

**ASTSWMO  
Peer Match Trip Report  
Compendium  
2008-2010**

**Prepared by the ASTSWMO Tanks Subcommittee**

**UST related Peer Matches**

**1. New Hampshire to Oklahoma Peer Match**

Spruce Wheelock, Environmental Specialist II, New Hampshire Department of Environmental Services, Division of Waste Management traveled to meet with members of the Oklahoma Petroleum Storage Tank program on September 25-26, 2009. The Peer Match allowed New Hampshire to learn Oklahoma's inspection techniques, compliance, enforcement, and data management experience and methodology. New Hampshire hopes to utilize this information to increase the effectiveness and efficiency of its own UST Program.

Purpose of Peer Match- NH would like to learn from OK's Petroleum Storage Tank Program inspection techniques, compliance, enforcement, and data management experience and methodology. NH hopes to utilize this information to increase the effectiveness and efficiency of its own UST Program. Unless this can be done, NH expects difficulty in meeting the Federal Energy Act mandate of inspecting every federally regulated UST facility every three years by August 8, 2010 and thereafter.

**NH Peer Match Trip Report:**

**Primary Peer Match Participant**

Name/Title: Spruce C. Wheelock/Inspector Oil Compliance Section

Division/Agency: Waste Management Division/NH Department of Environmental Services

Address: 29 Hazen Drive

City/State/Zip Code: Concord, NH 03302

Phone: 603-271-2933

Fax: 603-271-2181

E-Mail Address: [spruce.wheelock@des.nh.gov](mailto:spruce.wheelock@des.nh.gov)

## **State Staff Providing Assistance to You**

Name/Title: Terry Roberts/Environmental Compliance Analyst

Division/Agency: Petroleum Storage Tank Division/Oklahoma Corporation Commission

Address: Jim Thorpe Building, P.O. box 52000, Oklahoma City, OK 73152-2000

Phone: 504-522-4810

Fax: 405-521-4945

E-Mail Address: [t.roberts@occcemail.com](mailto:t.roberts@occcemail.com)

### Dates of Peer Match:

September 21, 2009 to September 25, 2009

### Location of Peer Match:

Oklahoma City, OK

- What were your reasons for and expectations from this Peer Match activity?

NH would like to learn from OK's Petroleum Storage Tank Program inspection techniques, compliance, enforcement, and data management experience and methodology. NH hopes to utilize this information to increase the effectiveness and efficiency of its own UST program. Unless this can be done, NH expects difficulty in meeting the Federal Energy Act mandate of inspection every federally regulated UST facility every three years by August 8, 2010 and thereafter.

### Please provide a brief description of the Peer Match including the following points:

- Purpose of the trip (program area where assistance was sought, elements discussed)  
NH would like to learn from OK's Petroleum Storage Tank Program inspection techniques, compliance, enforcement, and data management experience and methodology.

- Information/materials received from provider State  
Please refer to the question/answers/itinerary attached.

- Issues/questions generated that may require follow-up or additional discussion and information exchange

I do not have any questions at this time. I'm glad for the face to face interaction we had. I feel as time goes on we will be in contact with one another on issues we face.

### How would you evaluate your Peer Match experience?

Fantastic!! I truly enjoyed seeing how another State conducts field inspections. Hands on is really eye opening and educational.

Will you be able to readily apply and/or adapt the information and materials received to your own program?

Yes, I believe we can apply some of the procedures and materials into our inspection program. Review of their program and their data collection methods allowed me to compare the differences between the two state's programs and furnished me with ideas on how to incorporate some of the inspection techniques Oklahoma uses. Review of the information and materials I collected, also, provided me with ideas for policies and possible NH UST rule requirements changes.

How will this information benefit your program?

The information I collected should benefit our program if we decide to adopt some of the techniques used by Oklahoma staff inspectors into our own inspection program. The Oklahoma inspectors do not phone ahead or schedule inspections. Instead they rely on the past inspections notifying them that they will be back in 6 months and the regulation require that they be ready at anytime so be prepared. I was surprised to see that the UST owners were able to work with this procedure. I was especially interested in the number of inspection they can accomplish as well as the additional duties of collecting and analyzing on sited octane and ethanol content. They also test dispenser meter for accurate calibration.

Would you participate in another Peer Match exchange, or encourage someone else from your State to do so?

Yes, I would encourage Peer Match exchange, not all States do inspections the same and we all can learn from each other to create an inspection program that could be similar in each State.

