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January 28, 2005

Noel Krahforst
525 Singley Hill Road
Loleta, CA 95551

RE: Bear River Casino –Project Review/ Off-site Impacts

Mr. Krahforst:

The following assessment is based on my site visit to your residence on January 12, 2005 and a review of the Draft and Final Environmental Evaluation for the Bear River Casino Project, and referenced appendices. As was noted during the public comment hearing there were off-site impacts that were not adequately addressed in the draft. The comments made in response by the Tribe's Consultant (AES) did not adequately address these concerns. This letter quantifies those concerns.

The primary off-site impacts to your property are: 1) noise; 2) visual resources and; 3) water quality and supply. These same impacts were raised during the public comment period.

1. **Noise**

Other than construction noise the document provides no background or analysis to reach the stated conclusions. Your residence is approximately 20 feet from Singley Road, 120 feet from adjacent parking areas and 325 feet from the casino facility itself. The Casino's secondary access into the building is closest to your residence and is designated as the bus drop off point. It is also designated as the future expansion area, bringing activities even closer to your residence. Since the majority of the parking is on this side the secondary building entrance may get the majority of use at peak times. Your residence is close in elevation to this activity, making it more susceptible to the increase in noise.

As to the casino activity itself I do not believe that noise levels will be high except if an amplified music event (concert) is proposed. Though there are double doors to reduce this source of noise from traveling your direction, if ventilation of the casino building is not adequate these doors will be propped open. These special events have the potential to create additional noise impacts since they usually have a specific starting time, resulting in all traffic and parking lot noise generated during a small period, For instance a concert beginning at 10:00 p.m. would generate most of the traffic-related noise between 9:00 and 10:00 p.m. when people will arrive and again between 12:00 midnight and 12:30 a.m. when people leave. Both the Environmental Evaluation and the Humboldt County Public Works letter acknowledges the fact that night time noise is more sensitive and could result in loss of sleep (direct health risk). Again without

knowing more about the uses and the attenuation ability of the building materials I cannot say more about this potential source.

Traffic noise is acknowledged in the Environmental Evaluation but no analysis why this was determined not to be a significant impact. The Federal Highways Administration (FHWA) noise standards indicate that increases of more than 6 dBA's over the existing ambient level is considered an impact. Part of the problem with the AES study is that the traffic information included in the report only pertains to intersection delays (LOS levels) and not to true traffic generation. You will have (based on Report's Figures 9 and 11) 176 vehicles passing your residence during the 'week day peak-hours (4:00-6:00 p.m.)'. This is a 700% increase of the 24 vehicles noted in Figure 9 under existing volumes. Table 3-9 also indicates that 303 vehicles will be maneuvering in the parking lot during this time period. The traffic information does not discuss what the total trip (ADT) generation or what the weekend peak hour levels would be but these should be significantly higher. I would expect Friday and Saturday night to see peak activities with people arriving for dinner and leaving at midnight or later. The front of your residence, which is only 20 feet from the traffic on Singley Road, will be subject to noise levels of 70-75 dBA or higher. The rear and sides of your residence will be subject to levels of 65-70 dBA. This increase above the measured exterior ambient level of 43 dBA will result in noise levels of approximately 68-70 dBA Ldn at your residence. Based on reduction by distance listed in Table 1, there would be little reduction of traffic-related noise from Singley Road throughout your residence. With single pane windows you would expect interior noise levels of 55-60 dBA. This is above the Federal standard of 45 dBA.

TABLE 1
Reduction of A-Scale Sound Level at Various Distances from a Vehicular "Point Source", Relative to 15 Meters Distance, Using the Drop-off Rate of 6 dB per Double Distance

Distance (ft)	Distance (m)	Reduction (dB)	Distance (ft)	Distance (m)	Reduction (dB)	Distance (ft)	Distance (m)	Reduction (dB)
49	15	0	131	40	8.5	371	113	17.5
52	16	0.5	138	42	9	394	120	18
56	17	1	148	45	9.5	417	127	18.5
59	18	1.5	154	47	10	440	134	19
62	19	2	164	50	10.5	466	142	19.5
66	20	2.5	174	53	11	492	150	20
69	21	3	184	56	11.5	525	160	20.5
75	23	3.5	197	60	12	554	169	21
79	24	4	207	63	12.5	590	180	21.5
82	25	4.5	220	67	13	620	189	22
89	27	5	233	71	13.5	656	200	22.5
92	28	5.5	246	75	14	695	212	23
98	30	6	262	80	14.5	738	225	23.5
105	32	6.5	279	85	15	787	240	24
112	34	7	295	90	15.5	827	252	24.5
118	36	7.5	312	95	16	876	267	25
125	38	8	331	101	16.5	928	283	25.5
			351	107	16	981	299	26

Note: dBA Reduction = 20 log Distance/15
1 meter (m) equals approximately 3.28 feet.

