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**MEMORANDUM**

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**FROM:** JOEL I. CEHN

**SUBJECT:** 2007 SUMMER TESTING RESULTS

**DATE:** JULY 12, 2007

**CC:**

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**TESTING PLAN**

This summer's testing focused on testing food crops grown at the Brandeis Bardin Campus. Several other areas were tested, including the Old Well Campsite, Hidden Valley and the area of the planned Alonim dining hall. The testing plan is attached (Attachment 1.) Results are discussed, below, followed by my conclusions and recommendations.

**SUMMARY OF TESTING RESULTS**

Garden soils and other soils showed normal levels of metals. Crops and vegetation contained no detectable strontium-90 or other radioactive pollutants. Vegetation did show low levels of perchlorate, but they are in line with area background levels.

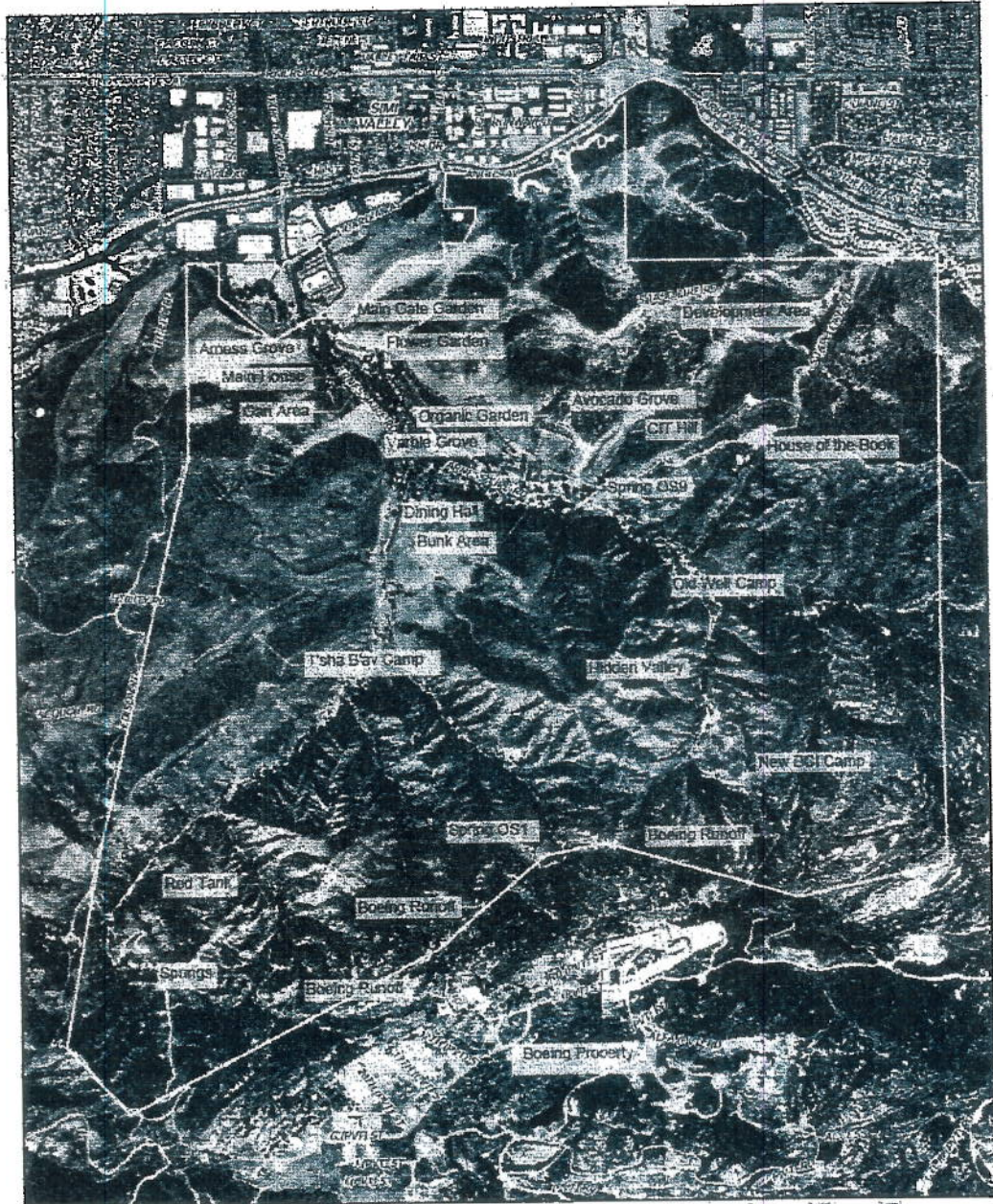
**FOOD CROPS**

Food crops were collected from the gardens shown in Table 1. Garden locations are shown in Figure 1. Where the plants had not yet produced fruit, the leaves of the plant were tested. This is indicated in the table.

