Safety Standards) and 103 (installation of water tanks of at least 5,000 gallons for fire response).

CEC ROC 3, Question 2 Reference Information: The report provides the following information about local Air Attack Bases, "Redding Air Attack Base, shared by CAL FIRE and the U.S. Forest Service, is the airbase nearest to the Fountain Wind Project. Flight time from the base to the wind farm is approximately 10 minutes. Various firefighting aircraft are stationed at the base, including CAL FIRE's OV-10 Bronco Air Attack plane and two S-2T air tankers. A fire-retardant refilling plant is located at the base, providing immediate retardant reloading for air tankers assigned to area fires. Bieber Helitack, with a helicopter and firefighting crew, is based approximately 18 minutes northeast of the project site."

CEC ROC 3, Question 2: Is this information accurate?

> **Shasta County Fire Department Answer:** Yes. This equipment is based at the site fulltime for at least 9 months out of the year when not in use.

Pyroanalysis Response, ROC 3, Question 2: No response required.

CEC ROC 3, Question 3 Reference Information: The report states that, "When fire danger is high, CAL FIRE will dispatch the following resources to a fire in Shasta County: 1 battalion chief, 6 Type 3 engines, 2 hand crews, 2 bulldozers, 1 water tender, 1 air attack plane, 2 air tankers, and 2 helicopters."

a. Is this an accurate statement about CAL FIRE activities and staffing for a fire during high fire danger periods?

   CAL FIRE Answer: Yes

b. How does CalFire determine when to dispatch additional resources to a fire during high fire danger?

CAL FIRE Answer: When and how much additional resources for a fire depends on the incident and what the incident commander and the air attack commander feel they need.

c. How does CAL FIRE determine high fire danger periods?

CAL FIRE Answer: CAL FIRE uses a modeling program (Indices of the Day) that uses input such as weather and fuel moisture to determine low, medium, or high fire danger. Low fire danger doesn't really occur in the area, and medium fire danger is limited to certain conditions and times of day; due to prevalent high heat and low humidity during fire season conditions are almost always high fire danger in the area. For fires during medium fire danger periods CAL FIRE would dispatch 1 less engine, tanker, and helicopter than what is listed above.

Pyroanalysis Response, ROC 3, Question 3: No response required.

CEC ROC 3, Question 4 Reference Information: The technical report indicates that a 2.5-acre circle will be cleared of vegetation from around the wind turbines. This equals an approximately 186 ft. cleared radius around the wind turbine.

CEC ROC 3, Question 4: Do you feel this is adequate clearance around a tower that stands to a height of up to 610 feet from the base to the tip of the 250+ foot blade?

Shasta County Fire Department Answer: Generally, CAL FIRE's preferred clearance around objects is 1.5 the height of the fuel. The Chief noted that in discussion with the Applicant about clearance around the tower he had mentioned 2-3 acres. Chief O'Hara feels that the current 2.5-acre circle/buffer cleared area is better than the previous smaller area around the wind towers. CAL FIRE would prefer an annually maintained fuel break around the perimeter of the entire project site; a full fuel break is preferred but a shaded fuel break would be better than nothing.

Pyroanalysis Response, ROC 3, Question 4: A perimeter fuel break is not feasible given the forested nature of the landscape and was not required for the Project by Shasta County in its 2021 EIR or staff report, nor for the Hatchet Ridge Wind Project. Here, the Project would introduce up to 667 acres of shaded fuel breaks per COA 97,[18] and up to 510 acres of permanently cleared areas that double as fuel breaks.

CEC ROC 3, Question 5 Reference Information: The report makes the following statement, "Based on the size of the Fountain Wind turbines, which will stand to a height of up to 610 feet from the base to the tip of the 250+ foot blade, they will be less hazardous to aerial operations than the electric transmission towers and powerlines that are ubiquitous across California's

[18] TN 248293-2; PDF p. 65

forest lands." The document also contends that the wind turbines are more visible than transmission lines and thus easier to "work" around.

CEC ROC 3, Question 5: Do you feel that these statements are accurate representations of the hazard related to these subparallel arrays of tall wind turbines as related to linear transmission lines?

> **CAL FIRE Answer:** The Chief noted that a hazard is a hazard and that yes, the wind turbine towers are easier to see but they are still as much, if not more, of a hazard as there are more of them in a single area and not in a straight line as opposed to several transmission towers and lines in a straight linear alignment.

