Ravenna Army Ammunition Plant
Restoration Advisory Board (RAB)
Meeting Minutes
November 16, 2000

1. Call to Order and Reading of Minutes

The meeting was called to order by Lt. Col. Tom Tadsen at the Windham Townhall of Windham, Ohio at 6:11 p.m. Secretary Denise Gilliam took attendance with 18 present, 5 excused and 1 absent (Ms. Courtenay Willis). Ms. Rebecca Carter made the motion to suspend the reading of the minutes, seconded by Mr. Walter Landor. A new membership list accompanies these minutes.

2. General Business

Mr. Mark Patterson began with an update on the TAPP application. He stated that a draft copy was sent to Dr. Rachael Craig for minor changes. The purpose of the grant is an ecological risk assessment review. Mr. Patterson distributed copies of the front page of the application to the RAB members. He stated that URS (new TAPP provider) had a rate change for 2001. He stated that the changes were modest and expected. He sent a copy of the final TAPP application to the Operation Support Command for final review and approval by Mr. Whelove. Mr. Patterson stated that he should know something by the next RAB meeting. If an answer comes in before the next RAB, he will contact URS and have them attend the next meeting. At this point Ms. Marti Long talked about the Department of Health review. She stated that Mr. Robert Indian of the Department of Health was not responding to the RVAAP request and only seemed to be responding to the Ravenna Health Department's request. She stated that perhaps Dr. Kenneth Rupp might be able to persuade Dr. Indian. She stated that she thought Dr. Rupp should be approached about assisting the RAB. She said that a community health assessment was needed to target birth defects and other cancers, instead of just another cancer assessment. Dr. Indian had asked for a letter about what areas needed to be assessed in April. Ms. Long spoke with Dr. Indian on Tuesday and he said that he would call back but as of today has not yet called. Ms. Long stated that Dr. Indian might require pressure from someplace else. Lt. Col. Tadsen suggested contacting Dr. Rupp in writing requesting his assistance. If that does not work he suggested contacting the state legislature. Mr. Milan Markov stated that he didn't feel that Dr. Indian had been well received the last time he appeared before the RAB. Mr. Patterson stated that maybe Dr. Indian felt that he was misdirected on what he was suppose to do at RVAAP. He suggested that the RAB as a group define exactly what it is that they are looking for and what type of results that the RAB is looking for. That way when they sit down with Dr. Rupp or Dr. Indian they can clearly explain their objectives. Ms. Long countered that Dr. Indian had already been informed of the RAB's needs; that they wanted Paris, Braceville and Newton townships included in the assessment. She stated that she believed that Dr. Indian could do the assessment, but he had to be willing. Lt. Col. Tadsen suggested that they review the information that Ms. Long has sent

already and then set up an informal meeting followed by a written letter. Mr. Caryl Griswold asked if they thought it would help the situation if the trustees got involved. Mr. Patterson suggested that the meeting should be open to the public and all the RAB members so that Dr. Indian can see them together as a group. Lt. Col. Tadsen asked the RAB if they thought that was a reasonable way to proceed. The members agreed. Lt. Col. Tadsen stated that once an established date and time for the meeting has been set up, the RAB will be notified so that they can try to attend. He entertained the motion to have a meeting with Dr. Rupp followed by a written letter. The motion was seconded by Ms. Carter and carried. Mr. Patterson at this point brought back up the TAPP application and the fact the primary goal was to review recent ecological risk assessment project at Winklepeck burning Grounds. He stated that the timing was good, as the draft will come back in the February or March time frame. This will give URS enough time to review the report. Mr. Landor stated that he saw Dr. Coogan and that he sends his best to the RAB members. Mr. Richard Kern remarked that the word "ammunition" was misspelled on the agenda. That will be corrected. At this point Lt. Col. Tadsen asked the RAB if there were any additional questions or business matters. There were none. He introduced Mr. Richard Callahan, Of MKM Engineers, Inc., stating that Mr. Callahan would present to the RAB the bioremediation of the explosively contaminated soil pilot study.

3. MKM Engineers, Inc.

Mr. Callahan began by informing the board that Mr. Patterson had asked him to add a few other site updates to the original presentation. He announced that he was the Environmental Program Manager for MKM and also joining him that evening from MKM was Mr. Mark Vess, Unexploded Ordnance (UXO) Program Manager, who would also be presenting, and Mr. Robert Snow, Demolition/Restoration Program Manager.