**Radioactivity.** Results were negative for a suite of radioactive elements, including strontium-90 and cesium-137, which are produced by nuclear reactors. The only radioactivity detected was naturally-occurring potassium-40. The lab did not test for tritium during this round.

**Perchlorate.** As you know, perchlorate is pervasive in Southern California. I found a range of levels that seemed to depend on plant type. The highest level was in leaves from the Flower Garden. In the adjacent Main House citrus grove, levels were much lower. In the nearby Arness Grove, levels in apricot tree leaves were still lower. Background, measured earlier in a pepper tree in west Simi Valley, was about one-third less than the highest level detected at BBI, but was twice the average. Results are plotted in Figure 2.





Key: Garden  
 Testing Locations for soil,  
 water, and/or vegetation.

**THE BRANDEIS-BARDIN  
 INSTITUTE PROPERTIES**  
 FIGURE 1: TESTING LOCATIONS

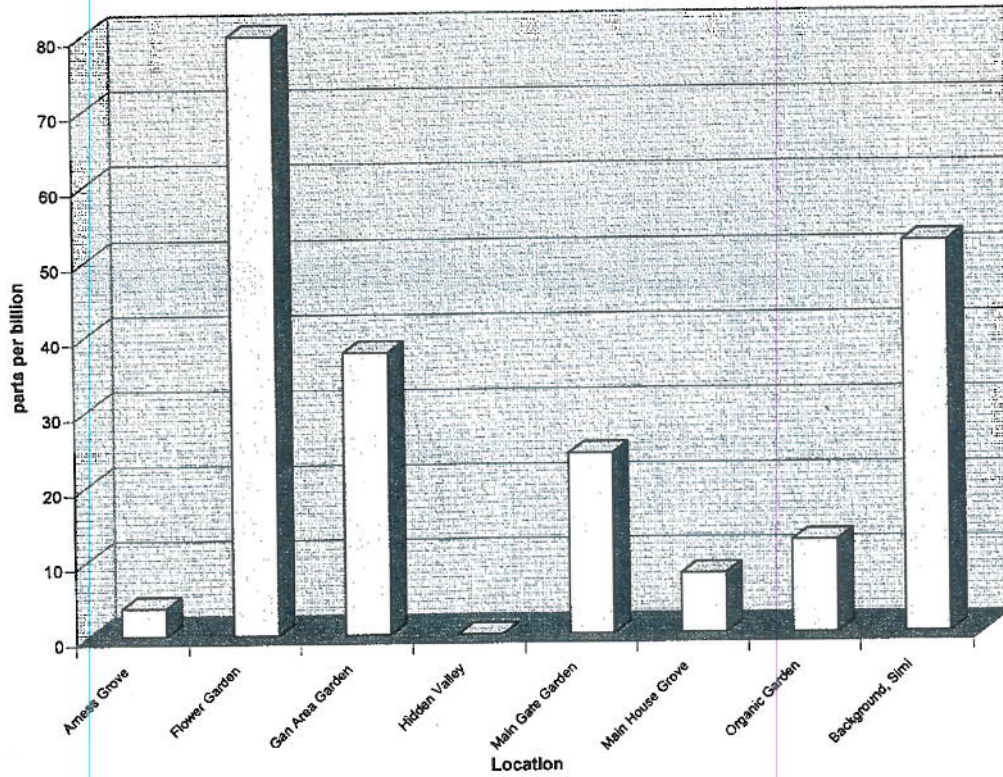
Disclaimer: The County owns and operates property at the  
 site and is not responsible for any and all environmental or physical  
 health-related liabilities at the site.