These decibel readings are slightly above the levels as you experience now, only there would be a 700% increase when peak hour traffic occurs. In regards to average daily traffic the only number I saw in the report was 500 daily visitors. Adding employees, service trucks etc. and utilizing the February 5, 2004 report's (p.12) calculation of 50% of traffic going past your residence suggests that 700 -800 vehicles may go past your house per day. Considering the amount of traffic that will occur after 10:00 p.m. the day-night averaging calculation (Ldn) would result in levels above the federal standard.

Parking lot traffic related noise levels of 66-68 dBA would be reduced by approximately 8 decibels where you have line of sight based on distance alone (Table 1). The existing vegetation at your residence may reduce these levels by an additional 3 dBA's. Parking lot levels would be estimated to be 57 dBA at your residence. By adding four hours of night time activity (10:00 p.m. to 2:00 a.m.) this would increase to a 60 dBA Ldn level. Since 80% of the parking is near to your residence several decibels should be added to the already high levels at the exterior of your residence from Singley Road traffic resulting in an approximate exterior level of 70-72 dBA Ldn.

Noise Standards/Impact Analysis

The County noise standards for noise activities utilizes an averaging mechanism (dBA Ldn) applicable to activities that generate sound sources averaged over a 24-hour period of time such as commonly used for measuring highway noise or industrial operations. A ten-decibel addition is added to noise levels occurring at nighttime – between 10:00 p.m. and 7:00 a.m. Utilizing the County standard of 45 dBA Ldn interior noise level allows for a maximum of 60 dBA Ldn for 'normally acceptable' exterior levels. This standard was originally based on attenuation by single pane glass windows. Double pane windows would attenuate noise by 20 dBA so 65 dBA Ldn is sometimes utilized as a maximum exterior level in order to achieve the 45 maximum dBA Ldn interior level

In addition to the County's standards additional methods of noise assessment are utilized. Utilizing the federal standard for residential uses (Dept. of Housing and Urban Development) exterior noise levels of 65 decibels (dBA) would be allowed so as to be attenuated (reduced) to an interior level of 45 dBA. This is the most common and universal standard though other standards are sometimes used. For instance HUD and FHA in approving financing of residential housing consider interior noise environments not exceeding 45 dBA more than 30 minutes per 24 hours as 'acceptable'. The 'acceptable' standard allows higher noise levels than the County but have limits as to duration. Frequent complaints of sleep interference can occur when interior noise levels exceed 38 dBA during normal hours of sleep indicating that timing of noise is an important consideration.

There are several other criteria to analyze the impacts that unwanted sound has on the community. These have been analyzed in various publications. I will be utilizing the reference Environmental Impact Analysis Handbook by Rau and Wooten, published by McGraw-Hill Book Company as one source of information. Some of the items listed below may be implied as contributing as a nuisance. The following attempts to quantify some of these issues.

Speech Interference

The above referenced document (page 4-28) indicates that indoor speech communication can be interrupted or lessened based on the level of surrounding "noise". This is generally quantified by the distance that normal speech can occur indoors without significant loss in the

degree of communication. A sound level of 45 dBA allows relaxed conversation at a distance of 3.6 feet and normal speech communication at a distance of 11 feet. The following table tabulates this information and compares it to the reduction of distance for communication with increased sound levels.

Indoor Communicating Distance (ft)	Relaxed Conversation (dBA)	Normal Conversation (dBA)	Raised Voice Conversation (dBA)
6.6	50	60	65
3.6	56	63	72
11	45	55	62
39	35	45	51

Current measurements are at an approximate 35 dBA level. The increase in traffic and parking activity associated with the casino could raise this to more than 60 dBA a majority of the time with the existing single pane windows at your residence.

This indicates that indoor communications would change from a "relaxed conversation" to a "raised voice conversation" at 11' distance when indoor sound measurements increased from 35 dBA to 62 dBA. Indoor noise levels would not allow a relaxed conversation to occur in the residence unless at closer than six feet. Project-related impacts would affect interior communication any time there is traffic on Singley Road or activity in the nearest parking areas.