### **LUST related Peer Matches**

#### **1. Nevada to Arizona Peer Match**

Greg Lovato, Supervisor of the Remediation and Certification Branch, Art Gravenstein, Supervisor of the UST/LUST Branch, and Todd Croft, Supervisor of the Las Vegas Remediation LUST Branch from the Nevada Division of Environmental Protection, Bureau of Corrective Actions will travel to meet with Joseph Drosendahl, Corrective Action Section Manager and Mike Fulton, Tanks Program Director for Arizona Department of Environmental Quality on January 27-28, 2009.

Purpose of Peer Match- NDEP is taking steps to update our risk based corrective action approach at State remediation and leaking underground storage tanks. A RBCA approach can be formalized in regulation or retained as guidance depending on the policy and technical objectives of the program, regulated community (including consultants), and the public. NDEP would like to visit with ADEQ officials who have implemented a more formalized RBCA process within regulation and guidance. We would like to learn how they evaluated specific pathways (e.g. soil concentrations protective of groundwater) and how those levels help make day to day case action or closure decisions. We are interested in lessons learned based on case experiences and how they balance need for additional information on a site-specific basis with efficiency and consistency in making decisions. We are also interested in how well the program has been implemented by the consulting community and whether there are any

NV Peer Match Trip Report:

Primary Peer Match Participant

Name/Title: Greg Lovato, Supervisor, Remediation and Certification Branch  
Division/Agency: Nevada DEP  
Address: 901 S. Stewart St.  
City/State/Zip Code: Carson City, NV 89701  
Phone: 775-687-9373  
Fax: 775-687-8335  
E-Mail Address: [glovato@ndep.nv.gov](mailto:glovato@ndep.nv.gov)

Other Peer Match Participants from Your State

Name: Art Gravenstein  
Phone: 775-687-9376

Name: Todd Croft  
Phone: 702-687-2850 x230

State Staff Providing Assistance to You

Name/Title: Joe Drosendahl, Manager, Corrective Action Section  
Jeanene Hanley, Senior Risk Assessor

Division/Agency: Arizona DEQ  
Address: 1110 West Washington St.  
Phone: 602-771-4845  
Fax: 602-771-4346  
E-Mail Address: [Drosendahl.joe@azdeq.gov](mailto:Drosendahl.joe@azdeq.gov)

Dates of Peer Match: January 27-28, 2009

Location of Peer Match: Arizona DEQ, Phoenix, AZ

- What were your reasons for and expectations from this Peer Match activity?

NDEP is evaluating adoption of a more formalized Risk Based Corrective Action (RBCA) program for our LUST and Remediation Programs.

From 1995 to 2002, ADEQ went through a process of promulgating a RBCA program in rules and guidance for its LUST program and since 2002, ADEQ has implemented a formal RBCA program.

NDEP would like to benefit from ADEQ experience in promulgation and implementation, specifically in the areas outlined on the attached RBCA Technical Policy Discussion Points

document. Additionally, after reviewing AZDEQ Release Reporting and Corrective Action Guidance, Soil Remediation Standards Regulations, and UST Corrective Action Rules, prior to the meeting we had 16 additional technical policy questions (additional questions attached).

For each of the specific areas covered, we wanted to know: 1) what ADEQ is doing; 2) rationale; 3) how it is working. We were very interested in not only the state of the practice from a scientific defensibility standpoint but in challenges of managing a RBCA program and what types of resources and expertise it takes from all parties involved.

Please provide a brief description of the Peer Match including the following points:

- Purpose of the trip (program area where assistance was sought, elements discussed)

Understand RBCA program adoption and implementation in AZ:

- Outreach
  - Role of petroleum fund incentives
  - Technical policies, rationale, and impacts on site management decisions costs, and timing
  - Resource and expertise demands
  - Management of change in toxicological data (IRIS, State tox evaluations, etc.)
- Information/materials received from provider State
    1. Oral answers to attached questions [minutes taken by NDEP]
    2. 2008 Draft Groundwater Protection Level (GPL) spreadsheet and User Manual
    3. AZ Tank program RBCA Tier 2 software
    4. AZ DEQ 2002 Response to Comments on UST Corrective Action Rules
  - Issues/questions generated that may require follow-up or additional discussion and information exchange

NDEP is working on an electronic desk manual for our cleanup program with template letters, spreadsheets, tools, references and may request to use portions of ADEQ tools or examples.

We will be evaluating their GPL spreadsheet vs. other available vadose zone fate and transport models (e.g. VLEACH and SESOIL) and may need some assistance on using GPL appropriately and adjusting for conditions at typical sites in Nevada.

How would you evaluate your Peer Match experience?

We are grateful to the host State AZ DEQ for their time and their offer to continue answering questions after our Peer Match meeting.