Pyroanalysis Response, ROC 3, Question 5: Turbine strings and transmission lines present different but nonetheless addressable hazards for aerial firefighting. The claim that aerial firefighting is not possible in and around wind turbines has not been substantiated and evidence to the contrary has been provided. In particular, former Shasta County Fire Chief Bret Gouvea opined that wind turbines were not significantly different from other towers and transmission lines for purposes of aerial firefighting.[19]

CEC ROC 3, Question 6 Reference Information: The report indicates that in the event of a wildfire at the wind farm, that before using aerial assets at a wind farm the air attack supervisor would order the turbines to be turned off and locked. Fountain Wind turbines may be shut down by personnel at the Remote Operations Control Center, which is staffed 24 hours a day, 365 days per year.

d. Do you feel that the turbines should be automatically turned off and locked in the event of a wildfire at or near the wind farm?

   Shasta County Fire Department Answer: Yes, the turbines need to be turned off and locked in the event of a fire at the wind farm. Chief O'Hara would like to have onsite confirmation that turbines are off and wants the Applicant to take responsibility to provide confirmation to CAL FIRE that turbines are off.

e. For wildfires in the vicinity of the wind farm, how close to the wind farm would a wildfire have to be for you to feel the turbines should be turned off and locked?

   Shasta County Fire Department Answer: With wildfires of varying sizes and numbers in the area, CalFire doesn't want to burden the Applicant with having to shut down turbines and then have to restart them if not necessary; i.e., if a fire in the general area is quickly put down or not a threat to the immediate wind farm area. CAL FIRE prefers that they (CAL FIRE) notify the Applicant when turbines need to be shut off due to area fires and have the Applicant shut down the wind turbines quickly when needed.

[19] TN 252187 and TN 253505

f. Do you feel that the remote shutdown and locking of the turbines is adequate and verification of this by Supervisory Control and Data Acquisition (SCADA) is adequate, or as you previously indicated would visual confirmation of shutdown be required prior to any aerial firefighting at the site?

Shasta County Fire Department Answer: Yes, the turbines need to be turned off and locked in the event of a fire at the wind farm. Chief O'Hara would like to have onsite confirmation that turbines are off and wants the Applicant to take responsibility to provide confirmation to CAL FIRE that turbines are off.

Pyroanalysis Response, ROC 3, Question 6: As stated in the applicant's response to ROC 1, Question 4, the Project facility will have redundant backup systems that will allow the operator to shut down turbine operation either onsite or from a remote location upon discovery of a fire through the turbine's own smoke and heat detection systems or after receiving notice from CAL FIRE. The Remote Operations Control Center (ROCC) will receive notice that the shutdown has occurred, and can take immediate steps to contact and coordinate with local emergency response. Operations staff at the ROCC will also be able to shut off the turbines at CAL FIRE's request, i.e., if an offsite wildfire requires aerial support and turbines should be shut off as a safety precaution. The ROCC will be staffed 24 hours per day, 365 days per year. The 24-hour contact numbers for ROCC staff will be included in the Project-specific Fire Prevention Plan and shared with CAL FIRE and the Shasta County Fire Department upon commencement of operations. Onsite staff will work during normal business hours five days per week and would be available on-call outside these hours.

Reference: Fountain Wind Project Wildfire Supplemental Information and Response to CAL FIRE Records of Conversation

