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TESTIMONY OF SUSANNE KRAEMER

I. QUALIFICATIONS; BASIS FOR TESTIMONY

1. My name is Susanne Kraemer. I am a registered geologist and a certified engineering geologist. I have a bachelor of science degree in geology from the University of California, Los Angeles and a master of science degree in geology from California State, Northridge. I have practiced as a geologist since 1986. My practice deals primarily with groundwater, groundwater contamination, and surface and groundwater flow. Hidden Lakes Estates ("HLE") Exhibit 36 is a true and correct copy of my professional resume.

2. I have lived in the Hidden Lakes Estates subdivision for about 20 years and own the lot on 8497 E. Hidden Lakes Drive. I am well acquainted with the subdivision and its topography, layout, drainage system, and artificial lakes, and I have a good working knowledge of the local geological features. This knowledge is based on personal observation, review of geophysical, topographical and plat maps of the area, review of numerous technical reports and analyses (many of which are being submitted as exhibits in this matter), discussions with other residents of the subdivision, and my educational and professional background.

3. I was named by the Hidden Lakes Estates Homeowners Association Board of Directors to serve on the Common Area Planning Committee when it was formed on July 14, 2005, and have served on the committee ever since. I prepared the committee's scope of work for the retention of experts to review issues relating to the seepage of water from the northern lake. I have reviewed Scott L. Barmann's testimony, which is being submitted concurrently with my own, and concur with his description of the committee's purpose, actions, and the basis of its conclusions that the seepage from the northern lake is reasonable/acceptable under the circumstances.

1 **II. DRAINAGE AND REMEDIATION ISSUES ARE COMMON THROUGHOUT**
2 **HIDDEN LAKES ESTATES**

3 4. The Hidden Lakes Estates subdivision is characterized by rolling, hilly
4 topography. (See HLE Exhibits 2-4, 16 Plate 2, 45.) Bedrock is shallow, fairly close to the
5 surface throughout the community, as is shown on HLE Exhibits 16 (pages 3 and 6, Plates 5-7)
6 and 18 (pages 2-1 and 4-1, Figures 2-3), with a thin veneer of soil overlying the bedrock. As an
7 example, I know of several lot owners' contractors that have had to use blasting materials to
8 remove bedrock to obtain the excavation depth needed to install their swimming pools.

9
10 5. As one would expect, this combination of shallow bedrock and soil causes
11 drainage problems throughout the subdivision. Groundwater flow follows topography from the
12 higher elevations down-gradient to the lower elevation areas, and appears in areas to perch atop
13 local bedrock, which results in a very shallow water table. As a personal example, even though
14 my lot is up-gradient from some of the lower elevation lots in the community, I have observed
15 groundwater on my property at approximately 6 to 12" below the ground surface. The
16 groundwater was observed during the excavation of new footings for a remodel of my house. As
17 an additional example, the back portion of the lot at 8273 Robert Court has wet soil for several
18 months of the year, for weeks after precipitation has ceased.

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20 6. Surface water flow occurs during and immediately following even fairly minor
21 precipitation events in the subdivision, and subsurface flow occurs throughout the year. I have
22 repeatedly observed significant surface water flow moving from Lot A-1 (on the corner of Hidden
23 Lakes Drive East and Hidden Lakes Drive West) flowing toward James Place; from the lots north
24 of Lot A-1, which are on a ridge, toward Gina Lane and the northern lake as well as down Hidden
25 Lakes Drive East toward the intersection of Jon Way and Hidden Lakes Drive East; and from
26 Hidden Lakes Drive East toward the intersection of Jon Way and Hidden Lakes Drive East; and from
27 Hidden Lakes Drive West toward the intersection of Hidden Lakes Drive West and Jon Way.
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1 (HLE Exhibit 1.) It is evident from the local topography that a significant quantity of surface and
2 subsurface flow moves from the higher elevation lots around the northern lake down to Lots 71
3 and 72. This flow would derive from both local rainfall events as well as supplemental irrigation
4 of landscaping.

