

A large, leafless tree with a thick trunk and many bare branches dominates the background. In the foreground, four people are standing on a dirt path, looking towards the tree. The sky is overcast and grey. The overall scene is a park or natural area during a dormant season.

'The Springs' HOA Grounds Committee Report

Vandalism of Trees Within The Nature Park

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Identification and Investigation of the Tree vandalism

I noticed in late summer or fall of 2011 that a very large Mesquite tree located near the north end of the Nature Park had begun to show yellowing of leaves on the upper third or so of the tree. I did not specifically check the tree again that year but did notice that it dropped all its leaves as it normally does with the first significant frost in Winter. Then in April of 2012 while Sutler Landscaping was handling a large tree trimming and removal job for the HOA within the Nature Park I saw that the large Mesquite had begun to leaf out and thought the tree was alright. I did not monitor the tree in Nature Park again until well after Grounds Chairman Lance Johnson left for the summer (for the past few years I have taken over supervision of the Grounds Committee during Lance's summer absence). However, in early to mid-July I noticed that large Mesquite had lost all its leaves so I began to investigate what might have caused such an unusual thing to happen. That Mesquite tree had never for the eleven years I have lived in The Springs ever shown anything but health and robust growth every summer even during the driest years, so the dropping of essentially all leaves was highly unusual and very unexpected.

In looking around the rest of the Nature Park for other signs of stressed or dying trees I quickly discovered a number of other much smaller Mesquite trees near the very large one noted above that were also showing very obvious signs of distress and a couple appeared to have already died (see Pictures-1,8, 9, 10, 11, 12, and 13 at the end of this report for the locations of these trees). And in looking around the area at the north end of the Nature Park I discovered several Acacia bushes that were clearly dead, as well as a large Willow tree (about 100 feet SE of the large dead Mesquite and the smaller dead and dying Mesquite trees) that had also lost all of its leaves but had already sprouted a few tiny new leaf branches from the multiple trunks of the tree. I also very early on noticed that the ground area beneath the crowns of not only the large Mesquite (with I later identified as Tree-1) but also the four dead or dying small Mesquites (which I later identified as Trees-2-5), and the large apparently dead or dying Willow tree (later identified as Tree-6) had areas of varying sizes beneath them with absolutely no vegetation, and this clearly is not normal. I had seen that condition on a fairly large scale back in the late 1990s when I worked for the Oregon Department of Environmental Quality for a few years and was asked to participate with a multi-agency team of State and Federal technical people on investigation of vandalism of quite a number of trees adjacent to a large wetland area that had been restored at great expense over a period of many years. The investigative task force determined that the trees had been killed by someone through deliberate application of a herbicide to the foliage and trunks of the trees and that a mixture of concentrated herbicide and diesel fuel had been poured at the base of at least some of the trees. The areas devoid of vegetation that I found in our Nature Park below all the dead and dying trees appeared the same as those I saw in Oregon during investigation of that case of deliberate tree vandalism.

I would point your attention to Pictures 2, 4, 5, 7, 8, 9, 10, 12, and 14 at the end of this report which show what I refer to above as areas beneath dead and dying trees as unnaturally devoid of vegetation, and the large area beneath Tree-1 is particularly graphic in this respect. Compare pictures 4, 5, and 7 with picture 6 that shows the usual and normal vegetation that grows beneath even large Mesquite trees that produce heavy shade beneath their large canopies. Picture-6 was also taken at the north end of the Nature Park and that picture is representative of essentially all other Mesquite trees within our Nature Park in terms of having dense vegetation beneath the tree crown. It was later discovered that there was one more dead Mesquite in the general area of the six I note above, but that one was actually on the western boundary of the golf course adjacent to our Nature Park (see Picture-13). There are no other areas in the Nature Park showing this dead tree problem.