Community Reaction

Utilizing Ldn levels, the table included in the above referenced document indicates that sporadic complaints can be expected when noise levels (measured at the exterior of residences) are generated between 55 and 65 dBA; widespread complaints or a single threat of legal action occurs between 60 and 70 dBA, and that several threats of legal action or strong appeals to local officials to stop noise occurs from 67 to 77 dBA. The above information has been normalized for residential urban noise with some prior noise exposure, windows partially open and no pure tone or impulses. These would be lower for a rural or suburban environment. Nonetheless, these levels provide some indication of "reasonableness" for affected parties.

A normalized outdoor level noise of 50-60 dB with a mean of 55 dB would result in no community reaction based on the document. The data suggests that widespread complaints may be expected when the normalized Ldn reaches about 65 dB. It would therefore be reasonable to expect that the community would react negatively to these elevated noise levels and clearly show that off-site impacts were not mitigated.

Based on the above information some method of reducing noise levels would be necessary to avoid significant impacts. The Environmental Evaluation by AES suggests that *"construction of an 8-foot tall concrete wall along the Rancheria property line to the south of the Krahforst residence"* will mitigate noise generated by the casino operation. An analysis of the locations of noise generation and existing topography suggests that this 'wall' would not achieve any noise

reduction. It is too far and low from the noise producing activities and too far and low from the receiver. Therefore though there is an acknowledgement of the potential noise impact, there is no mitigation provided that reduced this below a level of significance.

Noise attenuation is best when 1) closest to the source of noise; 2) blocks the 'line of sight' of the noise producing activities; 3) has a thickness and density to affect noise wave transmissions. Elevated exterior noise levels at your residence also require attenuation to your residence, though those opportunities are limited.

The following list of mitigation measures would be effective at reducing noise levels at your residence. I have not listed ones that modify the site layout or casino activities since this is probably not feasible and not likely to occur.

Noise from the Casino Area

1. The most effective mitigation would be construction of a block wall along the northern perimeter of the parking area north of the casino. Due to the slope of the parking area the block wall would have to be at a height that blocks the line of sight to your residence. Therefore the spaces north and east of the existing cul-de-sac would result in a higher wall requirement. As an alternative to a very high wall along the perimeter, a shorter wall (6') could be utilized with 4 foot high walls between rows of spaces (See Figure 1). This would achieve the added mitigation of reducing headlight beams into your windows.(discussed under "Visual Resources").
2. Plantings of trees on the slopes below the parking lot. Something like Monterey Cypress in the upper portions with Wax Myrtle or Beach Pine as an under story. Along the wetland fringe Sitka Spruce could be planted. This would only mitigate once the vegetation has grown to an effective height and would be an addition to the wall. This would best block bus and service truck-related noises where the noise is emitted 10-12 feet above the ground.
3. Replacement of all single pane windows at your residence with sound insulated window panes. This will be necessary to reduce the interior noise levels an additional 5 dBA.

Noise from Singley Road Traffic

1. Again the most effective measure would be construction of a solid block wall the full frontage of your property. You already have a two foot high wall in front of your residence. A minimum four foot wall might suffice but due to the elevational differences this wall may need to wrap partially along your side property lines to eliminate line of sight traffic noise sources (as well as headlight beams, as discussed under "Visual Resources"). Since you mentioned cedar plank or slatted chain link alternatives, neither of these would be effective at reducing noise created by traffic. Cedar plank would also have high maintenance needs and be subject to blow down from winds.
2. Replacement of all single pane windows at your residence with sound insulated window panes. This will be necessary to reduce the interior noise levels an additional 5 dBA.

2. Visual Resources

The Environmental Evaluation document discusses visual impacts due to lighting and recommends mitigation to minimize outdoor lighting and add additional vegetative screening. No specific information was included in the study of what types of light standards will be used or a planting/screening plan. The Blue Lake Casino balanced the need for security lighting and eliminating off-site light impacts. Making reference of not exceeding those standards would provide an adequate level of mitigation. The Blue Lake Casino minimized the height of the light standards, screened the light source, minimized the wattage, selected an appropriate type of bulb, and directed light downward or away from residences. There is a distinct difference between what they did and what is usually utilized for large parking lots in urban areas,

consisting of high light standards with bright bulbs, minimizing the number needed. Most of these areas are lit well beyond what is necessary for safety/security lighting.

The AES Analysis does not consider headlight glare, and similar to the discussion about noise, does not provide enough traffic analysis to ascertain what the impact would be. Also the signage, especially if it is high, internally lit and includes flashing or moving lights can be a visually impacting object. No information is included in the document on the signage to be utilized.