We were able to learn a lot about their program in a short amount of time since they offered their senior manager and senior risk assessor with several years of experience to us for the Peer Match meeting.

Will you be able to readily apply and/or adapt the information and materials received to your own program?

Yes.

How will this information benefit your program?

The information we gained will help us decide what portions of the RBCA program used by Arizona we would like to adopt and which we would like to alter.

We have a better understanding of problems encountered in getting defensible Tier 2 documents from responsible parties, the incentives for parties to use Tier 1 as default cleanup levels, and the internal agency expertise constraints.

Would you participate in another Peer Match exchange, or encourage someone else from your State to do so?

Yes, NDEP would like to visit the State of New Mexico tank program in a similar RBCA peer match. However, we think only one day would be needed.

Other comments and/or recommendations:

ASTSWMO staff was very helpful and prompt in facilitating this Peer Match. We appreciate this opportunity and experience.

## **2. Alaska to Oregon and Washington**

Fred Vreeman and Earl Crapps, both Environmental Program Managers with the Alaska Department of Environmental Conservation, traveled to the State of Oregon to meet with Jim Anderson, Northwest Region Director of the Oregon Department of Environment Quality and Irene Ronning, OLELAP Administrator, also of the Oregon Department of Environment Quality on March 23-24, 2009.

Fred Vreeman and Earl Crapps, both Environmental Program Managers with the Alaska Department of Environmental Conservation, traveled to the State of Washington to meet with Bob Carrell, Chemist IV for the Manchester Environmental Laboratory and Dr. Craig McCormack, Toxicologist with the State of Washington, Department of Ecology on March 24-26, 2009.

Purpose of Peer Match- This trip will be very valuable as Alaska DEC investigates and considers revisions to our cleanup levels and our application of new scientific methods, particularly the 4 phase modeling, to characterize petroleum transport. Travel to Oregon and to Washington in the same trip. Meet with regulators in both States to discuss their risk based cleanup levels for petroleum fractions, and their application of 4 phase models to determine risk based cleanup levels in soil for exposure pathways and use scenarios.

## AK Peer Match Trip Report

I attended meetings near Portland, Oregon and Olympia, Washington March 23 – 26. These were fact finding missions to support our efforts to develop new cleanup levels for petroleum contaminated sites. I met with Toxicologists and Chemists from the Oregon Department of Environmental Quality (OR-DEQ), the Oregon Lab Approval Program (ORELAP), Washington Department of Ecology (WA-ECY), Washington's Manchester Labs, and the Washington Lab Approval Program. Earl Crapps from Anchorage was originally scheduled to attend all of the meetings but he was unable to fly from Anchorage due to a volcanic eruption near there.

In Portland the meetings focused on a sharing of information about the Oregon risk based decision making guidance for petroleum contaminated sites. I met with Paul Seidl and Mike Poulsen, both Toxicologists, and Mike Anderson via telecom a retired program manager. These individuals were the ones who wrote that guidance, developed the online calculators used by consultants, went through the process of getting it adopted, and who are responsible for updating the guidance and calculators. The information from this meeting will be very helpful as we begin the very same process here in Alaska DEC. We discussed the public processes they followed as well as political and regulatory issues they faced. Oregon is an early adopter of the VPH/EPH methods for characterizing petroleum contamination and has integrated a 4 phase calculator into their decision making matrix. This was discussed in detail. Mike Anderson, former program manager for OR-DEQ, is the person who actually wrote the documents and the calculator.

I learned that Oregon leaned heavily on the work of Hun Seak Park, from WA-ECY, in the development of their 4 phase calculator. Various technical issues were discussed regarding the importance of site specific information for the inputs into the model. The limitations of the model and shortcomings of it were also discussed. Of primary importance, it seems, is the definition of residual saturation in soil. Above this level Oregon assumes free product (NAPL is assumed to be free product). This is a policy followed there and is not written into regs or guidance. When NAPL exceeds 1% it either must be removed or there must be strict institutional controls, regardless of the risk demonstrated.

I went to the Oregon DEQ laboratories, which are operated in cooperation with their Department of Agriculture and their Dept of Health and Social Services. A program operated under that 3 way partnership is the ORELAP program, which accredits laboratories in Oregon and other States. The program is pretty efficient because it uses staff that are employees of the laboratory for it's on site inspectors. They receive specialized training and operate as inspectors as part of their "other duties as assigned". ORELAP is a "National Environmental Laboratories Approval Program" (NELAP) notified body, so it can approve laboratories with that certification, which is accepted by many States. We discussed how the EPH/VPH methods are certified by ORELAP and also whether the AK methods could be certified there. I learned that ORELAP already certifies and does the onsite inspections for SGS laboratories in Anchorage. We also discussed the difference between the certification programs in Oregon and in Washington. The biggest difference is that Washington does not certify NELAP accreditation, and they do not necessarily accept labs that have that accreditation. ORELAP states that Washington does fewer onsite inspections and their program is less stringent.