There are two pruned Acacia bushes immediately adjacent to the walking path and about due west of Tree-1 (between the walking path and the back wall of one of the homes on Wolf Run), and also five or six naturally growing Acacia bushes on golf course and HOA property in the general area where Trees 1-6 are located that appear almost certainly to have also been poisoned – again with either a herbicide or another toxic chemical. The two pruned Acacia's (see Picture-2 for a view of one of them) was I believe poisoned most likely by spraying with a herbicide because of two reasons: 1) both of those pruned bushes have no vegetation growing beneath them and that is perhaps the most classic single visible symptom of herbicide spraying, and 2) while several other of the same species nearby that were also pruned back the same way, at the same time, and to the same extent, did not die (see Picture-3 to view four of the several Acacia that were so pruned at the same time), and in fact every single one of those pruned Acacias located elsewhere in the Nature Park began to sprout new growth very quickly after pruning and at this time show very vigorous and extensive new growth. Regarding the other five or six dead Acacia at the north end of the Nature park, every single one showed the classic sign of having been sprayed with a herbicide, that is, all had an area beneath them where no vegetation has grown this summer despite this being one of the wetter summers we have experienced in the past ten years. The White Thorn Acacias are a native desert species in the upper Sonoran Desert where our Nature Park is located, and those bushes are known to be one of the hardiest of desert species and I have frankly never seen any of a hundred or more that grow in the Nature Park die like that.

Regarding the very sudden death of the large Mesquite tree (Tree-1), that species is also known to be one of very most hardy tree species that grow in the SW. They can become infected and killed by a fungus infection caused by beetles borrowing beneath the bark, and also by the parasitic Mistletoe plant that infects some of the desert trees, including all species of Mesquite trees; and also via a fungus that infects and destroys the root system of the tree such that the weakened root support usually leads to tree death by the tree being blown over in a wind storm. However, based on examination by arborist Thomas Sutler and myself, Mesquite Tree-1 showed no apparent evidence of any of these relatively common killers of Mesquite trees, nor any other disease that Thomas was aware of as an arborist, and all of the diseases noted above are slow killers that require massive infections and some years to kill an infected yet healthy appearing tree such as Tree-1.

After discussing this situation of dead and dying trees within the HOA's Nature Park with the HOA Board President (Sandie Stone), other Grounds Committee volunteers, and the golf course Greens Keeper (Jeff Bognor, who offered his unsolicited opinion at this stage that the dead tree on the golf course and those on our HOA property had been poisoned, probably with a herbicide) the decision was made to locate an arborist to investigate this situation for us. I contacted Thomas Sutler (Sutler Landscaping) who had done a large tree trimming and removal job for the HOA in spring of 2012 and asked if he would come out and take a look at our dead and dying tree situation and he said he would. Upon spending perhaps a half hour looking around at our tree situation he stated unambiguously that the trees had in his professional opinion been poisoned, probably with a herbicide or possibly a mixture of herbicide and some sort of petroleum product (although he could not detect a petroleum product in the surface soil beneath the dead and dying trees by smell at the time of his investigation). He further stated that he has seen this same type of situation in Green Valley multiple times over the years with the same indications of poisoning as were observed in our Nature Park. And later in the summer another person with experience in poisoning of trees (Art Flores – Tumacacori Mesquite Sawmill -- also came out to look at our tree situation and he too concluded unambiguously that the indications were that this was a case of tree poisoning.

At this point we had four credible technical opinions that all concluded we were dealing with a case of tree poisoning vandalism. The next two investigative steps -- undertaken per direction from the HOA Board President -- were to collect a number of soil and plant tissue samples from the area of the affected trees, and secondly report to the Pima County Sheriff's office what was now believed to be an act of wonton vandalism. I setup a sampling regime and with the help of another Grounds Committee volunteer (Sam Coggins) we collected 16 soil samples and 9 plant tissue samples we believed were representative of the tree poisoning

and those samples were immediately sealed in glass jars and placed in a refrigerator for later possible analysis of herbicide residues by a local commercial analytical lab. And at about this same time Sandie Stone made contact with the Pima County Sheriff's office and an officer was sent out to meet with a few of us to initiate a case file concerning our situation with vandalism to trees within the Nature Park. Officer Stivers (badge 6877) was taken out for a tour of the area of vandalism and upon completion of his half-hour field investigation, stated a report would be filed as case #120822087. Officer Stivers also stated it was unlikely that further investigation would be undertaken by the Sheriff's Office unless or until the HOA had further information upon which to base an investigation, e.g., if a resident should come forward with information that identified a potential suspect who might have been involved or a possible eye witness to the vandalism came forward. As of the date of preparation of this report, this is where the situation stands at this time awaiting BOD action.