Attachment 2: Figures

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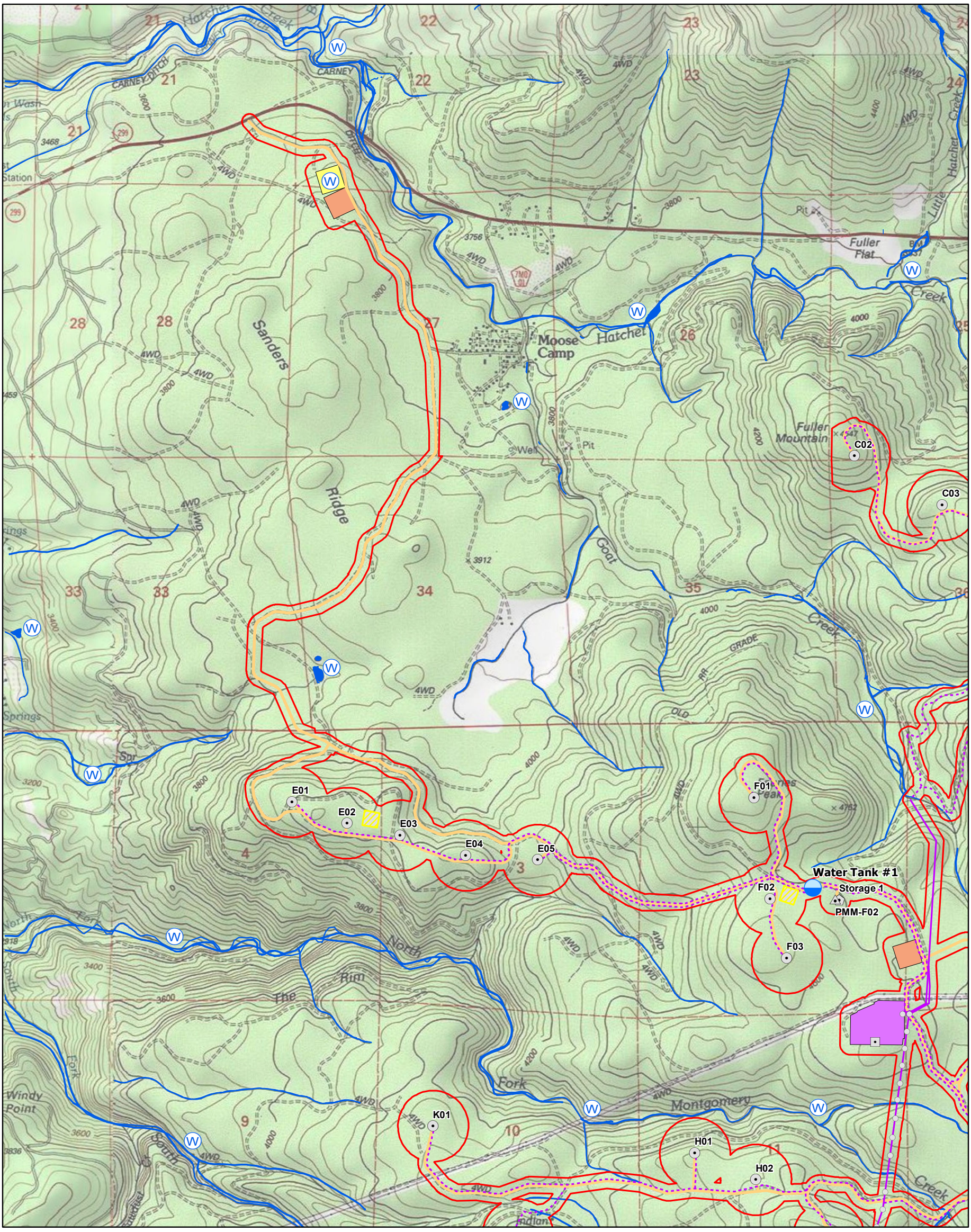

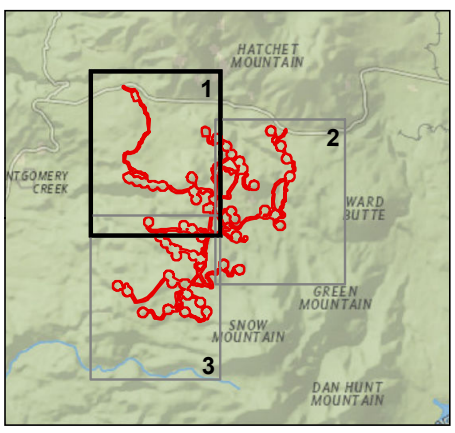

Notes

1. Coordinate System: NAD 1983 2011 StatePlane California I FIPS 0401 Ft US
2. Service Layer Credits: ESRI online services, 2019

- Project Site Boundary
- Switching Station
- O&M Facility
- Batch Plant
- Perennial Surface Waters
- Staging Area
- Turbine
- Met Tower
- Storage Shed
- Microwave Tower
- Overhead Collection Pole
- Overhead Collection
- Underground Collection
- Access Route
- Potential Emergency Surface Water Source
- Proposed Water Tank Site

Sources:
U.S. Fish and Wildlife Service, National Wetlands Inventory, 2024.
U.S. Geological Survey, National Hydrography Dataset, 2024.
Stantec, 2017-2019.
ConnectGen, 2024.

