LAW OFFICES
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Christopher W. Mixson
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November 6, 2020

VIA ELECTRONIC MAIL

Hon. Bob Lucey, Chair
Washoe County Board of County Commissioners

Re: Comments of Pyramid Lake Paiute Tribe re Item 23 of Nov. 10, 2020 Agenda, Appeal of Denial of SUP No. WSUP20-0013 for Orni 36, LLC

Dear Chair Lucey and Board of County Commissioners,

On behalf of the Pyramid Lake Paiute Tribe (Tribe), thank you for the opportunity to provide comments regarding your consideration of Orni 36, LLC's (Ormat Geothermal) appeal of the Washoe County Planning Commission's denial of Special Use Permit No. WSUP20-0013. Ormat sought a Special Use Permit (SUP) from the Planning Commisson in order to construct two 24 MW geothermal power plants in the San Emidio Desert of Northern Nevada that would require multiple new geothermal fluid production and injection wells, approximately 7.5 miles of above-ground pipelines, and an approximately 58-mile long overhead generation tie powerline (the Proposed Project). Specifically, the SUP application sought the following approvals:

- Establishment of an Energy Production, Renewable use type;
- Establishment of a Hazardous Materials use for 720,000 pounds of flammable pentane gas;
- Grading/landscaping variance for approximately 195 acres of ground disturbance; and
- A 120kV power transmission line to extend approximately 22 miles.

Because of the amount of energy generated, the construction of two substations and a new transmission line, and the necessity of approval by the regional planning authorities, the Proposed Project meets the criteria for a project of regional significance.

The Tribe provided extensive comments regarding the Proposed Project to the Washoe County Planning Commission in advance of its consideration of the SUP. In summary, the Tribe's concerns stem from the close proximity of the Proposed Project to the Pyramid Lake Paiute Reservation (Reservation). As shown in Figure A-1 of the Draft EA (provided with these

comments), the Proposed Project is located approximately 3 miles to the northeast of the Reservation boundary, which makes the reservation a neighboring and/or adjacent property. Because the Proposed Project, if approved, will withdraw large volumes of groundwater from the San Emidio Basin, which basin extends into the Reservation boundary, the Proposed Project will adversely impact Tribal resources. First, the Tribe has serious concern with the Proposed Project's high potential to impact the Tribe's federal reserved groundwater rights within the Reservation boundary, including geothermal and underground water. The impacts to the Tribe's groundwater resources are not just to the volume of water taken from the Tribe's portion of the basin, but also to the quality of the groundwater. These impacts would amount to the loss of an irretrievable resource to the Reservation and the Tribe.

In addition to the decline and receding of the water table and impacts to water quality, there would be impacts to springs on the Reservation within the San Emidio Basin. The area is inhabited by wildlife, including sage grouse and tribally-protected Big Horn Sheep. Tribal members also utilize the rangelands in the area for cattle grazing, for many of whom this is their sole source of income. These springs are essential to maintain the vegetation on the rangeland habitat as well as streams and wetlands. Any disruption of the water flow in these areas will have a devastating effect on the wildlife and cattle in the area. The hydrological and NEPA analysis did not evaluate groundwater and thermal water movement, or impacts to the Tribe's resources.

The increased pumping could also result in reversing the groundwater gradients from the playa and older alluvial deposits into fresh water zones. In addition to the loss in groundwater storage, there could be land subsidence in connection with the Proposed Project.

The geology in the Proposed Project area and within the Reservation requires detailed analysis to determine impacts resulting from extensive groundwater pumping due to the nature of the local geology and the potential for fault structures to provide a conduit for both vertical and horizontal groundwater movement. This analysis was not completed in the Ormat studies and/or in the May 2020 Draft Environmental Assessment (Draft EA) prepared by the Bureau of Land Management for the Proposed Project. The greatest problem with the analysis performed by the Draft EA is their premise that the San Emidio geothermal resource is not connected to the Pyramid Lake Basin, Pyramid Lake, or Tribal geothermal resources. Evidence of faults in this system and the geothermal connection to Pyramid Lake are seen in the many geothermal outflows in the east side of Pyramid Lake. This is demonstrated on geologic mapping performed by the Tribe during exploration activities.

The Tribe is also concerned with the impacts of the Proposed Project to Pyramid Lake itself, which is home to two species of fish listed as threatened and endangered under the federal Endangered Species Act.

Based on the statements made by the Planning Commissioners at the September 1, 2020 hearing on the SUP, it was in large part a result of the Tribe's concerns that the Planning Commission to denied the SUP. The Planning Commissioners were concerned that the staff's recommendation of approval over the Tribe's concerns was based only upon Ormat's and staff's reliance on the analysis in BLM's Draft EA, which itself had not yet considered the Tribe's concerns. The Tribe's concerns are still valid and BLM continues to formally consult with the Tribe on a government-to-government basis with respect to the ongoing preparation of its final environmental document, which should result in significant changes from the Draft EA that was relied upon by Ormat to satisfy the applicable criteria for the SUP (discussed in further detail below).

Based on these concerns, the Planning Commission denied the SUP because the SUP fails to satisfy the requirement of Washoe County Development Code Sec. 110.810.30(d) that its issuance will not be significantly detrimental to the public welfare, will not be injurious to the property or improvements of adjacent property, and will not be detrimental to the character of the surrounding area. Similarly, the Planning Commission properly denied the SUP pursuant to Sec. 110.810.35 (Development of Natural Resources) because the Proposed Project threatens to be unduly detrimental to surrounding properties, land uses and the environment in general.

Ormat's appeal misstates the Planning Commission's decision to deny the SUP. For example, Ormat's appeal claims that the Planning Commission failed to "enumerate any specific concerns" for not making the necessary findings (*see* Attachment A to Nov. 10, 2020 Staff Report at p.7). Ormat's appeal claims "the Planning Commission's decision appeared to be based on an overarching concern about the contents of the Draft EA." Attachment A at p.7. Ormat incorrectly states that the Draft EA was provided only for "informational purposes." (Appeal at p.5). But the Planning Commission did not ***rely*** on the Draft EA, Ormat and Staff did. The minutes of Planning Commission meeting show that its members explained that the Draft EA was disputed and also not final, and therefore it ***should not*** serve as the basis or support for making any of the necessary findings. Therefore, because the SUP Application lacked any support for the findings ***other than the Draft EA***, the Planning Commission found that it could not make the necessary findings based on the SUP Application and properly denied the SUP. That decision was appropriate and is not arbitrary or capricious or an abuse of discretion.

The Staff Report for the Planning Commission (Attachment C at p.20) expressly relied on "remaining state and federal permitting requirement [to] mitigate the negative effects associated with operating the proposed facilities". *See also* Minutes of Sept. 1 Planning Commission Meeting (Attachment D to Staff Report) at p.6 ("Commissioner Donshick requested clarification – the Paiute Tribe put together a packet of concerns. Mr. Cahalane said those will be addressed in the draft environmental assessment. … She said the response from the Paiute Tribe said that's not true. Mr. Cahalane referenced the [Draft EA] table noting there is no conflict.") It was this finding that the Planning Commission appropriately disputed because of its reliance on the

BLM's ***Draft*** EA. The Planning Commission correctly opted not to rely on the Draft EA, and without that reliance there were no grounds to make the necessary finding, so the SUP application was denied. The applicant's appeal does not remedy that failure.