In Lacey, Washington at WA-ECY I met with Toxicologist Dr Craig McCormack, Environmental Scientist Hun Seak Park, Chemist Bob Carrell from the State Laboratories, and Alan Rue from the Washington Lab Accreditation Unit. Dr McCormack gave a presentation on the Washington Model Toxics Control Act (MTCA) and Dr Park gave a presentation on how the risk based decision making models are used to implement MTCA. We discussed the EPH/VPH methods in detail and Bob Carrell, who authored those methods, discussed how they are applied and validated. A lively discussion was held to discuss polar fractions that might be in soil as a component of weathered petroleum. It was clear from the chemists and toxicologists that this possibility was not accounted for in the EPH/VPH methods. They did reference several studies on Catachols and other potential breakdown product after biodegradation has occurred. This was seen by everybody in the group as a topic that should be studied, however nobody in the group had knowledge of any specific studies with answers to the subject.

The Washington Lab Accreditation Unit works from the Manchester Laboratories. They are not a NELAP accrediting body and they can choose whether or not to accept Oregon or other NELAP approval. They are more expensive than Oregon, and they do not do as many onsite inspections. They don't have a high percentage of out of State laboratories because they are focused mostly on Washington. We discussed whether they can approve or certify labs to the AK methods, and also discussed in detail how their continuous accreditation program works. There are some differences between Oregon and Washington in how they require reports from their accredited laboratories and in how many failures will lead to suspension or revocation of their certification. Both States appear to have fairly robust programs requiring regular reporting and testing by their certified labs.

This trip was made possible through a "Peer Match Grant" provided by the Association of State and Territorial Solid Waste Management Officials (ASTSWMO). The goal was to open lines of communication so that State officials can learn from each other. This goal was successfully met during these meetings and the results will provide valuable assistance to Alaska DEC as we develop our cleanup levels for petroleum contaminated sites.

### **3. Utah to Hawaii Peer Match**

John Menatti, Program Manager, Utah Department of Environmental Quality and Kevin Beery, Environmental Scientist for the Utah Division of Environmental Response and Remediation traveled to meet with Roger Brewer, Office of Hazard Evaluation and Emergency Response for Hawaii State Department of Health on April 6-7, 2009. The Peer Match will focus on Hawaii's expertise on Vapor Intrusion.

Purpose of Peer Match- UTAH DEQ is currently in the process of preparing a vapor intrusion guidance for LUST sites. Hawaii DEH prepared a VI guidance dated October 2008. We would like to lean from Roger Brewer about VI evaluations.

### UT Peer Match Trip Report

#### Primary Peer Match Participant

Name/Title: John Menatti, Manager, Petroleum Storage Tank Trust Fund

Division/Agency: Utah Department of Environmental Quality

Address: 168 North 1950 West

City/State/Zip Code: Salt Lake City, Utah 84116

Phone: (801) 536-4159

Fax: (801) 359-8853

E-Mail Address: [jmenatti@utah.gov](mailto:jmenatti@utah.gov)

#### Other Peer Match Participants from Your State

Name: Kevin Beery

Phone: (801) 536-4214

#### State Staff Providing Assistance to You

Name/Title: Dr. Roger Brewer, Environmental Risk Assessor

Division/Agency: Hawaii Department of Health

Address: 919 Ala Moana Blvd., Honolulu, Hawaii 96814-4912

Phone: (808) 586-4328

Fax: (808) 586-7537

E-Mail Address: [roger.brewer@doh.hawaii.gov](mailto:roger.brewer@doh.hawaii.gov)

Dates of Peer Match: April 6 – 8, 2009

Location of Peer Match: Honolulu, Hawaii

- What were your reasons for and expectations from this Peer Match activity?