5
6 7. Homeowners throughout the subdivision have had to modify their onsite drainage
7 and install improvements in order to protect their property from damage by surface water and
8 groundwater. The following are just some examples:

9 a. The owners of a down-gradient lot at the corner of Gina Lane and Hidden
10 Lakes Drive West (8300) had to install a substantial French drain (2-3' deep, 1' wide) to
11 convey water from the back yard across their front yard and tie into to the drains abutting
12 the front yard.

13
14 b. Numerous owners in the neighborhood have sump pumps to control and
15 resolve water drainage problems. Specifically, I am aware of sump pumps at 8515 James
16 Place, 8035 Hidden Lakes Drive West ,and 7955 Hidden Lakes Drive West. My
17 understanding is the owners of Lot 72 have a sump pump that is immediately
18 downgradient of the steep wall with their neighbor at 8336 Hidden Lakes Drive East.

19 c. Sheetflow from my neighbor's property required me to install a French
20 drain (1-2' deep, with perforated pipe) to divert water around my house to the front yard.
21 This improvement was necessary after water flow penetrated the base of my house (which
22 is constructed on a slab) and caused mold growth on part of the subflooring.

23
24 8. Subsurface water flow within the subdivision is complex, with multiple water
25 sources including direct precipitation, surface stormwater flow, subsurface flow, irrigation from
26 up-gradient lots, and on some lots, seepage from the northern and southern lakes. (HLE Exhibit
27 17 at 1-2.) As a result, it can be difficult to predict with great certainty how a particular drainage
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1 improvement or lot alteration will affect flow and groundwater conditions on lots within the
2 Hidden Lakes Estates subdivision. For example, a remodeling project on the lot at 8283 Robert
3 Ct. significantly increased the quantity of surface flow arriving on the lot immediately down-
4 gradient at 8273 Robert Ct.

5
6 9. Based on observation and review of reports, I have concluded that the drainage
7 issues on Lots 71 and 72 are seasonal and have not resulted in property damage that is greater or
8 different in kind from that caused by overflow and subsurface groundwater movement on other
9 low-elevation lots. I attended a summertime party at Lot 72 prior to the trespass/negligence
10 action that the owners of Lots 71 and 72 filed against the Homeowners Association. I recall
11 children playing on the lawn, but do not recall standing water. From a vantage point on
12 neighboring property, I have observed lush green grass on the lots, but have not observed any
13 damage. I have reviewed submittals from contractors who have made site visits to Lots 71 and
14 72, and several of them did not notice any significant moisture on the property. (HLE Exhibits 16
15 at 5; 19 ¶ 4L.) I have reviewed photographs of the property that further support these
16 observations. (See HLE Exhibit 41 #2 to #5, 19.) I have also noticed that the owners of Lots 71
17 and 72 installed improvements within the meandering drainage easement that is shown on the
18 subdivision maps as occurring along the line between their respective properties (HLE Exhibit 2),
19 including hardscape and a swimming pool. I understand that the owners' predecessors in interest
20 may also have filled in the easement, constructed improvements in and upon it, and planted trees
21 within it.
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24 10. There is a fairly large drainage area that contributes runoff to the northern lake (an
25 8-acre area forms the watershed of both the northern and southern lakes). One consultant has
26 estimated the annual precipitation and runoff contribution to the northern and southern lakes to be
27 approximately 12.5 acre-feet. (HLE Exhibit 21 at 2.) Prior to the construction of the lakes, a
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1 large quantity of this water would have flowed unimpeded through what is now Lots 71 and 72,
2 and caused formation of the drainage swale that once occurred along the Lot 71 and 72 property
3 line. Under current conditions, surface flow is captured by the northern lake and flows by gravity
4 over a weir into the southern lake during periods of high inflow. Lots 71 and 72 receive this
5 benefit from the lakes.
6