Ormat's appeal also argues that because underground geothermal resources are not regulated by Washoe County, they are not "germane" to the findings necessary to approve the SUP, and therefore the Planning Commission should not have considered the Tribe's comments in opposition to the SUP. Again, Ormat's appeal misunderstands the scope of the Planning Commission's review under the Development Code Sec. 110.810.30(d) and 110.810.35. The operative terms in those code sections are "public welfare," "adjacent property," "character of the surrounding area," and "unduly detrimental to the surrounding properties, land uses and the environment in general." Whether or not the extraction of geothermal waters are directly regulated by Washoe County is therefore not material—the Planning Commission is obligated to consider the *effects* of the entire Proposed Project, including but not limited to the effects of the proposed geothermal extraction, on the public welfare, adjacent property, the character of the surrounding area, and to consider whether the entire project, not just the grading and landscaping, will be unduly detrimental to surrounding properties, land uses and the environment in general. For example, page 9 of the August 13, 2020 Staff Report for the Planning Commission discusses that the applicant's project is subject to, among other things, compliance with Development Code Sec. 328, **Geothermal Resources**. Yet, in its appeal Ormat asks the Board of County Commissioners to ignore the effects of the extraction of those geothermal resources on the Tribe and the Reservation. Even more importantly, Sec. 110.810.35 (Development of Natural Resources) requires a special use permit for "natural resources development including energy production," and requires the Planning Commission to analyze the entire "proposed development," not just certain aspects of the development like grading or transmission line.

As a Project of Regional Significance, the Proposed Project is also subject to Washoe County Development Code Chapter 110, Article 812. It is not clear that the Board of County Commissioners has jurisdiction over this appeal pursuant to Sec. 110.812.25(d), which states that if the Planning Commission does not provisionally approve an application for a special use permit for a project of regional significance, then "no further action is taken." Pursuant to Sec. 110.812.25(h), appeals of denials of special use permits for projects of regional significance are only allowed if the Truckee Meadows Regional Planning Commission finds the project to be not in conformance with the Truckee Meadows Regional Plan, and in such case the appeal is to the Truckee Meadows Regional Planning Agency, not to the Washoe County Board of County Commissioners. The Tribe requests that the Board of County Commissioners seek a legal opinion with respect to its jurisdiction over this appeal.

The Tribe requests that the Washoe County Commission deny the appeal, and affirm the Planning Commission's denial of the SUP, because the Proposed Project has not addressed the Tribal concerns related to adverse impacts to the Tribe's resources, including the effects of the

Proposed Project's development of a significant amount of geothermal pumping. The BLM has yet to issue a final EA and is planning to revise the Hydrology Report and EA based on the Tribe's concerns. Washoe County does not have the information required to make the affirmative findings required by the applicable codes, and a decision before the SUP Application is revised to include all the impacts to the Tribe's Trust Resources would be premature. Ormat's appeal claims the Draft EA is irrelevant, yet at the same time it suggests that the Final EA should resolve the Tribe's concerns. The Planning Commission took a roll call vote on the SUP, and the Planning Commissioners who voted against approval of the SUP explained that their decision was based upon their disagreement with staff's finding—which relied only upon the ***Draft*** EA—that the SUP would not be detrimental to the public welfare, be injurious to the property of adjacent areas pursuant to Sec. 110.810.30, or would not be detrimental to the character of the surrounding area, and/or be unduly detrimental to the environment in general pursuant to Sec. 110.810.35. Put simply, the Planning Commission correctly declined to defer to the findings of an incomplete and unfinished federal environmental analysis of the proposed project, particularly when those draft findings have been disputed by the Tribe with competent evidence.

In addition to the comments above, technical comments prepared on behalf of the Tribe by Stetson Engineers and Ehni Enterprises, are attached to this letter. Thank you for considering the Tribe's comments on this project, and we look forward to continued collaboration and consultation with Washoe County.

Very truly yours,

WOLF, RIFKIN, SHAPIRO, SCHULMAN & RABKIN, LLP

Chris Mixson

CHRISTOPHER W. MIXSON

CM

cc: Donna Marie Noel, Director of Natural Resources, PLPT

Attachments:
1. Map of Project Area and Pyramid Lake Reservation Boundary from Draft EA
2. Comments by Stetson Engineers (Technical Memorandum dated July 13, 2020)
3. Comments by Ehni Enterprises Inc. (dated July 13, 2020)

ATTACHMENT 1

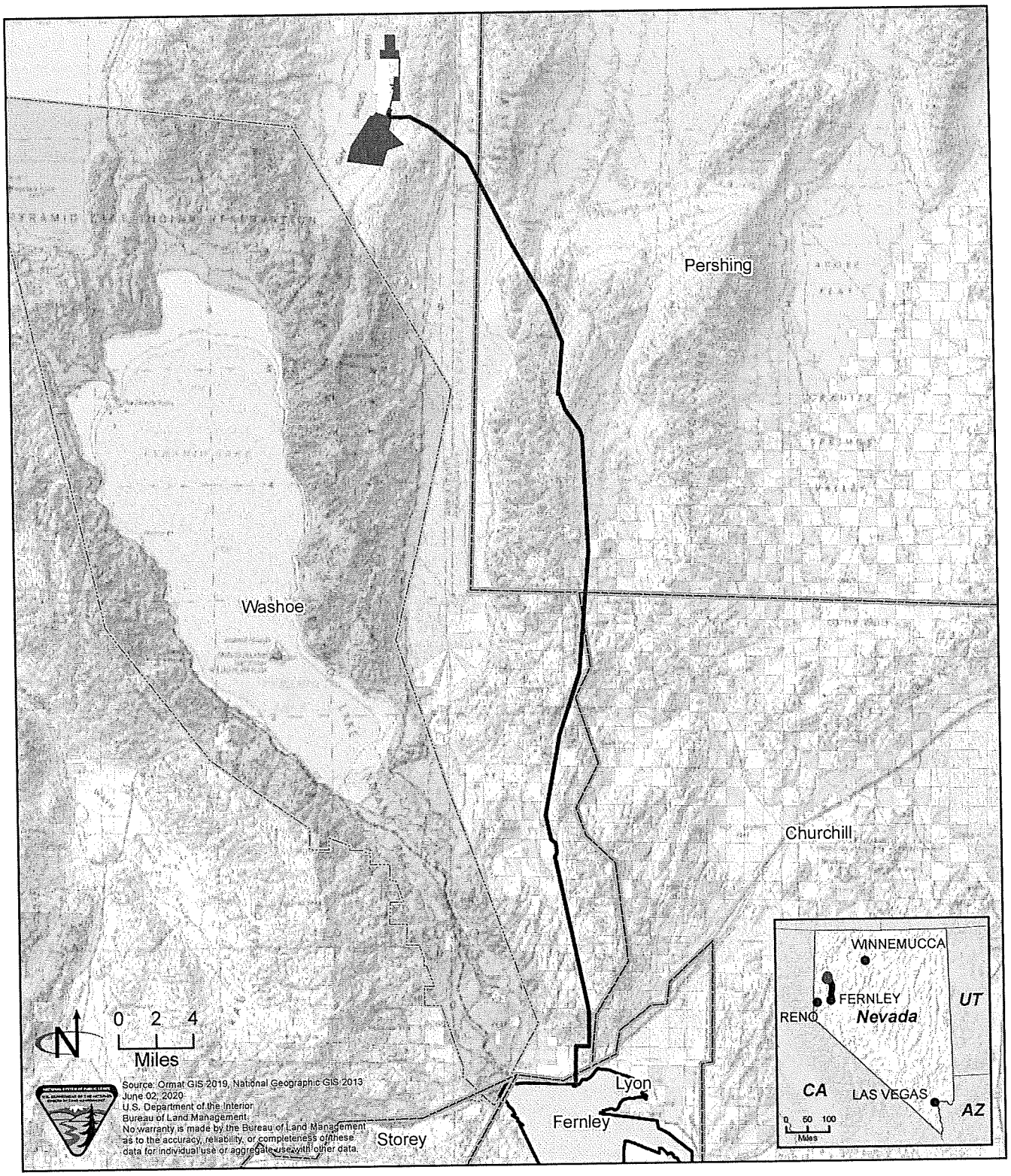


Figure A-1. Project Area

- Proposed gen-tie
- Area of Interest
- County boundary
- Pyramid Lake Paiute Tribe Reservation Boundary

Surface Management Agency
- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Private
- Fish and Wildlife Service
- Nevada State
- Water

ATTACHMENT 2

STETSON
ENGINEERS INC.