Your residence will be impacted by lighting from both the parking lot as well as Singley Road traffic. As I understand it the Casino will have a 24-hour/365 day activity so lights could be on during all night time hours. If certain portions of parking lot lights could be turned off based on Casino usage (for instance the far lot after 1:00 a.m.), this would reduce your impacts. Motion-activated sensors could turn them back on when needed.

The proposed vegetative screening includes no specific information. However the suitability of the plantings, their initial planting size and their growth rate and their life expectancy would determine their effectiveness. You should consider life expectancy and health of your existing vegetation. For instance Leland Cypresses usually live for 20 years. Your redwoods may experience problems once they are high enough and subject to the high winds that your area is prone to. Some trees as they grow may start to lose lower limbs, which would limit their effectiveness. These should all be considered by a local landscape professional in selecting a planting plan. These are not likely to be considered by someone from outside the area that hasn't been to the site to assess these concerns.

The same list of mitigation measures under "Noise" would be affective at reducing light levels at your residence. The lighting plan should be based on local designs that work to minimize impacts. Manufacturers who offer to provide lighting plans typically over-design the lighting plan to sell more lighting standards and equipment than is necessary.

3. Water Quality and Supply

During my site visit you showed and discussed with me your current water supply system. It is shallow (only ten feet deep) and low lying adjacent to the Tribe's wetland area. I reviewed the AES document for any information specific to impacts related to your well and found no discussion or analysis. The concern is both related to water quality and water supply.

You stated that your well has consistently produced a reliable water supply (drought or no drought) for over 40 years. The water quality has consistently tested uncontaminated for fecal coliform and oil and other contaminants and has been suitable to drink without filtering or other treatment for that same period. It is unknown what impacts to the supply (disturbance of the source) could occur from excavation in the vicinity of this shallow well. The environmental evaluation has not documented the location of neighboring off-reservation leachfields, let alone the existence of your well and its immediate proximity to the parking lot.

The well test that is documented in the AES document does not appear to have been performed for this specific project. It is unclear where the well test was done or its original purpose. However there was no analysis in their document addressing the off-site impact to your well. There is no substantiation as to what might occur to your well from the increased pumping of the aquifer for the Casino project.

Storm water directed towards the wetland area, especially from overflow exceeding their design standards would direct peak flows towards your well, which is susceptible due to its low lying elevation and will be subject to surface flow contaminants.

Another concern would be related to the wastewater disposal leachfields and how this might affect your aquifer. Again there was no analysis in the report to review. The recent growth of alders near the cut surface at the northern property line indicates groundwater seeps or groundwater close to the surface. These cuts could result in untreated wastewater being carried quickly to the vicinity of your well either from the Casino or other nearby residences.

To get better information on the potential impacts would require geologic testing and analysis and as expensive a study as that might be it would provide only a level of risk. I am not sure what the extent of mitigation measures to the Casino project design or use would be available. The best source of mitigation for these concerns is at your well. The higher the well platform, the deeper the well and the better it is sealed, the less risk you would likely have. The cost of a study could instead be used to pay for a good portion of the mitigation.

At a minimum I would suggest developing a baseline of flows and water quality at your well before the casino project starts operating. Water quality tests such as fecal coliform, nitrogen (nitrate, TKN) ,chloride and oils would provide a basis for noting change. An increase of pollutants or decrease of flow would indicate that the impacts were not adequately assessed in the AES documents. Lab tests would be approximately $400 for each sample period (includes labor). If improving your well, as described herein, cannot occur at this time, you may wish to have the baseline testing occur and enter into an agreement that should your well become polluted or is unable to provide needed flows that the Tribe would replace your water supply system. Ideally testing should occur quarterly prior to the Casino operating and annually after that. Approximate costs would be $1600 for the first year and $400 each year thereafter.

The above is my initial assessment given the time and materials provided me and based on my experience with similar studies and issues. It is my opinion that the Tribe's document is missing some key analysis and specific mitigation. However their Final Environmental Analysis, page 2-2 states that *"These are not loosely defined mitigation measures, but specific measures to reduce off-Rancheria impacts to a less than significant level. Implementation and oversight of the proposed mitigation measures will be carried out by the Tribe."* Once the Tribe realizes that there remain unmitigated significant impacts their document suggests that they will sincerely want to reduce those impacts.