0 0.25 0.5 Miles

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Stantec

Project Location: Shasta County, California

203723159

Prepared by PG on 2024-04-12
Technical Review by CB 2024-04-15

Client/Project: Fountain Wind Energy

Figure No. 1

Title: **Surface Waters in the Project Area**

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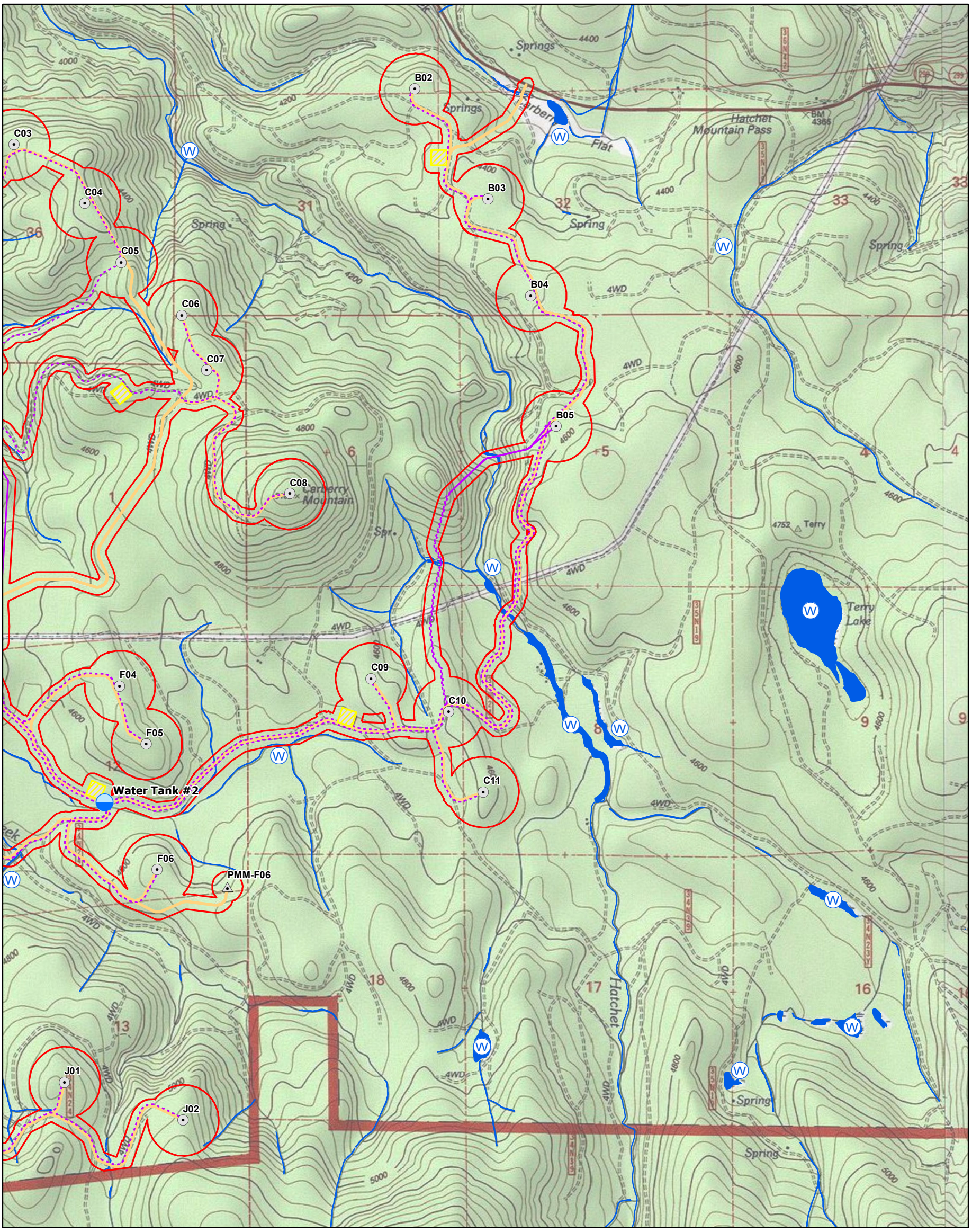