Technical Memorandum

2171 E. Francisco Blvd., Suite K • San Rafael, California • 94901
TEL: (415) 457-0701 FAX: (415) 457-1638 e-mail: allanr@stetsonengineers.com

TO: Donna Noel, Natural Resources Director
Pyramid Lake Paiute Tribe

DATE: July 13, 2020

FROM: Stetson Engineers Inc.

RE: **Comments on the Draft Environmental Assessment and the Hydrogeologic Evaluation for the North Valley Geothermal Development Project at the San Emidio Geothermal Field**

This Technical Memorandum was prepared at the request of the Pyramid Lake Paiute Tribe ("Tribe") and concerns the Draft Environmental Assessment ("Draft EA") and the Hydrogeologic Evaluation ("Hydro Report") for the North Valley Geothermal Development Project at the San Emidio Geothermal Field ("Project"). The U.S. Bureau of Land Management's ("BLM") reports on the Project are both dated May 2020.

The proposed Project is located in the San Emidio Desert Basin, less than two (2) miles from the northeastern boundary of the Pyramid Lake Reservation. The San Emidio Desert Basin is identified by the Nevada State Engineer's Office as Hydrographic Basin No. 22. The location of the Project relative to the Pyramid Lake Reservation, and within the San Emidio Desert Basin No. 22, is shown on **Figure 1** attached to this Technical Memorandum.

The Project seeks to construct two 20 MW closed-loop binary geothermal power plants in the San Emidio Desert that would require twenty-five (25) new geothermal fluid production wells, injection wells, approximately 7.5 miles of above-ground pipelines, and an approximately 58-mile long overhead generation tie powerline. The proposed Project boundary (referred to as the "Area of Interest" in the EA) and the locations of the proposed Project wells are shown on **Figure 2** attached to this Technical Memorandum. As shown on Figure 2, the Project boundary is only 8,450 feet from the Reservation and the nearest proposed Project well is only a little more than 3 miles from the Reservation. Notably, a significant portion of the San Emidio Desert Basin extends into the Reservation. More than 23,000 acres of the San Emidio Desert Basin is within the Reservation.

Comment #1 (EA and Hydro Report Fault Mapping)
The EA does not provide a map showing the fault systems in the vicinity of the proposed Project. Figure 3 of the Hydro Report does show the location of some faults in relation to the proposed Project, including references to Lake Range, San Emidio, and Empire Faults. As generally illustrated on Figure 3 of the Hydro Report, the Lake Range fault extends from the Pyramid Lake into the San Emidio Desert Basin and the proposed Project area. However, Figure 3 of the Hydro Report does not correctly represent the full extent of the fault identified as the San Emidio Fault.

The full extent of the faults extending from the Pyramid Lake into the San Emidio Desert Basin are provided on Figure 2 attached to this Technical Memorandum (faults in Figure 2 are based on USGS, 2007). As shown on the attached Figure 2, there are two faults that extend from the Pyramid Lake into the San Emidio Desert Basin. The southernmost fault extends from the Pyramid Lake through the San Emidio Canyon and a second fault to the north extends from the Pyramid Lake through the Sweetwater Canyon/Stag Canyon. Both faults extend from Pyramid Lake into the San Emidio Desert and the geothermal production area associated with the proposed Project. Figure 3 in the Hydro Report should be corrected to accurately show both faults extending from the Pyramid Lake into San Emidio Desert Basin.

Comment #2 (EA, Section 3.2.1 Water Resources, page 3-7)
The EA includes two (2) paragraphs under the heading "**Water Budget**." However, a water budget is missing from this section of the report. The Water Budget section of the report discusses an annual estimate of 4.2 inches of precipitation per year for the San Emidio Basin, cites 7,186 acre-feet of existing groundwater usage in the basin, and states the basin perennial yield is 4,600 acre-feet per year. The second paragraph of the section entitled Water Budget concludes with the statement: "*It can be inferred that the excess recharge due to precipitation is counterbalanced by discharge due to groundwater uses and water uptake by vegetation.*" The EA should provide a proper analysis for a water budget and explain how the proposed Project will affect the existing water budget.

Comment #3 (Hydro Report, Section 3.3.1 Water Budget, page 3-2)
The EA relies on the Hydro Report for most of the conclusions that the proposed Project will not affect the environment, water resources, vegetation, wildlife, and cultural resources. Section 3.3.1 of the Hydro Report is entitled "Water Budget" and it, like the Water Budget section of the EA, does not provide an actual water budget analysis or a discussion of how the proposed Project will impact the existing water budget for the San Emidio Desert Basin. Section 3.3.1 of the Hydro Report correctly notes that the perennial yield of the San Emidio Desert Basin is 4,600 acre-feet annually, and correctly notes that the Nevada State Engineer has permitted 7,296 acre-feet of groundwater to be pumped from the basin annually (not including 1,303 acre-feet of additional permitted pumping from geothermal groundwater). The Hydro Report also correctly notes that the San Emidio Desert Basin is a "designated basin," meaning it is over depleted and in need of additional administration by the State Engineer. However, the Hydro Report fails to explain/justify/reconcile how the proposed Project could not adversely affect the already over-committed groundwater resources of the San Emidio Desert Basin.

Comment #4 (Hydro Report, Section 3.3.3 Surface Water, San Emidio Desert, page 3-7)
The Hydro Report states that there are three perennial springs within 5 miles of the Project area with a reference to Hydro Report Table 4. Table 4 in the Hydro Report does not appear to list any springs. Furthermore, there are several other springs within the portion of the Reservation that extends into the San Emidio Desert Basin that are not mentioned in the Hydro Report. Figure 2 attached to this Technical Memorandum shows springs in the San Emidio Basin (on the Reservation) that should be included in the Hydro Report.

Comment #5 (Hydro Report, Section 3.3.3 Surface Water, Pyramid Lake, page 3-7)
The Hydro Report states that the waters of the Pyramid Lake are hydrologically distinct from the surface and groundwater resources north of the Pyramid Lake basin, including the San Emidio Desert, based on TDS, salinity, and pH levels of the Pyramid Lake water. This statement is made without scientific bases and does not recognize the various sources of water that contribute to TDS, salinity, and pH in the Pyramid Lake that are not present as contributing sources to the San Emidio surface and groundwater resources.

Comment #6 (Hydro Report, Section 3.4 Existing Water Rights, page 3-7)
Section 3.4 of the Hydro Report makes reference to a table of existing water rights and a figure showing existing points of diversion within the San Emidio Desert Basin, presumably derived from data/information published by the Nevada Department of Water Resources. However, the Hydro Report fails to recognize or mention the Tribe's federal reserved rights to the resources of the San Emidio Desert Basin, including geothermal and shallow groundwater, underlying the portion of the Reservation that is within the San Emidio Basin.