*To attend workshop on vapor intrusion at the Hawaii Department of Health (HDOH) and visit sites impacted by vapor intrusion. To obtain the HDOH risk assessment (RA) model that includes evaluation of the vapor intrusion pathway. To obtain training on the use of the HDOH RA model.*

*To help Utah DEQ prepare a vapor intrusion guidance document that incorporates applicable portions of the HDOH RA model.*

Please provide a brief description of the Peer Match including the following points:

- Purpose of the trip (program area where assistance was sought, elements discussed)

*The Utah DEQ is in the process of preparing a vapor intrusion guidance document. Dr. Roger Brewer of the HDOH has created a model for the evaluation of the vapor intrusion pathway. We discussed the use and applicability of the HDOH RA model to the Utah DEQ. We also discussed vapor intrusion mitigation, soil gas sampling technologies, and laboratory analytical methods.*

- Information/materials received from provider State

*Obtained an Excel version of the HDOH RA model and copies of the HDOH's document titled: "Evaluation of Environmental Hazards at Sites with Contaminated Soil and Groundwater" dated October 2008.*

- Issues/questions generated that may require follow-up or additional discussion and information exchange

*We will be communicating with Dr. Roger Brewer via telephone and email to obtain additional advice on how to use the HDOH RA model and how to incorporate it into the Utah DEQ vapor intrusion guidance document.*

How would you evaluate your Peer Match experience?

*Excellent. Honolulu has a similar shallow groundwater and geological depositional environment as Salt Lake City, Utah. These conditions can enhance vapor intrusion problems. Our Peer Match experience gave us insights into vapor mitigation methods that will be helpful in Utah.*

Will you be able to readily apply and/or adapt the information and materials received to your own program?

*Yes. We will incorporate the HDOH RA model into Utah DEQ's vapor intrusion guidance document.*

How will this information benefit your program?

*The information gathered on this Peer Match will benefit our program because we won't have to re-invent the wheel. This will save the DEQ time and resources.*

Would you participate in another Peer Match exchange, or encourage someone else from your State to do so?

Yes.

Other comments and/or recommendations:

*We would like to thank ASTSWMO for providing this excellent program to the States.*

#### **4. Missouri to Utah Peer Match**

Vince Henry, Environmental Specialist III, Missouri Department of Natural Resources, traveled to meet with John Menatti of the Utah Department of Environmental Quality on August 26-28, 2008. The goal of the trip was to learn how Utah completes cleanups and the reasons why Utah has a small backlog of sites.

Purpose of Peer Match- To learn how Utah completes cleanups and has a small backlog of sites.

#### Peer Match Trip Report

Thanks to paid reimbursement from ASTSWMO, the HWP – Tanks Section sent one of our staff to participate in a Peer Match hosted by Utah's Department of Environmental Quality, Division of Environmental Response and Remediation (DERR) in Salt Lake City Utah. The Peer Match occurred on August 26 through August 28, 2008.

The objective of the peer match was to compare the methods used by each State in evaluation and remediation of risks at sites associated with leaking underground petroleum storage tanks.

The internet homepage for Utah's Department of Environmental Quality, Division of Environmental Response and Remediation is: <http://www.environmentalresponse.utah.gov/>

Vince Henry, of our staff, met with Mr. John Menatti and other staff within Utah's Department of Environmental Quality, Division of Environmental Response and Remediation (DERR). The topics discussed during the three day peer match event included: Comparison of the general remediation process utilized in each State, establishment of target/screening levels, off-site risk evaluation, current and future property use and risk evaluation, contamination plume stability determination, delineation criteria, reaching closure at sites where free product is present, and public notification requirements. The following comments are very general, Mr. Henry would be happy to discuss any aspect of his recent Peer Matching trip to Utah in greater detail.

#### Major Differences:

One of the major differences between the two States is Petroleum Storage Tank Insurance Fund (Fund) oversight. In Missouri, fund oversight is provided by a board of trustees and a private company provides third party administration, including application and claims processing. In Utah, fund administration is provided by the Leaking Underground Storage Tank (LUST) section staff.

In Utah, UST installers/removers, consultants, and groundwater/soil sampling personnel are required to be certified. The source of funding related to the certification is certification fees.

The LUST section provides oversight for the certification program. In Missouri, certain reports are required to include the pertinent seal, either of a professional geologist or a professional engineer and no other certification is required.

Other major differences in the process implemented by each State include a meeting between the responsible party (RP), the DERR, and the RP's consultant, at the point in time when contamination is found at levels above initial screening levels. This meeting allows all involved parties to agree upon how the contamination will be addressed and appears to decrease the amount of time spent preparing, reviewing, approving, and revising work plans. In addition, the DERR requires the consultant to solicit bids from at-least three contractors for conducting work such as soil boring advancement, groundwater monitoring well installations, and remediation system installation.

In Missouri, the Missouri Risk-Based Corrective Action (MRBCA) guidance for petroleum storage tanks indicates that certain information is required to be included within submitted documents. In Utah, templates, forms, and flow charts are used when submitting documents, the utilization of the templates, forms and flow charts appears to decrease the time needed for the project manager to review the submitted information.