If you or anyone that reviews this letter has need for clarification of any of the above information please call me at (707) 822-5785.

STREAMLINE Planning Consultants

Robert Brown

Robert Brown, AICP
Principal

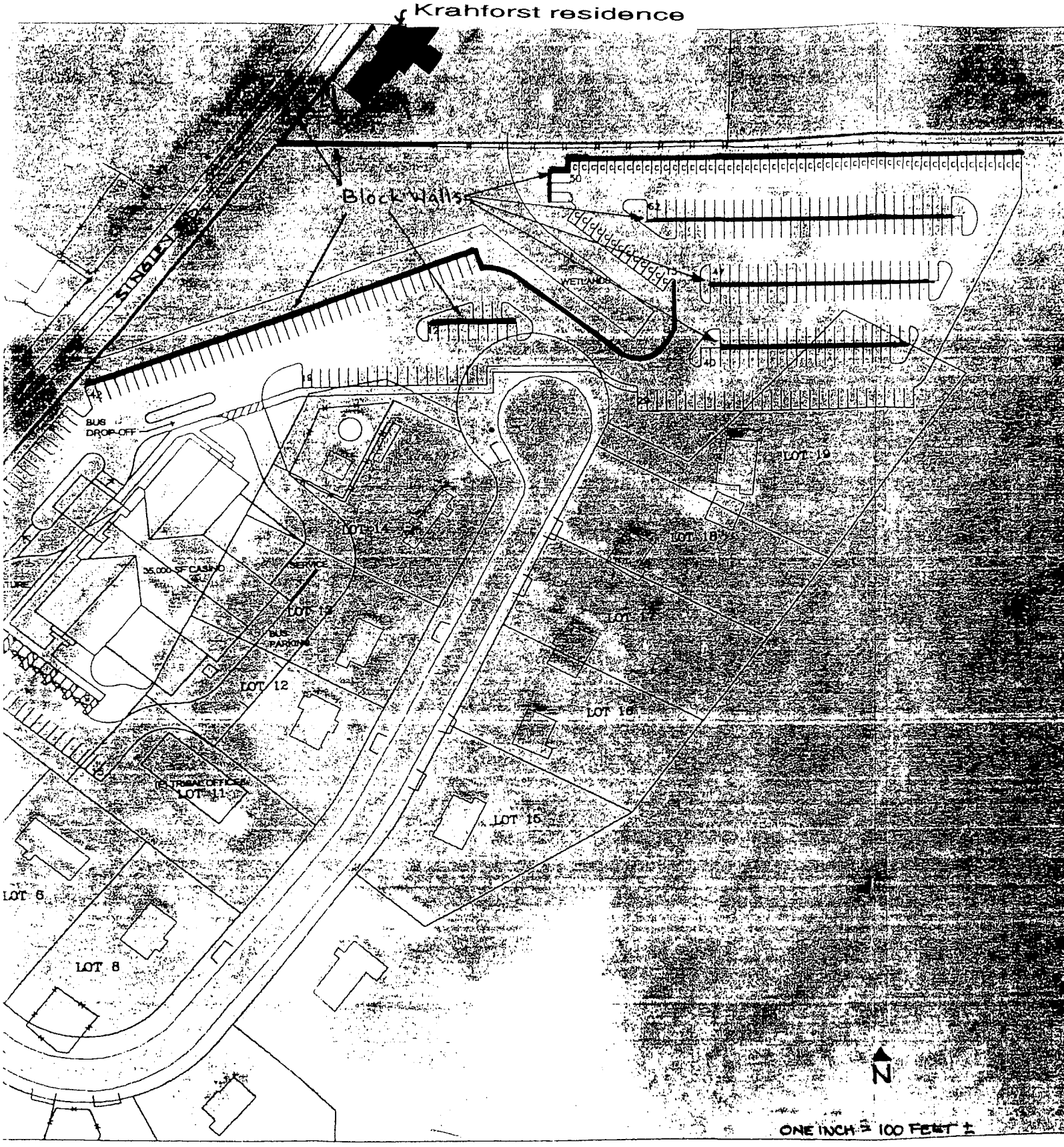
Krahforst residence
Block Walls
SINGLE
WETLANDS
BUS DROP-OFF
35,000 SF CASINO
SERVICE
BUS PARKING
LOT 12
LOT 11
TRIBAL OFFICES
LOT 14
LOT 15
LOT 16
LOT 18
LOT 19
LOT 8
LOT 6
N
ONE INCH = 100 FEET ±

FIGURE 1