Comment #7 (Hydro Report, Section 3.5 Jurisdictional Water, page 3-7)
Section 3.5 of the Hydro Report refers to *"...approximately 115 acres of freshwater emergent wetlands that may be present on the floor of the San Emidio Desert...[that] may be considered jurisdictional Wetlands and Other Waters of the US by the US Army Corps of Engineers"* and concludes that coordination with the USACE would be necessary to determine the jurisdictional status of the wetlands. However, Table 3-2 of the EA shows that *"Wetlands – Riparian Zones are* ***Not Present****. A project area habitat inventory (BLM 2020a) determined that wetlands and riparian areas are not present."* The conflicting statements made in the EA and the Hydro Report concerning the existence and status of wetlands and riparian areas should be reconciled.

Comment #8 (EA, page 3-35)
The EA erroneously states: *"...connectivity between the geothermal resources in the San Emidio Desert and adjacent undeveloped geothermal resources is unlikely. Proposed geothermal utilization, including reinjecting cooled geothermal fluids, is not anticipated to affect adjacent geothermal resources or the possibility of developing these resources in the future."* Referring to Figure 2 attached to this Technical Memorandum, clearly the use of well water, geothermal well water production, and reinjection of geothermal well water at the proposed Project site will likely have impacts on the Tribe's undeveloped geothermal resources in the San Emidio Desert Basin. The resources underlying the portion of the Reservation that extends into the San Emidio Desert Basin are part of the same resources associated with the proposed Project.

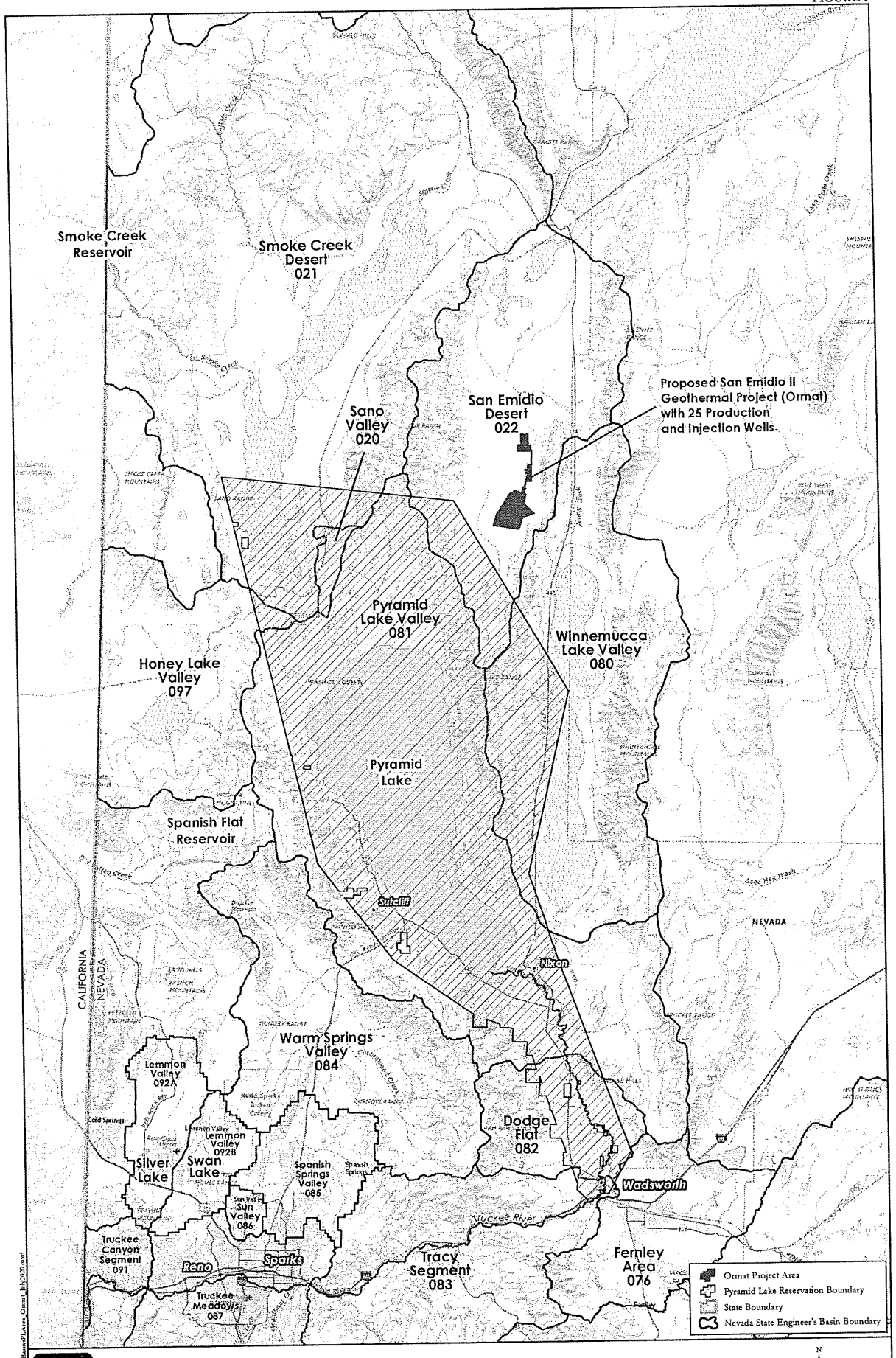
Comment #9 (EA, page 3-53)
The following comment is made in the EA in regard to cumulative effects:
"Because there is a lack of connectivity between the geothermal resource in the San Emidio Desert Basin and undeveloped geothermal resources in adjacent hydrologic basins, Alternative A is not anticipated to prevent development of these resources in the future. Similarly, there is no direct connection between the geothermal resources in the San Emidio Desert and groundwater and surface water resources in the Pyramid Lake Valley basin; thus, there would be no contributions to cumulative effects on water quality or quantity in Pyramid Lake, including habit for listed fish species."

There is no conclusive scientific bases or analyses in either the EA or the Hydro Report to support these statements. The capacity and extent of the geothermal resource from which the proposed Project will withdraw from are not stated, quantified, or otherwise illustrated in either the EA or the Hydro Report. The analyses and information that are provided in the Hydro Report conflict with the statements that are made regarding no effects.

Comment #10 (EA, Section 3.3.6 Cumulative Effects, page 3-53)
The Hydro Report states that the current San Emidio geothermal plant and northern production wells are associated with the San Emidio fault (Hydro Report, page 4-5). The Hydro Report also states that the geothermal system is likely produced by conductive faults that provide pathways for fluid convection (Hydro Report, "Proposed Project" page 4-11). As shown in Figure 2 attached to this Technical Memorandum, there are two (2) faults that extend from the Pyramid Lake into the San Emidio Desert Basin and into the area proposed for geothermal well production. Based on the fault connectivity that exists between the Pyramid Lake and the proposed geothermal production area in the San Emidio Desert Basin, the following conclusion as stated in the EA is unsupported and contradicted by the facts:

> *"Because there is a lack of connectivity between the geothermal resource in the San Emidio Desert Basin and undeveloped geothermal resources in adjacent hydrologic basins, Alternative A [the proposed Alternate] is not anticipated to prevent development of these resources in the future. Similarly, there is no direct connection between the geothermal resource in the San Emidio Desert and groundwater and surface water resources in the Pyramid Lake Valley basin; thus there would be no contributions to cumulative effects on water quality or quantity in Pyramid Lake, including habitat for listed fish.* (EA, page 3-53).

FIGURE 1



STETSON ENGINEERS INC.