#### Major similarities:

Utah and Missouri both consider the area within the property boundary of the source site as "on-site" while any other affected property is considered "off-site".

The "No Further Action" letters for the two States appear to be very similar in that they both explain the approved land use for the property and indicate that additional environmental investigation could be required in the future.

Each State has petroleum storage tank sites that are evaluated using Leaking Underground Storage Tank (LUST) Trust Funds and other sites that are evaluated using Petroleum Storage Tank (PST) Insurance Funds. In Missouri, our project managers are responsible for managing projects that are involved with either of the funding sources and our 8 project managers are each responsible for managing an average of 150 projects each. In Utah, the DERR has separated the projects by the funding sources, with 5 (LUST) or 6 (PST) project managers that are responsible for managing 40-45 sites each.

#### Topics:

##### Screening/Target Levels:

Utah implements initial screening levels, (can be compared to Missouri's default target levels), tier 1 screening levels (compare to Missouri tier 1 target levels), and tier 2 screening levels (Missouri tier 3 target levels). In Utah, the screening levels are established by a DERR Toxicologist.

Utah's initial and tier 1 screening levels are not dependent on soil type, however tier 2 screening levels may be based on soil type.

Utah's risk evaluation does not allow for determination of representative concentrations.

Remediation in Utah continues until initial screening levels are met or other conditions exist such as: no buildings, property boundaries or utility lines within 30 feet of the highest measured concentration of any contaminant that is greater than the initial screening levels but less than or equal to the Tier 1 screening levels and, no water wells or surface water within 500 feet of highest measured concentration of any contaminant that is greater than the initial screening levels but less than or equal to the Tier 1 screening levels.

### Utility corridors:

In Utah, the distance from point of highest concentration above their tier 1 screening levels, to the location of the utility must be at-least 30 feet. In cases where concentration levels of contamination are closer than 30 feet (for soil and groundwater vapors – 15 feet below the utility) the subsurface utility pathway is considered to be complete and a Risk Assessment proposal is requested. If the risk Assessment determines the utility pathway to be complete, protective actions are to be proposed. The protective action can be in many forms for example: an engineered control to protect the utility from the contamination, or source removal to acceptable concentrations would be forms of protective action.

### Delineation:

In Utah, the contamination must be delineated to initial screening levels.

### Light, non-aqueous phase liquid (LNAPL):

A no further action required letter may be issued in regard to a site, in Utah, were LNAPL is present, as long as it has been demonstrated (through a pilot test) to be impractical to remove the LNAPL, the LNAPL plume is stable, the LNAPL plume is not expanding, and the LNAPL plume poses no risk to human health or surface water. An environmental covenant is required before the DERR will issue a no further action required letter at sites where LNAPL is present.

### Public Participation:

In Utah, anytime contamination is discovered above initial screening levels a corrective action plan is needed. An integral component of the corrective action plan is public notification. Anyone who could be affected by the contamination or remediation is notified, by the consultant using methods approved by the DERR. In general, there is a public comment period during which, the DERR, the responsible party, and the consultant can answer any questions posed by the public.

### Plume Stability:

In general at least two years of quarterly groundwater monitoring is needed to demonstrate plume stability in Utah, however, the DERR project manager for a particular site may adjust the plume monitoring frequency as needed. Two consecutive quarterly monitoring events that demonstrate concentrations of chemicals of concern are below the appropriate action levels, at an active site, may trigger a letter of no further action. In addition, the DERR provides a plume stability worksheet (in the form of an Excel spreadsheet). Submission of a completed worksheet is required in order to evaluate plume stability and appears to expedite the review of the information by the DERR project manager.

### Future land Use:

In Utah it is assumed that any off-site affected property will be used for residential uses in the future. Utah has rules in place that would allow an off-site property owner to give permission to remediate the contamination to levels that are above initial screening levels however, according to DERR project managers this course of action has not happened to-date.

### Other topics generally discussed:

### Remedial technique:

While many different remedial techniques have been implemented in Utah, discussion during the peer match, indicated that based on costs associated with the different available techniques,

including long-term monitoring of natural attenuation, source removal by excavation and disposal of contaminated soils and groundwater treatment by pumping and air sparging is currently the most commonly used method in the State.

Vapors from contaminated soil/groundwater:

In Missouri, groundwater/soil contamination concentration levels are utilized in evaluating the risks associated with evaluating the risks posed by vapors from contaminated soil/groundwater. In Utah, the indoor inhalation pathway is not immediately evaluated however if environmental investigation, needed to prepare a risk assessment at sites where contamination is above their initial screening levels, indicates an unacceptable risk from vapors, the vapors must be abated, often through the use of sub-slab soil vapor extraction wells and air stripping systems.