Summary and Conclusions

Four individuals including myself participated to various levels in the investigation of the dead and dying trees within our Nature Park. All four technically credible individuals came to the same basic conclusion independently, that it is a virtual certainty an act of vandalism was committed by a person or persons unknown at this time, and the result is that a number of trees in the HOA Nature Park have been killed by one or more doses of a powerful herbicide and/or some other toxic chemical. In seeking information about this situation from the University of Arizona, I had multiple conversations with a professor at the internationally recognized University of Arizona - Tree Ring Laboratory. And based on my measurements of the height of Tree-1 (40-45 feet) and the diameter of the trunk of the tree (at least two feet), he estimated that tree was likely 200 or more years old – that means it probably started growing well before the U.S. Declaration of Independence was signed. While age of desert trees cannot be reliably determined by simply counting the number of tree rings (they do not produce tree rings every year, only when sufficient water is available) the age estimated by the Professor suggests our now dead Mesquite was very old by anyone's standards. And it is a terrible shame that anything that has survived for so long in the extreme environment of the Sonoran Desert, and by all indications was a still a vigorous and very healthy tree, was killed by a senseless act of vandalism.

Following is a brief summary of what may have taken place in terms of the time line for the apparent poisoning. Because I observed the large old Mesquite showing substantial yellowing of leaves on upper branches in late summer or early fall last year (the tree had appeared robust and very healthy up to that point in time), Thomas Sutler (owner of Sutler Landscaping) and I believe that tree may have been poisoned last summer before or during the monsoon rain season. A common foliar herbicide such as RoundUp (with the active herbicide agent glyphosate at a concentration of one or two percent is the most commonly sold herbicide product sold over the counter to the public) generously sprayed on the lower and mid branches and leaves of that tree could be a very effective tree killer during the main part of the summer growing season, and especially so during the monsoon season. Also, while RoundUp in the normally sold dilute concentration of 1-2% is not normally used nor recommended for killing trees via being poured on the ground beneath the tree or on the trunk and reachable large limbs, pouring a very highly concentrated form of RoundUp (glyphosate can easily be purchased via the Internet at concentrations of up to 70%) on the ground or the trunk of the tree (especially a Mesquite which has cracked and loose porous bark) just before or during the summer rain season would almost surely transport the herbicide into the cambium layer of the tree just inside the bark and also transported the herbicide down through the sandy-loam soil at the Tree-1 site and into the tree root zone during significant summer rain events where it would be quickly taken up through the roots with water and transported throughout the above ground part of the tree. Additionally, and more important, there are many other extremely effective brand-name herbicides readily available that are formulated specifically for killing woody brush and trees (for example, Velpar, Remedy, and Vista) and in even in a mildly concentrated form they will kill any tree if applied in sufficient amounts to the soil at the base of the tree and/or on the trunk or uncovered surface roots of the tree.

Our large Mesquite has been observed by me, Lance Johnson, and Sam Coggins to have been exceptionally healthy and full for the last several or more years. Thomas Sutler and I believe for an apparently very healthy tree to suddenly die within a matter of months is not something that would happen as a result of natural factors such as insect damage or Mistletoe infestation (we found only a couple tiny Mistletoe plants growing on tree limbs and no substantive indications of any insect or fungus infestation damage anywhere on the tree. And additionally, there was no indication of any kind suggesting that the large Mesquite tree had ever been struck by lightning – that would pretty much always leave an obvious burn scar down the trunk and on large dead limbs higher up in the tree. Because Thomas and I observed the large Mesquite leafing out early this year when Thomas was doing tree removal and trimming for the HOA within the Nature Park, it may be possible that the tree received another large dose of poison this spring, but it is also possible that the contaminated sap from the initial poisoning moving back up inside the tree in spring and could have carried another dose of poison up into the new spring growth from the poisoning the year before. And of course it is also possible that the large Mesquite was poisoned during spring after Thomas and I observed it leafing out, or even in early summer before the monsoon rains started in early July.