7/13/2020

HYDROGRAPHIC BASINS
IDENTIFIED BY THE NEVADA DIVISION OF WATER RESOURCES
IN THE VICINITY OF PYRAMID LAKE

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0 2.5 5 Miles

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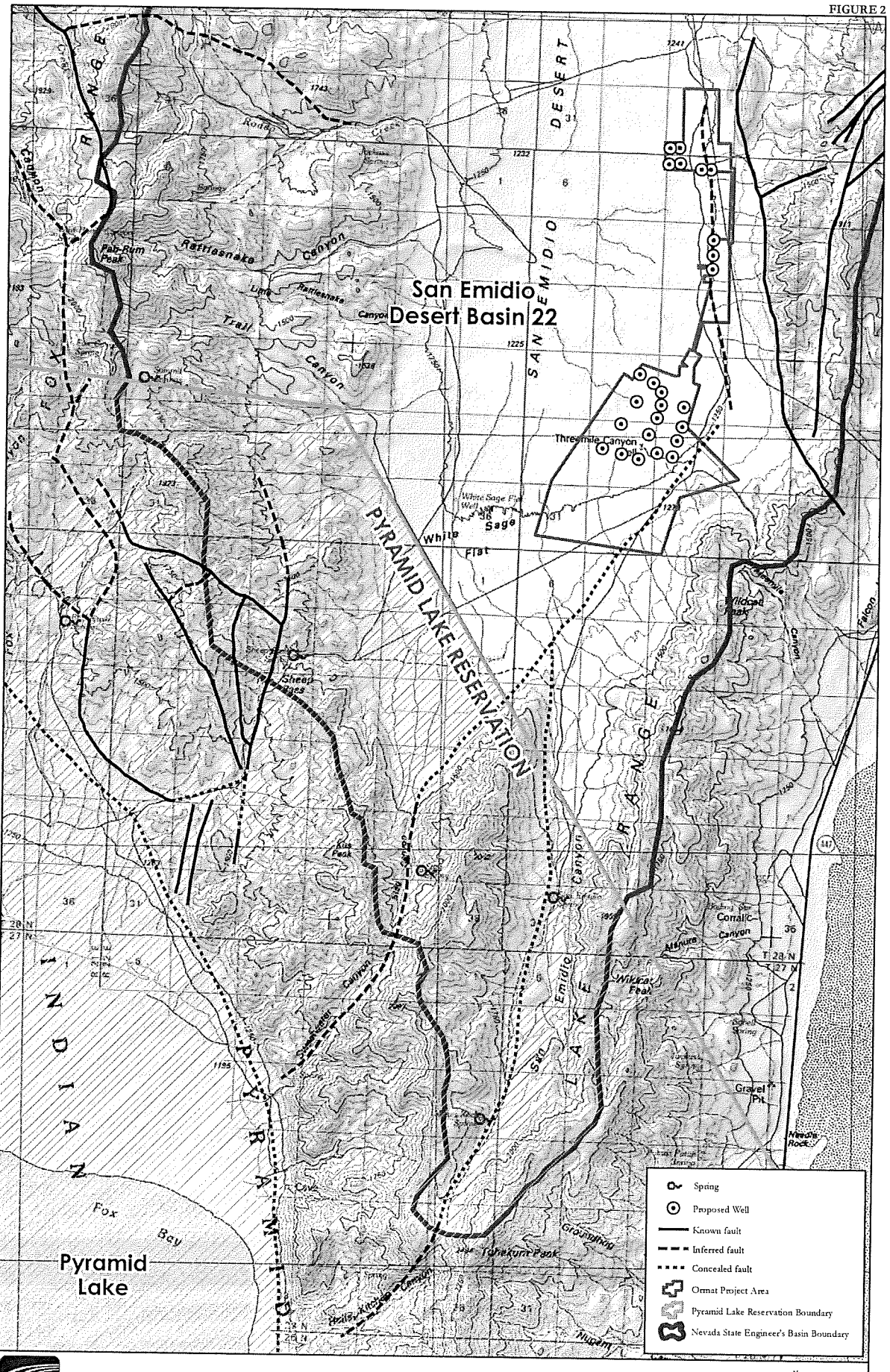
FIGURE 2



STETSON ENGINEERS INC.

7/13/2020

Geologic Faults from:
Crafford, A.E.J., 2007, Geologic Map of Nevada:
U.S. Geological Survey Data Series 249, 1 CD-ROM, 46 p., 1 plate.

PROPOSED SAN EMIDIO II
GEOTHERMAL PROJECT (ORMAT)

N

0 2,500 5,000
Feet

Document Path: J:\mxd\136\Proposed_San_Emidio_Project.mxd

ATTACHMENT 3

Ehni Enterprises, Inc.

GEOLOGIC CONSULTING, PROSPECTING, & EVALUATION
P. O. BOX 4228, CARSON CITY, NEVADA 89702-4228
(775) 883-1107 email:ehnient@aol.com

13 July 2020

Comments on the Environmental Assessment (EA) and Hydrogeologic Evaluation for the North Valley Geothermal Development Project at the San Emidio Geothermal Field (Reports dated May 2020)

To
BLM-Black Rock field office
Attn: Tai Subia (NVW010.28)
Bureau of Land Management
Winnemucca District Office
5100 E. Winnemucca Blvd.
Winnemucca, NV 89445.

Via Electronic Mail
blm_nv_wdo_sanemidioii@blm.gov,

Please accept the following comments on Environmental Assessment ("EA") DOI-BLM-NV-W030-2020-0003-EA regarding the draft EA on North Valley Geothermal Development Project at the San Emidio Geothermal Field. These review comments are prepared on behalf of the Pyramid Lake Paiute Tribe (PLPT) by Wm. J. Ehni, consulting geologist.

The EA and supporting documents have numerous deficiencies as outlined below. In addition, the proposed project could seriously endanger PLPT's valuable geothermal and water resources. The areal extent of the geothermal resource is poorly defined and open ended to the southwest, and most likely extends onto the PLPT reservation. The EA erroneously discounts the affect that the proposed development will have on the PLPT resources by making numerous references stating that the "The groundwater systems in the San Emidio Desert are not interconnected to those in the Pyramid Lake Valley groundwater basin" while nearly 23,500 acres (over 36 square miles) of the PLPT reservation lies within the San Emidio Desert ground water basin. Freshwater resources belonging to the PLPT could be adversely affected if the proposed development is mismanaged. Based on the above, and as well as the impact of other geothermal developments that were mismanaged and adversely impacted the freshwater and or geothermal resources, the proposed development will need a robust monitoring program coordinated by the PLPT.

The EA discusses the link between faults and geothermal systems however fails to present maps that show the location of these faults. The supporting documents of the EA and Hydrogeologic Evaluation indicate that the geothermal system at San Emidio extends to the southwest as noted by Warren (2018) where he states "drilling south of the producing field discovered a new, hotter (>160C) resource that is

currently in the early development stages" and this area coincided with the Sweetwater fault that extends onto the PLPT Reservation (see Figure 1 by Wm. J. Ehni). Geologic mapping clearly links the Lake Range Fault on the east side of Pyramid Lake with the production faults at the San Emidio geothermal project (Crafford 2007, Faulds et al 2013, Anderson and Faulds 2013, Moore 1979) as indicated on the attached map by Ehni (Figure 1). San Emidio geothermal production wells are located adjacent to the north end of the Lake Range (Mackelprang and More 1979) which extends south where the Lake Range forms the eastern side of Pyramid Lake. The fault system associated with the San Emidio geothermal system is the northern extension of accommodation faults related to the Lake Range Fault. The Lake Range Fault is a right lateral, right stepping west dipping normal fault. The producing faults at San Emidio are a northern extension of this fault. The Lake Range Fault splays off to the north on the Sweetwater and Hell's Kitchen faults which are most likely extensional accommodation (tensional) faults and are probably the primary fault system that is being produced at the San Emidio geothermal project.