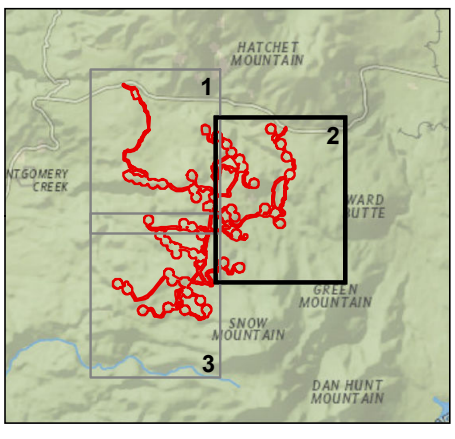

Notes

1. Coordinate System: NAD 1983 2011 StatePlane California I FIPS 0401 Ft US
2. Service Layer Credits: ESRI online services, 2019

Project Site Boundary
Perennial Surface Waters
Staging Area
Turbine
Met Tower
Overhead Collection
Underground Collection
Access Route
Potential Emergency Surface Water Source
Proposed Water Tank Site

0 0.25 0.5 Miles
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Sources:
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Stantec, 2017-2019.
ConnectGen, 2024.

Stantec

Project Location: Shasta County, California
203723159
Prepared by PG on 2024-04-12
Technical Review by CB 2024-04-15

Client/Project: Fountain Wind Energy

Figure No. 1

Title: **Surface Waters in the Project Area**

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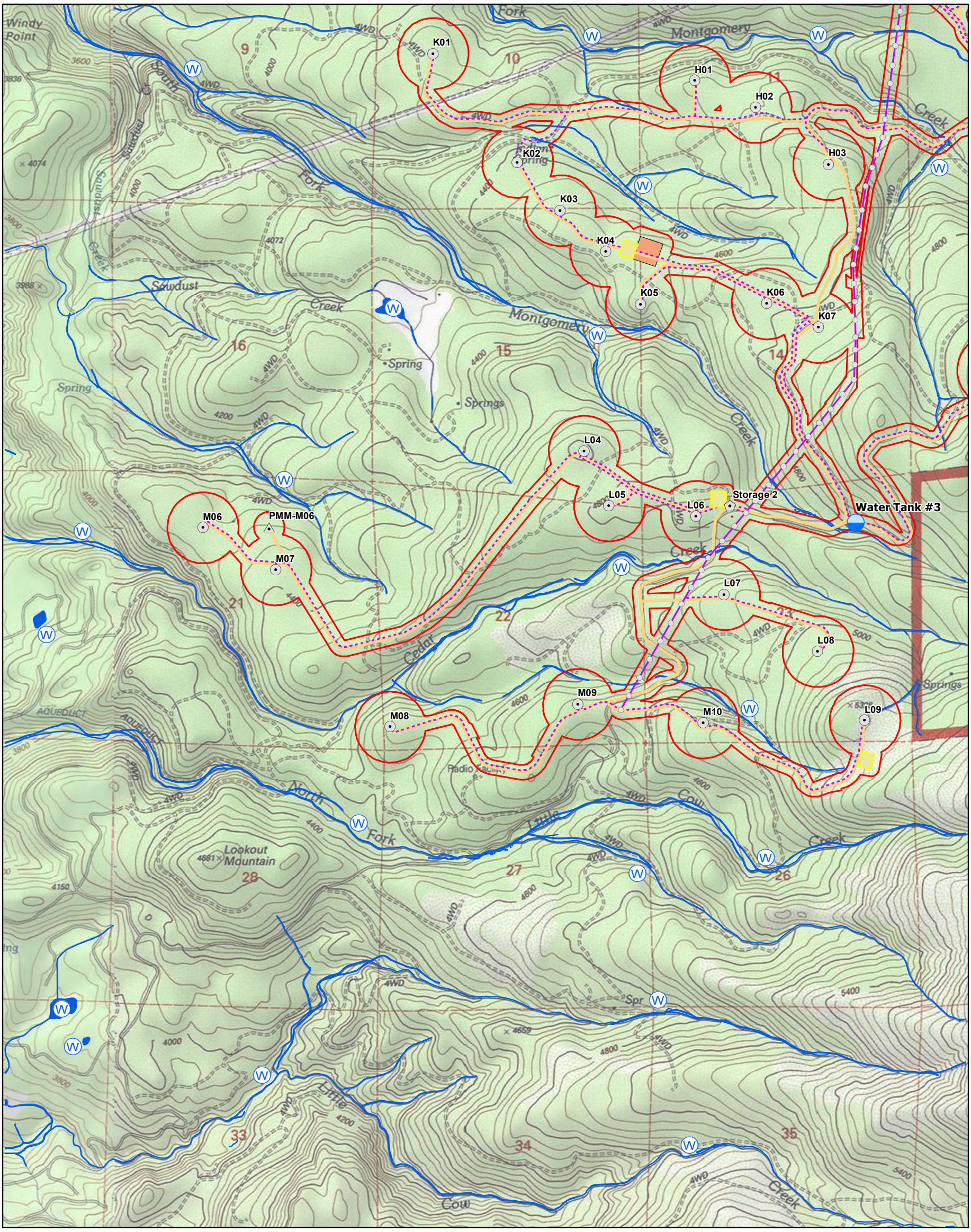