Ecological receptors:

Utah's DERR requires submittal of a site conceptual exposure model in which all possible routes of exposure to all possible receptors are considered. The Utah DERR indicated that the ISLs used are protective for all receptors.

Document submission format:

Both States continue to recommend that documents be submitted in paper form. However, in Utah, many of the paper submissions also include a digital copy. DERR employees did indicate that the use of the digital copy allowed them expedite their review of the submitted document because they could allow their computer to search for particular information.

Conclusion:

Information gained at meetings such as the recent Peer Match in Utah is beneficial to the department as we continue to evaluate the processes we use in our efforts to protect human health and the environment in our State. The department, our staff, and our programs benefit greatly from meetings such as this. We appreciate the opportunities afforded by ASTSWMO in making the Utah peer match possible.

**5. Missouri to Texas Peer Match**

Vince Henry, Environmental Specialist III, Missouri Department of Natural Resources, traveled to meet with Charles Stone of the Texas Commission of Environmental Control. The goal of the trip was to learn how Texas completes cleanups and the reasons why Texas has a small backlog of sites.

Purpose of Peer Match- To learn how Texas completes cleanups and has a small backlog of sites.

Peer Match Trip Report

Thanks to paid reimbursement from ASTSWMO, the HWP – Tanks Section sent one of our staff to participate in a peer match meeting hosted by the Texas Commission on Environmental Quality in their Austin, Texas location. The peer match was scheduled for September 11 and September 12, 2008. However, due to weather related to hurricane Ike the peer match was cut short by one day, and was held only on September 11, 2008.

The objective of the peer match was to compare the methods used by each State in evaluation and remediation of risks at sites associated with leaking underground petroleum storage tanks.

More information regarding the Petroleum Storage Tank program in Texas can be found on the Internet at: <http://www.tceq.state.tx.us/nav/cleanups/pst.html>

Vince Henry of our staff met with Mr. Charles Stone and Victoria Modak of the Texas Commission on Environmental Quality (TCEQ). The topics discussed during the peer match event included: Comparison of the general remediation process utilized in each State, establishment of target/screening levels, off-site risk evaluation, current and future property use and risk evaluation, contamination plume stability determination, delineation criteria, reaching closure at sites where free product is present, and public notification requirements. The following comments are very general, Mr. Henry would be happy to discuss any aspect of his recent Peer Matching trip to Texas in greater detail.

In Texas, releases from underground petroleum storage tanks that were reported prior to September 1, 2003 are evaluated utilizing the petroleum storage tank (PST) Risk-Based Corrective Action. Released reported after September 1, 2003 are evaluated utilizing the Texas Risk Reduction Program (TRRP), a State lead program.

The following comments are in regard to the TRRP unless otherwise noted.

#### Major Differences:

One of the major differences between the two States is Petroleum Storage Tank Insurance Fund (Fund) oversight. In Missouri, fund oversight is provided by a board of trustees and a private company provides third party administration, including application and claims processing. In Texas, fund administration is provided by the Leaking Underground Storage Tank (LUST) section staff.

In Texas, a corrective action specialist (any entity who performs or coordinates regulated leaking petroleum storage tank (LPST) corrective action services in the State of Texas), any LPST project manager (individuals who supervises any corrective action required on an LPST site in the State of Texas), must be certified through the TCEQ Licensing Section. Licensed Professional Geologists and Professional Engineers do not need the TCEQ Licensing as long as their State issued Professional Geologist or Professional Engineer license remains current. The TCEQ licensing/certification program is funded by fees collected by the TCEQ Licensing Section for certification/testing.

In Missouri, the Missouri Risk-Based Corrective Action (MRBCA) guidance for petroleum storage tanks indicates that certain information is required to be included within submitted documents. In Texas, templates, forms, and flow charts are used when submitting documents, the utilization of the templates, forms and flow charts appears to decrease the time needed for the project manager to review the submitted information.