Regarding the other four much smaller Mesquites in the same general area as the large dead one, Thomas, Sam, and I believe that while it is possible some or all of those trees were also poisoned last year, because at least two of those trees were still alive in July (but in a clearly declining state) it is more probable that they were poisoned this year before or during the early part of the monsoon rain season, and it looks as though they were probably sprayed with a foliar herbicide, but as noted above a tree-specific herbicide or some other toxic chemical could also have been applied to the soil beneath the trees; that is also my best guess as to how the Willow was likely killed. And in two different areas adjacent to those smaller Mesquite trees it appears that surface or subsurface runoff from recent summer rain events has carried the poison a short distance out into the large open grass meadow to the north and east of those trees – and the grass in those recently affected areas has now died. But it is also possible that the dead grass around those smaller trees could have been caused by drift of a foliar application of RoundUp or another common herbicide when the trees were sprayed.

Because I anticipated a very high cost for having the collected soil and tree tissue samples analyzed to determine what specific herbicide or toxic chemical likely killed the trees, I spent a fair bit of time phoning as many local analytical labs as I could find. And based on a single local lab I could find that had the capability to do the comprehensive analyses for a number of potential herbicides and a number of toxic chemicals, the cost (based on one cost that single lab provided (per chemical and per sample) to analyze all the samples we now have stored could be as high as tens of thousands of dollars if all samples were analyzed for number of individual herbicides and a suite of other toxic chemicals that could have been involved in the tree poisoning, and that of course is prohibitive – and even analyzing a small subset for a large range of toxic chemicals would be huge and prohibitive. And given that we are essentially certain that we know the trees were poisoned, but even if we did the costly analyses and found out what chemical was used, we would still be in the same situation with respect to not knowing who was responsible for the vandalism – and that is salient outstanding issue at this time. Therefore it appears to me quite illogical to undertake extremely costly lab analyses to ID the toxic substance used in the vandalism.

Alternatives for Removal of the Dead Trees

I am of the opinion that we do not necessarily need to remove all the dead trees, but only the large Mesquite (Tree-1) which will clearly present a personal injury and liability risk at some point in the near future due to the large size of the tree and the very large number of larger branches that will soon begin falling off the tree. Because the other dead Mesquites are very small and can be easily removed by Grounds Committee volunteers at no cost to the HOA they need not be considered in a discussion of tree removal alternatives. I also do not believe the larger Willow tree presents a significant personal injury risk and I suggest it be left as is

for that reason and also because I have observed a lot birds using it. So the tree removal alternatives discussed below are only those related to the large Mesquite.