**Table 1. Gardens Tested**

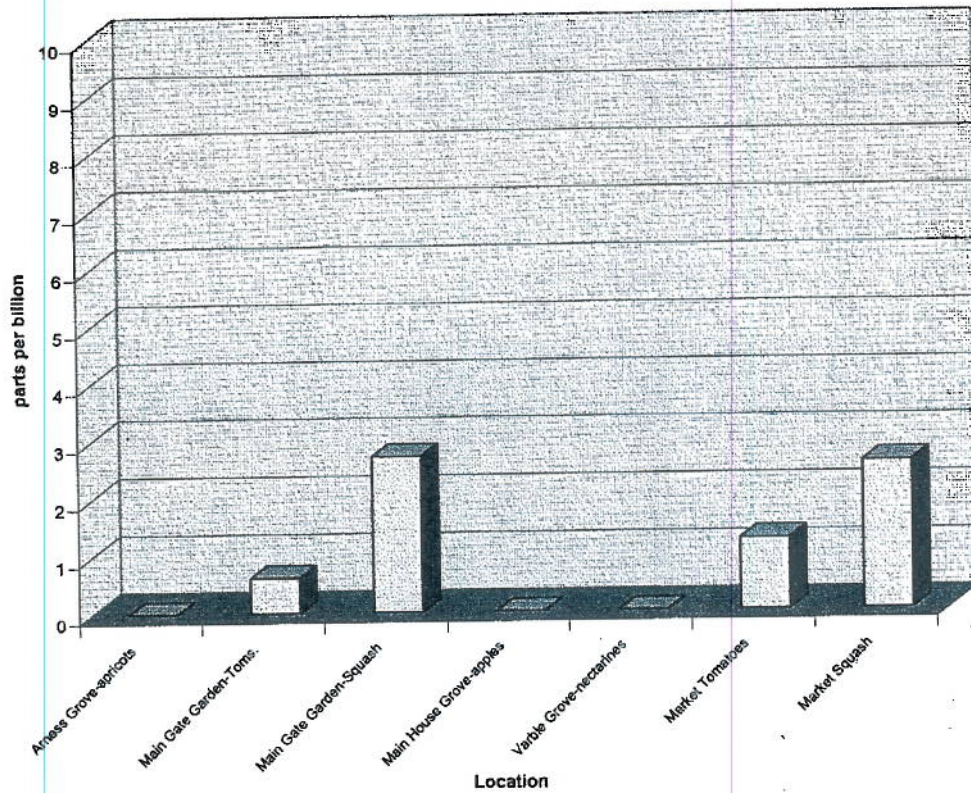
Location	Code	Samples Collected
Arness Grove	(ARG)	Apricots, leaves
Background, Simi	(BB)	Tomatoes, squash
Flower Garden	(FG)	Leaves
Gan Area Garden	(GAG)	Leaves
Main Gate Garden	(MGG)	Squash, tomatoes, leaves
Main House Grove	(MH)	Apple, leaves
Organic Garden	(OG)	Leaves
Varble House Grove	(VHO)	Nectarines

**Figure 2. Perchlorate in Plant Leaves**



Perchlorate in fruits and vegetables varied with plant type. Levels were near zero in apricots, nectarines, and apples. Levels were higher in tomatoes and squash, but matched levels in locally grown vegetables bought in a Simi Valley market. This is shown in Figure 3. In general, levels were much lower in fruits and vegetables than in leaves.