There are four hydrologic systems that could be impacted by the proposed geothermal development at San Emidio. (1) Subsurface freshwater ground water aquifers could be damaged by overproduction and or poorly designed wells. (2) Surface water (and springs) could be impacted by over production. (3) Known geothermal systems in the Pyramid lake basin might be affected and (4) undeveloped geothermal resources that might exist along the Sweetwater fault on the PLPT Reservation in the San Emidio basin could be significantly affected by the proposed development. The water table in the San Emidio basin is at a higher elevation than the surface of Pyramid Lake and if producing the geothermal resource at San Emidio resulted in lowering the water table below the surface elevation of Pyramid Lake, water in Pyramid Lake might be affected. In 1988, one year after the San Emidio power plant went on production, the water table in the San Emido basin was at an elevation of about 4044 feet above sea level, 6 feet below ground level (AMOR II, 1988). By 1994 it had dropped to an elevation of 3923 feet above sea level, 142 feet below ground level (Pruett 1994). The elevation of pyramid lake is 3792 feet above sea level and therefore the hydrologic gradient is from San Emidio into Pyramid lake. Isothermal intervals in geothermal wells in San Emidio and on the PLPT reservation, are convective zones with relatively high fracture connectivity and permeability (Reeves et al., PLPT). Permeable Vocaniclastic rocks at San Emidio (Mesquite 1994, pg 28) could also provide communication between Pyramid Lake and San Emidio.

Wood (1990) recognized the Lake Range Fault as separating Wind Mountain from the Lake Range just north of the San Emidio geothermal project. The Fault zone that produces geothermal fluids at San Emidio is just west of the Lake Range fault, in a similar structural setting to the Wind Mountain Fault as described by Wood in 1990. The Sweetwater Fault zone appears to be a southern extension of the Wind Mountain / San Emidio fault zone, connecting Pyramid Lake with San Emidio.

The Hydrogeologic Evaluation is fraught with numerous errors and false statements. One example is found on page 4-4 where it states that at Emerson Pass "In 2013, the Nevada Bureau of Mines and Geology drilled four shallow wells, from 140 to 250 feet deep. The bottom hole temperatures ranged from approximately 205 to 298°". These are false and erroneous statements, the Nevada Bureau of Mines and Geology did not drill these holes, the Pyramid Lake Paiute Tribe did, and there are no wells with temperature as high as 298F.

1) Map showing the cumulative effect study area (CESA) is missing

Maps showing the cumulative effect study area(s) are emphasized in the National Environmental Policy Act (NEPA), particularly in section 5 of "cumulative effects"
https://ceq.doe.gov/publications/cumulative_effects.html
and are totally missing from the EA or Hydrogeologic Evaluation. Figure 1 of the Hydrogeologic Evaluation shows a 5 miles buffer area around the Area of Interest (AOI) which is arbitrary and misses several areas that might be affected by the project.

2) The EA fails to identify where the San Emidio Geothermal unit is located.

On page 1-1 in Chapter 1, the EA states: "***The Project proposes geothermal development in the San Emidio Geothermal Unit (SEGU; NVN-85820X), which encompasses approximately 20,400 acres.***"

However, on figure A-2, the outline of the San Emidio Geothermal Unit barely encompasses 13,440 acres. The BLM serial page agrees with the unit size of being 20,400 acres, so Figure A-2 must be wrong and a map showing where the unit is needs to be included in the EA. And there is no mention of the Unit geology supporting this geothermal unit.

3) The EA fails to accurately explain how much production and injection is being proposed

On page 2-3, the EA states: "***Ormat is proposing 25 production and injection wells,..... During normal well field operations, total geothermal fluid production rates are expected to be approximately 8,400 gallons per minute (gpm) at 320 degrees Fahrenheit. Individual production well flow rates are expected to be approximately 4,200 gpm.... Individual injection wells are expected to receive approximately 2,600 gpm".*** This math doesn't add up, total field production for 48 mega watts will be closer to 34,000 gpm, not 8,400 gpm. At 320F it will take about 17,000 gpm to produce 24 Mega Watts (gross) for each plant, which will only require 4 production wells at 4,200 gpm. And in order to reinject all 17,000 gpm at 2,600 gpm per well only 6 wells or so would be required. In order to fully assess the environmental impact, PLPT needs to have a better understanding of how much fluid is being produced and injected. In addition it is not clear if the old plant be decommissioned?

4) The EA failed to adequately discuss the potential impact on wetland and riparian areas.

In Table 3-2, the EA makes a false statement that wetlands and riparian zones are "***Not Present A project area habitat inventory (BLM 2020a) determined that wetlands and riparian areas are not present***". The biological baseline resource document (BLM 2020a) does not mention wetlands and the discussion of riparian areas is inadequate. Section 3.5 of the Hyrdrogeologic Evaluation refers to the wetlands that exist just west of the existing facility and riparian areas exist around perennial springs in the area.

5) The EA erroneously dismisses the possibility for possible adverse impacts to Endangered species.

On page 3-6 in Table 3-2, the EA states **"No threatened, endangered, candidate, or proposed species or designated critical habitat are present in or near the project area and would therefore not be affected by Alternative A (BLM 2020a)."** This statement is not supported by any factual information. And then this section continues with saying "**There were concerns raised during scoping regarding the potential connectivity of the San Emidio geothermal reservoir and surface water in Pyramid Lake and that Alternative A could affect Lahontan cutthroat trout and cui-ui in Pyramid Lake. See analysis for Issue 2 (Section 3.3.3) and the Hydrogeologic Evaluation (BLM 2020b), which indicate that geothermal fluid flows northward following fault structures along the eastern boundary of the San Emidio Valley and there is no connectivity between the San Emidio geothermal reservoir and Pyramid Lake. Accordingly, Alternative A would have no potential to affect threatened or endangered species in Pyramid Lake or the Truckee River.**" Not all of the springs in the area have been inventoried for endangered species and the research presented in BLM 2020a is not conclusive that there is not any hydrologic communication between San Emidio and Pyramid Lake. Especially since the water table in San Emidio is higher than the surface level of pyramid lake, it would seem that the hydrologic gradient would flow toward Pyramid Lake. On Page 4-1 the EA discounts the possibility of any endangered species be affected by the proposed development with this statement: "***Current surveys have indicated that ESA-listed species are not found in the project area.***" Since the EA only recognized 3 springs in the area and in reality there are several more, recognized in this EA, it would appear that the other springs that have not been inventoried in this EA might have endangered species inhabiting them, such as mollusks (snails).

6) The EA fails to identify all surface waters that might be affected the proposed action.

On page 3-7, the EA states "***Three springs are present within 5 miles of the AOI. These include Rodeo Creek, Chimney Spring, and Painted Rock Spring".*** This statement is wrong. Sheep Pass Spring is 3.6 miles from the project area and not included in this inventory. Stag Spring is 5 miles from the project area and San Emido Spring is about 5.2 miles from the project area. All three of these springs are on the PLPT Reservation. In addition there are other springs in the area that are within 5 miles of the project area that are not included in this inventory. On Page 3-33; the EA states "***Effects on surface water quality are unlikely because there are no perennial streams or other surface waters in the project area."*** This statement is erroneous; there are perennial springs within the project area.