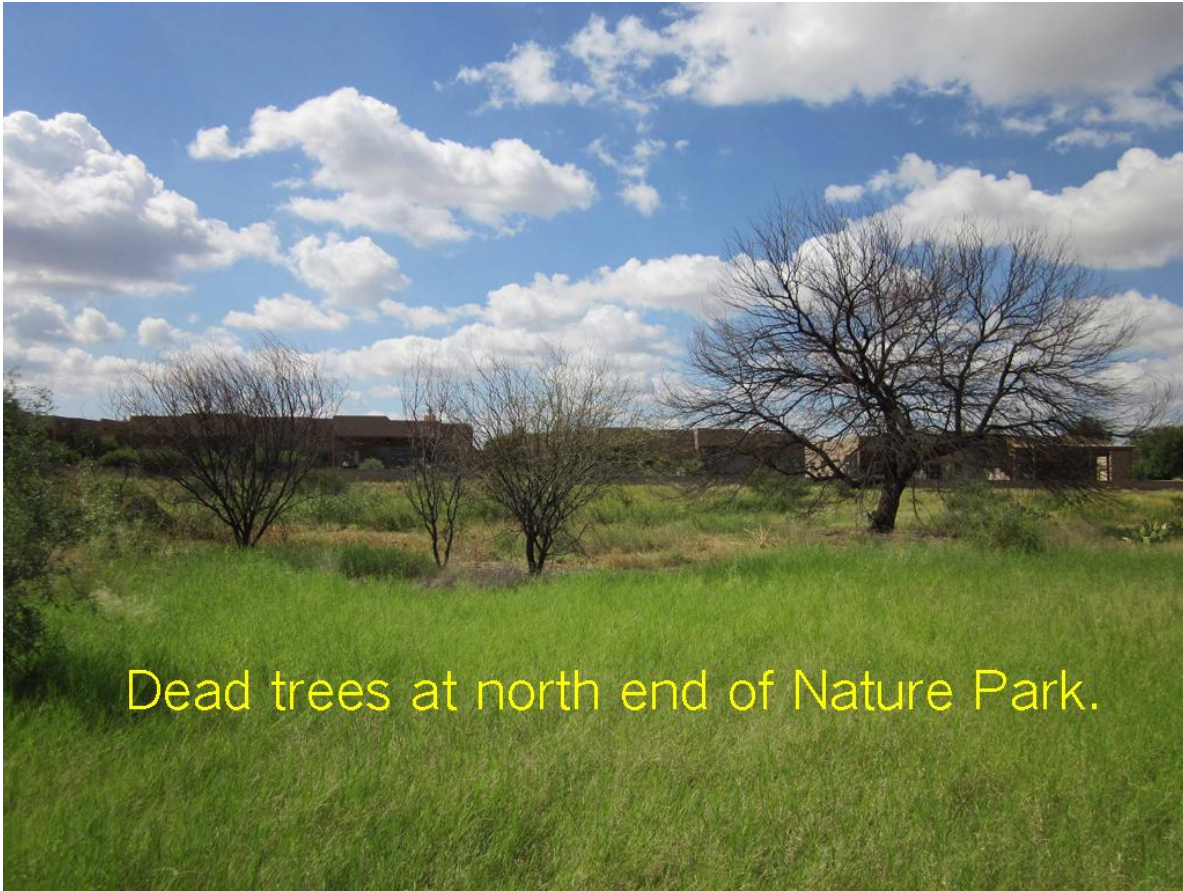
Both of the alternatives presented involve the fact that the large Mesquite tree has significant value to Art Flores (Tumacacori Mesquite Sawmill) as a lumber source for his business of manufacturing furniture, doors, tables, and many other things from Mesquite wood which is not in plentiful supply because the vast majority of the trees are small. On the other hand, our large dead Mesquite can provide a substantial amount of valuable planks especially prized for Mesquite furniture, tables, and doors. Mr. Flores has offered to cut down our very large Mesquite at no cost to the HOA in exchange for getting at no cost to him all the large logs and limbs from that Mesquite that he wants to haul away for his use (he has estimated that he could use up to 70% of that large tree). On the surface that would seem to be the ideal win-win situation for him and the HOA, but it turns out Mr. Flores does not carry liability insurance for this type of thing and there are apparently some in our HOA who believe that is a serious problem.

Regarding the removal and disposal of the large dead Mesquite, I do not believe it is a significant matter that Art Flores does not have liability insurance covering his felling of trees. Felling of our large Mesquite would be a straight forward tree cutting job with nothing special, difficult, nor unique about the felling. I therefore believe that with the extensive experience Mr. Flores and his tree cutting crew have in felling and removing large Mesquite trees, they could safely take down the large Mesquite tree without need for concern about liability issues. That large tree is about 40-ft tall but that height is well within the distance in any direction to the walking path, so if we have HOA volunteers do crowd control that keeps folks on the walking path and out of harm's way, there should be no danger to the crew or onlookers who will surly want to witness the tree felling, and that should minimize the need for liability insurance. Both alternatives below would potentially allow Flores to haul away the logs he wants at no cost to the HOA via the walking path using a rubber-tired BobCat (we have had BobCats and even larger front-end loaders on the walking path without damage to the path, and we would block off the north end of the path to resident use during the log haul-out which would likely only take about an hour or two. Therefore the first suggested alternative would involve felling of the large Mesquite by the Flores crew. The second alternative has all the tree cutting, removal and disposal being done by an outside contractor having extensive tree cutting experience and liability insurance, and the second alternative may or may not involve Flores hauling away the logs he wants.