Mr. Callahan began a slide presentation. The first slide showed MKM and RVAAP partners. These included: the Operation Support Command (OSC), MKM, Ohio EPA (OEPA), US Army Corps of Engineers (USACE), RVAAP, Ohio Army National Guard (OHARNG), Army Environmental Center (AEC), and the RAB. He stated that he felt it was important that the community to be involved and informed about what was happening on the arsenal. He showed the current projects that MKM is working on. These were Load Line 11 Remedial Investigation, Load Line 11 Interim Removal Action, the flashing furnace facility, Building T-5301 Interim Removal Action (Area of Concern #47), Open Detonation Area #1 Interim Removal Action, Bioremediation Pilot Study, and Shape Charge Disassembly. He remarked that the RAB had been particularly interested in the Shape Charge Disassembly the last time MKM presented and that Mr. Vess would be showing a video on that particular technology.

He stated that on a program level, MKM has had many successes during the first year of its environmental program at RVAAP. They have closely coordinated with the USACE and the OEPA to modify the facility wide sampling

analysis plan. In addition MKM has coordinated with the OEPA and the USACE to help develop RVAAP's remediation goal objectives.

He stated that MKM regulatory interface has been successful. They were able to obtain Akron Regional Air Quality Management District approval of "de-minimis" operation of the flashing furnace with no permit required and the bioremediation operation was approved by the OEPA and the USACE with no permit required. Approval was received from OEPA to develop the ground water well at AOC 47 for use as an onsite source of non-potable water for purposes at RVAAP. This well is cleaned and will be re-plumbed for use by all RVAAP contractors. This saves the cost of bringing water into RVAAP. MKM used the Jenkins Field Screening technique at RVAAP. This technique accurately detects concentrations of explosives in "real" time. In addition MKM is assisting the USACE, Louisville district, in the development of the XRF correlation study at RVAAP. XRF stands for X-ray. This technique detects metals in the soil. This is a controlled study which if proven effective can be used to assist future decision making. Mr. Callahan also stated that MKM had received a letter of commendation from the OEPA for their efforts during the past year.

At this point Mr. Callahan began to give project updates to the RAB. The first was building T-5301 and the Interim Removal Action. T-5301 was a smokehouse that was converted to a washout building for items exiting from the Winklepeck Burning Grounds. The metal sides of the building were dismantled and provided to the OHARNG for reuse. The masonary portions of the structure went to the clean hard fill site. The site was then excavated using Jenkins and XRF to make in-the-field decisions. This site represents the first final closure of a CERCLA site at RVAAP. He showed a slide of the original building as well as the site following it's restoration. The entire area was backfilled with clean soil and graded.

Open Detonation Area #1 Interim Removal Action followed. Lab data from an earlier study provided MKM information on the level of contamination. The site was divided into grids. The grids are being excavated and the removed soil is then sifted to remove all ordnance items. The remaining soils are then tested using the Jenkins testing method. If the soil is clean it is immediately backfilled. Ordnance items found in the soil will be pressure washed or treated using detonation. All of the proper permits will be secured prior to any detonation activities. After excavation, sifting and backfilling is complete, the area will be seeded and returned to the OHARNG for training purposes. He showed slides of ordnance that has been found on the site, as well as slides depicting the sifting operations. He finished this segment by showing a slide of Grid #1 after its restoration.

The next area covered was the Bioremediation Pilot Study that was conducted from June to August 2000. This was a pilot study to determine if this process can be successfully used at RVAAP. All of the objectives originally set for the

project were met. The basic principle is the same that is used in backyard composting procedures. The contaminated soil is placed into a compost pile and additional nutrients are then added. Organic materials are biologically degraded by bacteria and fungi in the soil. The process generates a lot of heat. The heat produced speeds up the degradation process. Explosives and contaminants are broken down by bacteria into innocuous products that can permit the soil to be used as backfill. This procedure is both cost effective and environmentally friendly. This pilot study was conducted in three phases:

- Phase I - Bench Scale Study. This study used non-contaminated soils. 23 Separate recipes or combinations of ingredients were tested to see if temperatures could be maintained for a long period of time in clean soils. Amendments to the different recipes included hay, wood chips, chicken and cow manure, potatoes and corn in various percentages and combinations. The coolers in which the recipes were tested were stirred everyday and their temperature was measured. The test was conducted for 28 days. Mr. Callahan showed slides of the area that the study was conducted in.