7) The EA makes misleading statements regarding the potential impact on Pyramid Lake

On Page 3-35; the EA states "***As described in the Hydrogeologic Evaluation (2020b), connectivity between the geothermal resource in the San Emidio Desert and adjacent undeveloped geothermal resources is unlikely. Proposed geothermal utilization, including reinjecting cooled geothermal fluids, is not anticipated to affect adjacent geothermal resources or the possibility of developing these resources in the future. Similarly, there is no direct connection between the geothermal resource in the San Emidio Desert and groundwater and surface water resources in adjacent hydrographic basins such as the Pyramid Lake Valley groundwater basin (Basin 81); thus, Alternative A is not anticipated to have effects on groundwater or surface water quality or quantity in adjacent hydrographic basins or on Pyramid Lake."*** It has not been demonstrated or proven that there is no connection between the San Emidio groundwater basin and Pyramid Lake. The EA infers that there is no "direct" communication between San Emidio and the Pyramid Lake, but there is no data on how is this measured except for indirect conclusions made from geophysical data. Although communication between San Emidio and Pyramid Lake might not be "direct" with obvious surface drainage from San Emido to Pyramid Lake, there is most likely some communication because Pyramid Lake is the low point and fault communication between San Emidio and Pyramid Lake is obvious.
In 1988, one year after the San Emidio power plant went on production, the water table was at an elevation of about 4044 feet above sea level, 6 feet below ground level (AMOR II, 1988). By 1994 it had dropped to an elevation of 3923 feet above sea level, 142 feet below ground level (Pruett 1994). The elevation of pyramid lake is 3792 feet above sea level and therefore there is probably a significant amount of recharge and communication of water from San Emidio into Pyramid lake. If the water table in San Emidio is dropeed below 3792 feet, the hydrologic gradient would be from Pyramid Lake to San Emidio.
On Page 3-36; the EA makes a similar statement; "***The groundwater systems in the San Emidio Desert are not interconnected to those in the Pyramid Lake Valley groundwater basin (Basin 81)."*** The connection between San Emidio and Pyramid Lake has not been fully evaluated. Faulting connects the two basins and how much permeability there is along these faults has not been determined.
On Page Page 3-37; the EA states "***The currently producing geothermal reservoir at the SEGU and the geothermal reservoirs south of the unit on the PLPT Reservation do not interconnect (BLM 2020b). This indicates that proposed geothermal utilization would not affect the PLPT's ability to develop the geothermal resource on the reservation in the future."*** Although BLM 2020b (Hydrogeologic Evaluation) implies that the geothermal systems are separate, the evidence is indirect and inferred from geophysical interpretations. Communication between the two basins might occur along the Sweetwater fault and Hell's Kitchen fault. Both of these fault systems are dilational "transitional pull apart" zones similar to example G on Figure 6 of in the Hydrologic Evaluation report (BLM 2020b). Unknown geothermal resources probably exist in the area, especially within the PLPT reservation in the San Emido Basin. Sacred hot springs at the "Pyramid" in Pyramid Lake are on the Lake Range Fault, which extends all of the way up to San Emidio, and the hydrology of this system in not very well understood.

8) The Hydrogeologic Evaluation does not include all Springs within the AOI.

The Hydrologic baseline data in the report did not include included or characterize all freshwater surface sources and subsurface groundwater well data in the project area. On page 3-7 the reports states that

"Three perennial springs are present within 5 miles of the Project area: Rodeo Creek, Chimney Spring, and Painted Rock Spring (see **Table 4**)". This statement is erroneous, Sheep Pass Spring on the PLPT reservation is only 3.6 miles from the project area and Jackass spring is only 4 miles west of the AOI. Stag Spring is 5 miles from the project area and San Emido Spring is about 5.2 miles from the project area both of which are within the San Emidio hydrologic basin and located on the PLPT reservation. In addition, Table 4 has nothing to do with Springs. Although Stag and San Emido springs are just outside of the arbitrary 5-mile buffer (Figure 1 of Hydrogeologic Evaluation), they should be included the Hydrogeologic study since they are within the San Emidio hydrologic basin and could be affected by the proposed activity.

9) The Hydrogeologic Evaluation lacks critical water table data.

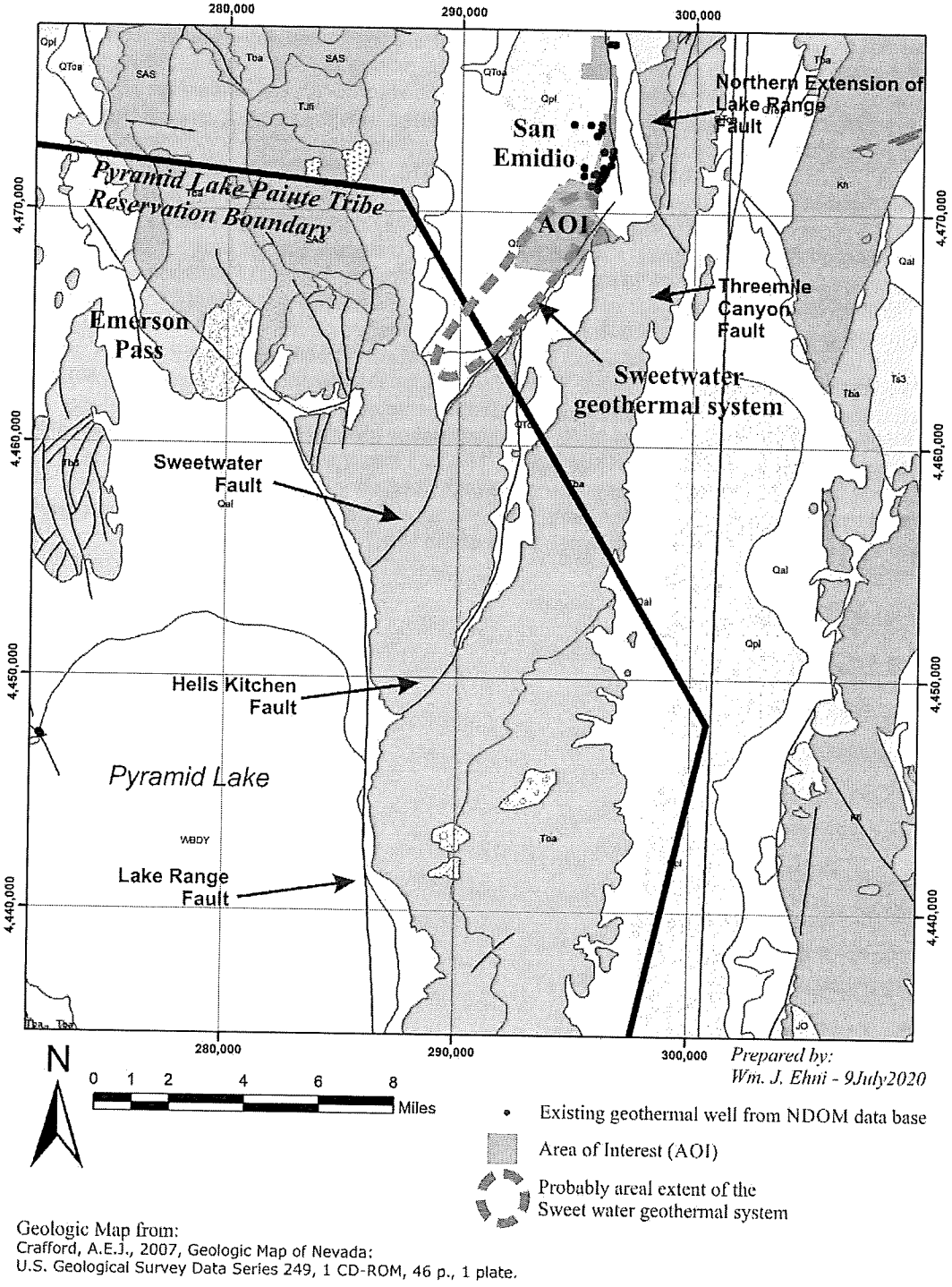
The report failed to include historical data showing how much draw down in the water table has occurred during the production of the existing power plant. In addition, water table data in Table 3 is blacked out. To make a complete Environmental Assessment, the current water table elevations need to be included for baseline data for all existing wells (production, injection, and freshwater wells) within the cumulative effects study area (CESA). Historical data on all wells (water table when first drilled and subsequent measurements) should be included to evaluate how much draw down in the water table has occurred with the current facility. The Hydrologic Evaluation also states that "There is also no evidence that geothermal water or groundwater is connected with geothermal or groundwater resources outside the San Emidio basin" (page ES2). However, the faulting that controls the San Emidio geothermal system is permeable and connects to Pyramid Lake. In addition, the water table in San Emidio is at a higher elevation than the surface elevation of Pyramid Lake (NDWR well file records) and you would have to assume that the faulting that connects the two basins is not permeable; and this is contradictory to the data, since the hottest portion of the San Emidio geothermal system is along the Sweetwater fault. Therefore the Sweetwater fault must have good permeability which is good evidence that the San Emidio basin could be connected to the Pyramid Lake basin.