The first suggested alternative would involve the Flores crew having principal responsibility for felling of the large dead Mesquite at no cost to the HOA, and hauling away as much of that tree to use for Art's business that he wishes free of charge. This alternative would be by far the most cost-effective way to go for the HOA. But it would still be necessary to pay a contractor to haul away the large amount of slash from the tree removal. Off the top of my head I would suggest this alternative would cost perhaps \$500-\$700 for removal and disposal of unwanted wood slash from cutting and removal of the large Mesquite. **This is the alternative that I strongly recommend, and I do not see any significant safety or liability issues associated with it.**

The second alternative that could be considered would be to hire arborist Thomas Sutler (who has done major tree removal and trimming work for the HOA in the recent past) or perhaps Hot Desert Landscaping, to take down the large dead tree, cut it into manageable pieces and dispose of all the unwanted slash wood. Under this alternative Mr. Flores could either still be allowed to haul away the logs from the large Mesquite that he wants for his business at no cost (or perhaps he could be charged a fair amount for the logs he wants because the work of felling the tree and cutting out the logs he wants would be done for him, but I believe this arrangement would likely not be acceptable to him). I would grossly estimate that having a contractor do all the cutting, removal (except the logs Flores wants), and disposal of slash would cost the HOA about \$1,500. And frankly to me, given that the very experienced Flores crew could fell the tree and remove the logs Art wants without creating any liability issues, and this alternative would cost the HOA twice as much, I do not personally believe this is a very desirable nor viable way to proceed.

Picture-1: Wide-angle view of dead Mesquite trees at NW end of the HOA Nature Park.



Picture-2: Dead Acacia bush – signs of herbicide

Picture-3: Live Acacia that had been trimmed as in picture-2



Pictures-4 and 5: Lack of any normal vegetation beneath this tree is a classic indication of large-scale herbicide or toxic chemical application.



Picture-6: This picture shows the normal amount of vegetation expected beneath a Mesquite tree with a large crown spread.