7 **III. POSSIBLE REMEDIATION OF LAKE SEEPAGE**

8 11. As described in the Testimony of Scott L. Barmann, the Common Area Planning
9 Committee, which comprised 8 members including myself, made a careful study of all available
10 reports and analyses of seepage from the northern lake, and commissioned additional evaluations.
11 I and the other committee members determined that the northern lake seeps about as much as
12 other lakes of similar construction, and that based on the totality of the circumstances (complex
13 local hydrology, drainage issues common throughout subdivision, drainage remediation projects
14 on multiple lots, some property damage due to drainage on other lots, backfilling and
15 improvements in the easement on Lots 71 and 72), the northern lake is not seeping an
16 unreasonable amount and that it would not be equitable for the HOA to pay to remediate the
17 drainage issues on Lots 71 and 72.
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19 12. Nonetheless, the committee received copies of multiple documents discussing
20 possible repairs and costs to reduce or capture seepage from the northern dam/berm. (HLE
21 Exhibits 16 at 9, 21 at 2-3, 29 at 4.)
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23 13. Only one consultant provided cost estimates, for remediation measures ranging
24 from bentonite applications to the dam/berm surface, applying bentonite to the entire lakebed, or
25 installing a liner over the entire lakebed. The estimated costs ranged from \$10,000 to \$20,000 for
26 a surface bentonite application or from \$50,000 to \$100,000 for projects to line the entire lakebed.
27 (HLE Exhibit 21 at 2-3.) Based on my experience as a project manager for groundwater
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1 remediation projects, I believe that a project to line the lake would cost several times more than
2 these cost estimates. In my experience, projects that involve draining lakes, especially those that
3 are connected to a surface water outflow that ultimately drains into a natural creek system, are
4 also under the jurisdiction of federal agencies including the U.S. Army Corps of Engineers and
5 the Fish and Wildlife Service. The State Department of Fish and Game may also exercise
6 jurisdiction over any modification to the lake. The permitting costs alone would add substantially
7 to the cost estimates. In addition, the estimates have not been adjusted for inflation.
8


9 14. Draining the lake in order to install a liner or bentonite treatment would also
10 destroy the fish population in the lake and interrupt the natural biological processes in the lake
11 that have enabled fish to live there for years without periodic restocking. Installation of a liner
12 could also require periodic inspections and repairs over time.
13

14 15. One consultant has proposed installing a "curtain drain" along the toe of the berm
15 to capture water seeping from the northern lake, and then pumping the water back into the
16 northern lake or else into the drainage downstream of lots 71 and 72. Should the State Water
17 Board find that the lake seepage is somehow a violation of State law, the curtain drain would
18 appear to be the most cost-effective and practical solution to remediate the seepage. Such a drain
19 could be maintained without emptying the lake. The drain could be adapted over time if
20 observations showed it to be less effective than expected. A curtain drain would likely need to be
21 built along the back perimeter of Lots 71 and 72 themselves, rather than upon the dam or berm.
22 Locating such a drain directly on those lots would not be inequitable to the property owners,
23 however, given that they or their predecessors in title have interfered with the drainage swale
24 easement running along their joint property boundary. Moreover, a curtain drain would provide
25 additional, incidental benefits to the Lot 71 and 72 property owners by intercepting subsurface
26 flow from sources other than the lake, a benefit that the HOA does not make available to other
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1 landowners in the subdivision. (HLE Exhibit 16 at 9-10.)

2 16. Another possible solution would be to eliminate or reduce the size of the northern
3 lake. This approach might be less expensive but would eliminate fish and migratory bird habitat,
4 reduce recreational fishing opportunities in the community, and significantly increase surface
5 drainage onto Lots 71 and 72 and across other low-lying lots down-gradient.
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8 Respectfully submitted,

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SUSANNE KRAEMER