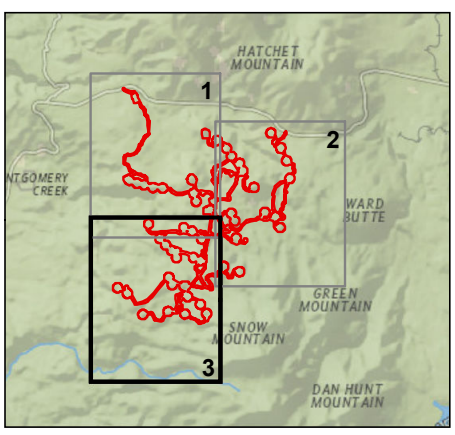

Notes

1. Coordinate System: NAD 1983 2011 StatePlane California I FIPS 0401 Ft US
2. Service Layer Credits: ESRI online services, 2019

- Project Site Boundary
- Batch Plant
- Perennial Surface Waters
- Staging Area
- Turbine
- Met Tower
- Storage Shed
- Overhead Collection Pole
- Overhead Collection
- Underground Collection
- Access Route
- Potential Emergency Surface Water Source
- Proposed Water Tank Site

Sources:
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U.S. Geological Survey, National Hydrography Dataset, 2024.
Stantec, 2017-2019.
ConnectGen, 2024.

0 0.25 0.5 Miles
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Stantec

Project Location
203723159

Shasta County, California

Prepared by PG on 2024-04-12
Technical Review by CB 2024-04-15

Client/Project

Fountain Wind Energy

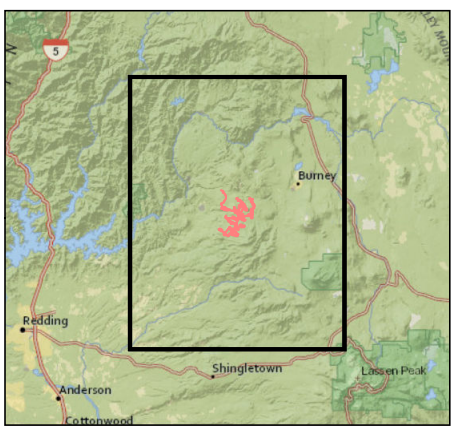
Figure No.
1

Title

Surface Waters in the Project Area

V:\1857\Active\203723159\03_data\gis_cad\gis\mxd\Fig2_InitialAttackSupport.mxd Revised: 2024-04-22 By: pglendenning

Big Bend Fire Station #70
Big Bend Station
Lake Britton
Pit River Pit 6
10k Gallon Dip Tank
Burney Station
Pit River Pit 7
Hillcrest Station
Montgomery Creek Station #71
10k Gallon Dip Tank
Sugar Pine Camp Station
Buckhorn Station
Oak Run Fire Station #30
Whitemore Fire Station #31



Project Site Boundary
5-Mile Project Site Radius

Initial Attack Support Locations

10k Gallon Dip Tank
Surface Water
CalFire Fire Station
Shasta County Fire Station

Source: Pyroanalysis, 2023

0 2 4 Miles
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Stantec

Project Location 203723159

Shasta County, California

Prepared by PG on 2024-04-12
Technical Review by CB 2024-04-15

Client/Project

Fountain Wind Energy

Figure No.
2

Title

Initial Attack Support Locations

Notes

1. Coordinate System: NAD 1983 2011 StatePlane California I FIPS 0401 Ft US
2. Service Layer Credits: ESRI online services, 2019