- Phase II consisted of an investigation of soils at Load Line #12 in an effort to find contaminated soils to be used in the study. Soils were excavated, Jenkins tested, and sifted. Ordnance was not expected to be found but construction debris had to be removed before the soil could be used in the study. Soil that has been sifted comes out very clean and very fine. Mr. Callahan showed slides of the sifter and the debris that was being removed from the soil.

- Phase III was the Windrow Study. Recipe amendments were provided in bulk. The final recipe consisted of chicken manure, corn and hay. Water was added on a daily basis. A sprinkler system was installed in the building to ensure that just the right amount of water was used. When the pile is dry nothing will happen but when it is wet the organisms such as bacteria and fungi flourish. A delicate balance of water is required. A lot of steam comes off of the pile and a lot of gasses are generated. Because of this the gas is monitored daily to ensure the safety of the workers.

Mr. Callahan then showed a video tape of the bioremediation activities. Ms. Long asked that, if water was added, was there any problem or possible problem with leaching. Mr. Callahan replied in the negative. He stated the building was well constructed and sandbags were placed on the sides of the pile. Leaching would mean that there was too much water being added. In the video, Mr. Callahan pointed out the limited access to the buildings. The operation is run in Level C personal protection equipment. The video showed the steaming pile and the sprinkler system installed in the building. There are two tankers outside. One holds clean water and the other contaminated. The temperatures were measured on a daily a basis in a number of different locations along the windrow. These locations were mapped out and precisely documented. The video zoomed in on shots of the sifter, the composter and the pile. It also showed the composter being

used on the pile. The composter is a large piece of equipment that turns the composting pile. Due to the large amounts of steam and gasses the operator of the composter is the only one allowed inside the building during operation. Ms. Long asked what happens to that material in the 28 days. Mr. Callahan stated that at the end of the period the material will be analyzed. The building can handle about 500 yards of soils. The idea is to use the treated soil as backfill in various areas around the plant. Mr. Patterson stated that the building is secured and that the purpose of the pilot was to verify that the process could work and it did. He stated that when they get the cleanup level established this soil may be used back on the site.

Lt. Col. Tadsen asked Mr. Callahan to give the RAB some information on the clean hard fill site on George Road. He wanted Mr. Callahan to explain what was in the landfill and how was that material tested. Mr. Callahan responded that large amounts of concrete and bricks have been placed in the landfill. He stated that with the help of the Guard and Tim Morgan historical records for the site were reviewed according to the OEPA clean hard fill rules. They found out that the area had been used as a quarry before. Once an area has been disturbed by man it is able to be used as a clean hard fill area in order to return the site to its original grade. This opened the door for the use of Load Line # 1 for clean hard fill. This load line was built into the bedrock. Once areas are determined to be clean, at Load Line #1, they can then be used for clean hard fill. When the area is filled, it will be capped with a two to three foot cover, domed and seeded with an appropriate mix of native plant seeds. Mr. Patterson added that the savings will be about three million dollars by using on site clean hard fill sites for all of the load lines.

Lt. Col. Tadsen then stated that he read the article in the Record courier where MKM had made an agreement with the City of Ravenna regarding disposing water. He asked what were the target levels or maximum levels that can be in the water that goes to Ravenna for treatment. Mr. Callahan responded that there is a program that is overseen by the OEPA that states what the acceptable discharge limits are. There are currently limits for metals and other contaminants. However, for the explosive contamination the city has asked MKM to assist in determining the levels. Levels of contamination have not been determined as of yet. The agreement with the city has just been signed and it still has to be sent to OEPA in Columbus for approval. Mr. Callahan stated that the City of Ravenna was very enthusiastic and eager to help.

Lt. Col. Tadsen then asked what Jenkins testing consisted of. Mr. Callahan stated that a small amount of soil is collected, the solids are weighed out, it is then rinsed with acetone. Once filtered a solution is added that makes the liquid change color to red if explosives are present. The darker the red color the higher the concentration of explosives. A spectrometer measures the intensity of the color and converts it to a concentration of explosives. The test, is fast taking only five minutes to detect TNT and 15 minutes to detect RDX.