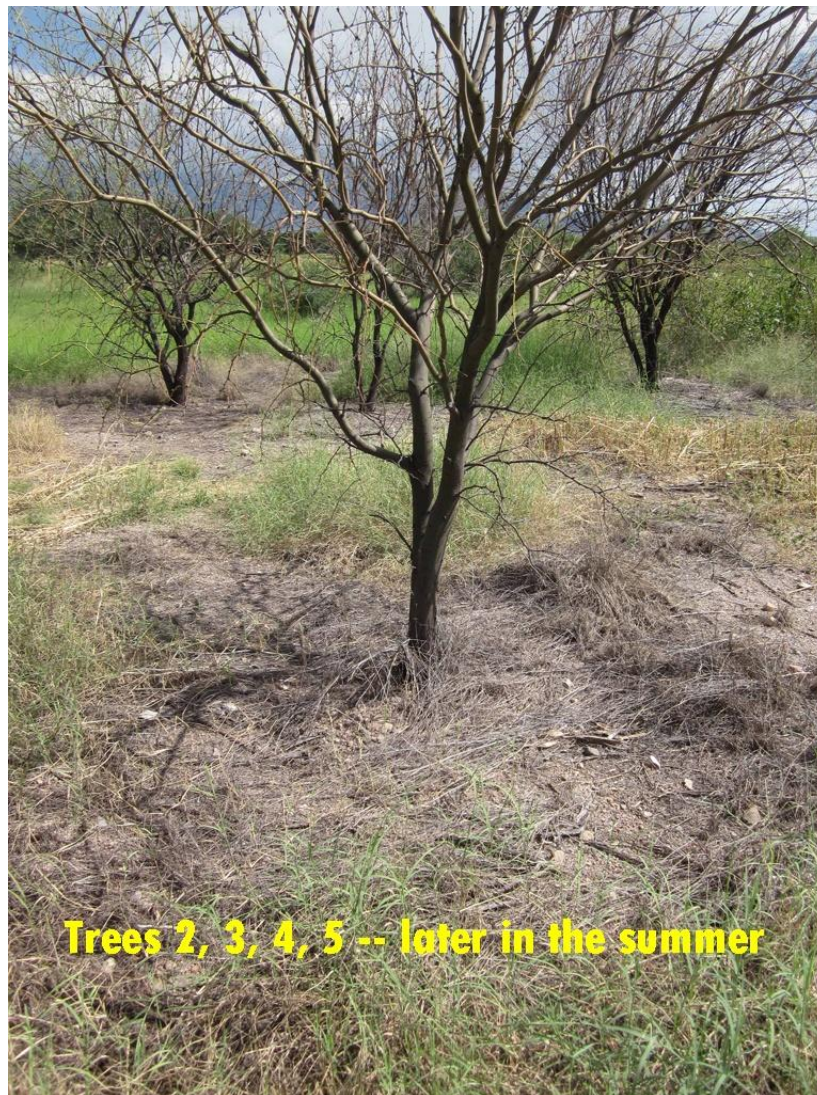
Pictures-7 and 8 : Full view of Trees 1 and 2 at the time poisoning was first suspected. Again, note the bare areas beneath the trees which is a very classic indication and symptom of the trees and/or soil beneath the trees having been treated with a strong wide-spectrum herbicide or another toxic chemical. In Picture-8 the tree is still living but is clearly in a seriously distressed state.



Picture-9: Wide angle view looking SE showing Trees 3-5 which all show clear and classic indications of having been treated with a strong herbicide by either a foliar or ground application or possibly by another toxic chemical. Note the yellowing and dying grass around Tree-3; this is an indication that the herbicide or other toxic chemical has probably been moved down-grade from an application point closer to the tree by summer rains. This grass was all dead within a another month, and there is no other location within the Nature Park where grass has died in that way.



Picture-10: This is a view of Trees-2-5 several weeks later than the view in Picture-9 on the previous page, and shows that Trees-2, 4, and 5 are now dead and Tree-3 is obviously now dying. This picture also shows the large area of dead grass beneath all of these trees and also some grass that is in a very distressed state and would die soon. There is nowhere else within the large Nature Park that has these large areas of dead grass beneath live Mesquite or other native desert trees. There is no doubt that these trees were killed by a toxic chemical and most likely by a very large dose of a strong herbicide. There are also some indications that more than one dose may have been applied.



Pictures-11 and 12: Large dead Willow tree at north end of Nature Park about 100 feet SE of the other dead trees at the north end of the Nature Park. Picture 12 shows the base of the dead Willow where application of herbicide or another toxic chemical seems apparent. When this tree was first investigated it had no leaves but a few weeks later it had sprouted some new leaves on the lower trunk – the tree now appears lifeless with no leaves at all.



Picture-13: Dead Mesquite (except for one small branch on the south side of the tree) located on the golf course adjacent to the north end of the HOA Nature Park where the dead trees are located. The golf course Greens Keeper who is experienced in use of herbicides believes this tree was deliberately poisoned, probably by being sprayed with a herbicide. Note the fully healthy tree to the left of dead one – there are also other Mesquites just to the right off the picture that are also obviously healthy.



Picture-14: Dead Acacia bush on golf course property adjacent to the north end of HOA Nature Park. This is one of five or six Acacia bushes on golf course or HOA property (the north end of the Nature Park) that also appear to have been killed by application of a herbicide or other toxic chemical applied to the foliage and/or on the ground beneath the bushes. Note the area where there is clearly a lack of vegetation – all other examples of dead Acacia in this area also show the lack of vegetation beneath the dead bush, while all live Acacia bushes in the Nature Park do not show this dead zone beneath the bushes.