Figure 3. Perchlorate in Fruit/Vegetables



**SOILS**

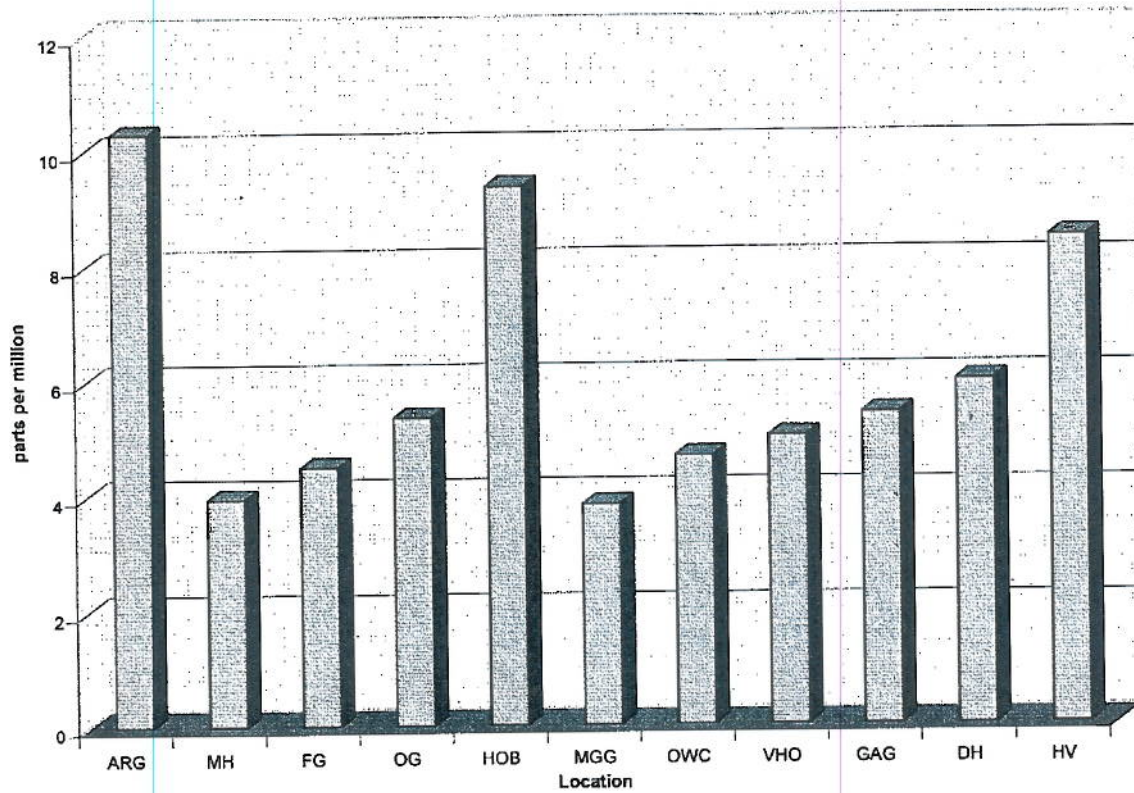
Soils were sampled from eleven locations (see Table 2) and tested for metals. Results were within normal ranges. For example, arsenic levels averaged 6 ppm, with the highest level at 10.3 ppm. This agrees with previously established backgrounds. Arsenic results are plotted in Figure 4.



**Table 2. Soils Tested**

Location	Code
Arness Grove	(ARG)
Dining Hall area	(DH)
Flower Garden	(FG)
Gan Area Garden	(GAG)
Hidden Valley	(HV)
House of the Book	(HB)
Main Gate Garden	(MGG)
Main House Grove	(MH)
Old Well Campsite	(OWC)
Organic Garden	(OG)
Varble Grove	(VHO)

**Figure 4. Arsenic Levels in Soil**



### CONCLUSIONS AND RECOMMENDATIONS

Food crops grown on the property tested clean. However, only early crops were tested. Plants/trees not yet producing had their leaves tested and background levels of perchlorate were detected. This does not pose a health risk--the levels are too low, and levels in fruits/vegetables are even lower.

I would recommend continued periodic testing of food crops. The next round should be at a different time of year to be able to test other crops (e.g., corn, citrus.)

I am enclosing copies of the lab report (Attachment 2.) Contact me if you have any questions.

ATTACHMENT 1

SUMMER TESTING PLAN

JOEL I. CEHN, CHP

[REDACTED]  
**FROM:** JOEL I. CEHN  
**SUBJECT:** SUMMER TESTING

Winter Sampling Campaign

You have the results of the January sampling. The recommended follow-up to that included a closer look at arsenic in soil near the southwest property line and testing of food crops during the growing season. The soil testing was continued, with Boeing, at the beginning of April. Crop testing is recommended for this June. Here is my detailed proposal.

Summer Sampling Campaign

My recommendations for further testing are: testing of crops for perchlorate and radioactivity and testing of garden soil for metals.

**Sampling Locations**

- Admin. Bldg. Garden
- Gan Area Gardens
- Main Gate Garden
- Organic Garden
- Main House Grove
- Arness Grove

Whatever is growing in the gardens will be sampled. In the past I've tested zucchini, tomatoes, apricots and citrus. I'm assuming two or three different samples per garden. Background samples will be collected from a local market. Avocados were sampled this winter (January.) No need to re-test.

Finally, you requested several locations to be re-visited and soil tested. Those include:

- Old well campsite
- Hidden Valley campsite
- Dining Hall grounds

7/12/2007