Mr. Patterson brought the conversation back to the composting process. He stated that now that it has been demonstrated to work it will be the most cost effective treatment for the soils on RVAAP. He stated that it will probably not be used for the next couple of years, due to the low levels of contamination at some of the sites. Those sites that do have contamination, will be excavated and the soils stockpiled inside of a building until there is a large enough amount of soil to treat. The cost to mobilize the composter is high, so the soils will have to be stockpiled to maximize the efficiency. At this time MKM introduced Mr. Vess

Mr. Vess showed a video dealing with the demolition of production equipment and piping using shape charge explosives. Using a small camera attached to a line or a snake (c-scope) the RAB members were able to see explosive contamination in process piping. Mr. Vess explained that they use this camera so that they can detect the levels of contamination in the pipe before they detonate it. The video display is in "real" time so that they can go on the outside of the pipe and measure exactly where the explosive build- up is. The cost is relatively inexpensive when you look at the gains in safety. Mr. Vess said that the camera is used to look inside of process equipment as well. With the camera you can look inside the edges and seams of machine equipment. He related an example from Joliet AAP in which the camera enabled the crew to detect a 15 pound deposit of explosives in a machine. The camera also has the ability to be in color. Once the pipe has been inspected shape charges are placed on the pipe and the effect of the explosion is as precise as a surgeon's knife. The video showed the demolition of the smoke stack on Load Line #1. MKM called in Dycon (world-wide leaders in demolition) to come in and take down three smoke stacks at RVAAP. Engineering studies were completed. Holes were bored into the stacks. The minimum possible amount of explosives were used to complete the job. Mr. Vess instructed the RAB to look at a building directly next to the smoke stack about to be leveled. The windows in the building were intact before and after the demolition of the stack.

Mr. Vess then asked the RAB members if they had any question about how things were going? He stated that MKM had several successful operations across the country. He stated that leaps and bounds have been made in technology to help make the jobs safer. Lt. Col. Tadsen asked how much explosives are in the shape charges. Mr. Vess replied $1/8^{th}$ of a pound. He stated that they were not so much using the explosives as they were using the effects of the explosion. Mr. Landor asked what the explosives consisted of. He asked if they used plastic explosives. Mr. Vess replied in the affirmative. He stated that there is a manufacturing company that is making the shape charges especially for MKM. Mr. Landor asked how buildings in large cities are detonated without harming the other buildings standing so closely beside it. Mr. Vess answered that in the building trade, there is a specialized science used. He stated that the process was akin to an art form. The building is structurally reviewed and then the building itself is physically weakened. Small amounts of plastic explosives are used to

bring the building down on itself. Mr. Markov stated that years ago he did some work with dynamite. He stated that the dynamite was rated with percentages. He asked how the plastic explosives compare to that. Mr. Vess replied that the percentages indicate the level of nitroglycerin in the dynamite. He stated that nitroglycerin is still used in rocket motors and propellants, however, plastics are not nitroglycerine based. Nitroglycerine is a primary explosive. TNT and plastics, and C4 are secondary explosives. Mr. Markov asked where the power was derived from. Mr. Vess replied the process relates to the speed of the different kinds of explosives. Dynamite has more power and push. Ms. Miller asked how the furnace operation was coming along. Mr. Vess replied that a pilot test was run and the furnace is ready to go. It hasn't started up yet however due to some regulatory issues that MKM is working out. He went on to say that RVAAP got a good deal on the furnace because MKM is the only civilian company to have this technology. MKM closed at 7:48 p.m.

Mr. Patterson added that they would be checking sewer and storm water conveyances to make sure that they don't have any explosive residuals in them. SAIC sent cameras in the sewage and drainage systems. All of the sanitary sewers were in great shape with no residuals. In addition there were no chunks in the drainage system. He stated that more scoping will be done in the future. Most of the lines on Load Line #12 are flooded, so video there has been nearly impossible. Mr. Landor asked what happens to the human waste that comes out of the arsenal. Mr. Patterson stated that there were three treatment plants utilized when the plant was active. Now a sand mound is used for the people who have plumbing.

4. Scheduling of the Next Meeting

Discussion on the date of the next meeting took place. It was decided that the next meeting would be held on February 14th, 2000. Freedom Township offered to host the next RAB meeting. It will be held at the Freedom Town Hall. There being no further business, Lt. Col. Tadsen adjourned the meeting at 7:54 p.m.

Respectfully Submitted,

Denise L. Gilliam
RAB Secretary

DG/dg