On Page 3-7 of the Hydrogeologic Evaluation, it states that "The TDS, salinity, and pH levels at Pyramid Lake indicate it is hydrologically distinct from surface and groundwater resources north of the Pyramid Lake basin, including the San Emidio Desert" but does not present the data to support this. And how do you compare ground water to surface water, especially when Pyramid Lake is sourced primarily from the Truckee river. In 1988, one year after the San Emidio power plant went on production, the water table was at an elevation of about 4044 feet above sea level, 6 feet below ground level (AMOR II, 1988). By 1994 it had dropped to an elevation of 3923 feet above sea level, 142 feet below ground level (Pruett 1994). The elevation of pyramid lake is 3792 feet above sea level and therefore, there is probably a significant amount of recharge of fresh water from San Emidio into Pyramid lake along permeable fault zones and or through permeable geologic units (volcaniclastic rocks), as described in the Hydraulic Evaluation on page 4-10.

10) The Hydrogeologic Evaluation failed to accurately characterize the geothermal system.

The report emphasizes that the geothermal system is fault controlled but then states that "These north-northeast striking structures appear to be geologically independent of the Lake Range, Fox Range, and Pyramid Lake faults, which appear south of the Project area". There are no temperature gradient or isotherm maps in the hydrogeologic evaluation that support this conclusion. Folsom (2020, Figure 1) presents an isotherm map at 30m below ground level; however, as Warren(2018) points out, the San Emidio geothermal resource is hotter to the south (towards the PLPT reservation) and the anomaly is open-ended to the south. In Figure 1 of the attached map Ehni outlines the areal extent of the hypothetical "Sweetwater geothermal system". The proposed North Valley Geothermal Development project is on the northeast end of the Sweetwater geothermal system. The right stepping right lateral Lake Range fault on the shores of the Pyramid Lake, and the Northern Extension of the Lake Range Fault adjacent to the existing San Emidio project, are connected by the dilational Sweetwater and Hell's Kitchen faults. The hydrogeologic evaluation completely misses this correlation. The San Emidio geothermal resource is located on the north end of the dilational Sweetwater extensional (NW-SE tension) fault zone which connects the northern extension of the Lake Range Fault in the San Emidio

basin with the Lake Range fault in the Pyramid Lake basin. As pointed out by Warren (2018), the San Emido geothermal anomaly extends to the south, which is where the Sweetwater fault is located. The hydrogeologic evaluation failed to show the relationship of the hottest portion of the San Emidio geothermal system and the Sweetwater fault. On Page 2-2 the Hydrogeologic Evaluation states that "The San Emidio and Empire faults are in and most closely associated with the Project" and as depicted on the Figure 3 of the Hydrogeologic Evaluation, the Empire fault is actually the northern extension of the Sweetwater fault (Faulds et al 2013, Anderson and Faulds 2013, Crafford 2007). It should be noted that The Faulting on Figure 3 of the Hydrogeologic Evaluation is not consistent with other published maps (Faulds et al 2013, Anderson and Faulds 2013, Crafford 2007). The Lake Range Fault on Figure 3 splits at Hells Kitchen and on figure 3 the Hells Kitchen fault is called the Lake Range fault. If this is correct, then the Lake Range fault that appears to supply the hot water for the Pyramid Hot Springs is the same fault that San Emidio is on. On Page 4-6 of the Hydrogeologic Evaluation states that "The Lake Range fault extends from the southeastern shore of Pyramid Lake, branches off into an east-northeast-striking oblique fault, and terminates southeast of Wind Mountain Mine" which basically says that the Lake Range fault connects Pyramid Lake with San Emidio. However, it is most likely that the Lake Range Fault and the Northern Extension of the Lake Range Fault are components of a "right stepping, right lateral" fault system and the Sweetwater-Hell's Kitchen faults are dilational or transitional pull apart geothermal zones as noted on figure 6 of the Hydrogeologic Evaluation. The fact that there are no maps of the fault system in the EA, and that the fault system is poorly described with conflicting statements, supports the recommendation that the proposed development, if approved, will need a robust monitoring program, directed by the PLPT, in order to protect the resources of the PLPT.



Geologic Map from:
Crafford, A.E.J., 2007, Geologic Map of Nevada:
U.S. Geological Survey Data Series 249, 1 CD-ROM, 46 p., 1 plate.

Figure 1: Fault system showing expansion of San Emido geothermal project Area of Interest (AOI) along the Sweetwater fault connecting the Northern Extension of the Lake Range Fault with the Lake Range fault on Pyramid Lake. The AOI appears to be "chopped" off on the southwest end even though supporting documents for the EA and Hydrogeologic report indicated that the geothermal anomaly is open-ended to the southwest as indicated on this map. (note: some fault names used on this map are colloquial and used as reference only)

11) The Hydrogeologic Evaluation failed to address water chemistry adequately.

The Hydrogeologic Evaluation states that "Geochemistry data from wells in the Project area also indicate the San Emidio geothermal system is hydrologically distinct from geothermal systems at Pyramid Lake and the Smoke Creek Desert." However data supporting this conclusion has been blanked out (Table 4) or just summarily summarized.
How was this decided. In the big picture, the San Emidio fluids are very similar to most Basin and Range fault controlled systems which are characterized by relatively low TDS and low SO4/Cl ratios.

On page 3-3 the Hydrogeologic Evaluation states "*These concentrations* (at San Emido) *are higher than those measured at geothermal systems near Pyramid Lake*" but does not present data that supports this conclusion. However, available data on water analyses from the geothermal fluid at the Needles well on the shores of Pyramid Lake and at San Emidio are relatively similar.

Source	Sample Name	Sample Date		pH @ 21 C	SiO2	HCO3	Cl	SO4	Na	K	Ca
					mg/l	mg/l	mg/l	mg/l	mg/l	mg/l	mg/l
Mesquite	Sam Emidio 75B-16	1994		6.18	132.4	73	2108	189	1199.3	108	139.8
GDA	Needles Geothermal well	1988		8.4	96.5	21.9	1895	324	1075	30	239

Page 3-3 of the Hydrogeologic Evaluation states that "The highest recorded TDS concentration at any Ormat well in the San Emidio Desert is 4,400 mg/L (ORMAT Nevada, Inc. 2020b; see **Table 4**), whereas TDS concentrations in Pyramid Lake typically exceed 5,500 mg/L (see **Section 3.3.3**)." Comparing geothermal water with lake water that is derived primarily from the Truckee River drainage system is meaningless, and there is no section 3.3.3 in this report. The Hydrogeologic Evaluation falsely states on Page 3-7 that "There are no known groundwater inflows to Pyramid Lake from outside the basin."
The data should be summarized in Piper Diagrams in order to make the conclusions that the Hydrogeologic Evaluation has arrived at, but there is no mention of this type of analysis, and therefore is deficient.

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