#### Some Similarities:

Missouri and Texas both implement ecological check lists to guide evaluations of ecological receptors. The Texas Tier 1 eco exclusion criteria checklist can be found on the internet at:

<http://www.tceq.state.tx.us/assets/public/remediation/trrp/ecochecklist.doc>

#### Topics:

##### Remediation Plan:

Two options are provided in Texas to establish target cleanup concentrations. Plan A cleanup levels are based on specified methods, conservative assumptions regarding potential human exposure, and site-specific factors to calculate site cleanup levels. Plan A generally requires less rigorous assessment and regulatory review; therefore responsible parties may be able to start site cleanup quicker. Plan B requires the completion of a limited risk assessment to evaluate current and potential human health risks and short-term and long-term fate of the contaminants. Plan B provides the responsible party with more flexibility in the approach to site cleanup such as compliance points, and target cleanup objectives. These parameters may be based on exposure assumptions that are more reflective of actual site conditions. Plan B will typically involve more rigorous assessment and regulatory review than Plan A, but may result in a more focused cleanup effort. Proceeding under Plan B may require the use of institutional controls (e.g., land use restrictions, deed certifications) to be undertaken to ensure that exposure conditions do not change. In any event, it is recommended that all sites be initially evaluated under Plan A. If maximum site contaminant levels do not exceed the Plan A target concentrations, proceeding under Plan B is not warranted. Minor cleanup efforts under Plan A may be less expensive than the assessment activities that may be pursuant to Plan B. The decision to proceed under Plan A or B is to be coordinated with the TNRCC project coordinator.

#### Screening/Target Levels:

In Texas, sites being evaluated under the PST Risk-Based Corrective Action program may be evaluated using a plan A or a plan B. Target levels under plan A are based upon maximum allowable concentrations of a chemical of concern within a specific media. The maximum allowable concentrations are determined utilizing equations that are supplied by the PST Risk-Based Corrective Action Guidance Document. Plan B target levels are site specific and allow the evaluator to use site specific factors into the supplied equations in order to derive a site specific target level for each associated chemical of concern.

At sites undergoing remediation utilizing the TRRP, tier 1 protective concentration levels (PCL)s are presented within tables and measured concentrations are compared to the tier 1 PCLs. Tier 2 PCLs may be calculated using site-specific inputs in the provided tier 2 equations.

TCEQ toxicologists are often involved in reviewing technical information submitted to the TCEQ regarding target levels and their appropriateness for each LPST site.

#### Defining the extent of contamination:

In Texas, the vertical and horizontal extent of free product must be defined regardless of its location.

Groundwater contamination plumes are evaluated and on sites where it is demonstrated to be technically impractical, through the use of current remediation techniques, to lower contamination levels to the applicable PCL a plume management zone is established. In short, a plume management zone is allowed only when certain site characteristics are present. A plume management zone allows the evaluator to change the location of the point of exposure used in establishing plan B target levels.

The extent of soil contamination is delineated to plan A target levels or to the point at which an impermeable barrier exists that will remain in place for a long period of time.

The delineation criteria established for determining the extent of groundwater contamination plume are based upon the groundwater classification that is representative of the site and the relationship of receptors with the groundwater contamination plume.

On sites where contamination is not removed to levels that are below residential PCL's, an institutional control (IC), such as a restrictive covenant, deed notice, Voluntary Cleanup Program completion certificate, or an ordinance / zoning law must be utilized. On off-site properties where an IC is necessary, the permission of the off-site property owner is needed prior to implementing the IC. In instances that the off-site property owner does not consent to implementation of an IC, the responsible party must remediate the off-site contamination to levels that would not warrant an IC. Other options available at sites where the off-site property owner does not consent to the IC include payment into the court's registry in the amount that the IC would devalue the property. Texas defines the entire contaminated area as an affected property, this is different than the subject and off site property evaluation used in Missouri.

#### Light, non-aqueous phase liquid (LNAPL):

Texas has developed a NAPL evaluation matrix in which the extent of the NAPL removal is determined by predetermined triggers. The output of the NAPL evaluation matrix determines the extent of NAPL recovery or control. More about how NAPL evaluations are conducted within the Texas Environmental Risk Reduction Program can be found on the internet at: [www.tceq.state.tx.us/files/rg-366\\_trrp\\_32.pdf\\_4253162.pdf](http://www.tceq.state.tx.us/files/rg-366_trrp_32.pdf_4253162.pdf)

In short, Texas requires that NAPL be evaluated, removed to a practical point, and any remaining risk is managed by implementing engineered or institutional controls.

#### Public Participation:

For any property where contamination is found to exist above residential levels, the Texas TCEQ and any affected the property owner must be made aware within 60 days of the discovery, this notification is conducted by the responsible party.

#### Plume Stability:

At the time of the Peer Match TERRP rules relating to plume stability at petroleum UST sites were not available, therefore the following comments are in regard to the PST program. In Texas at sites undergoing evaluation within the PST program plume stability is evaluated using groundwater monitoring events that are focused on collecting specific information such as pH levels that are used to evaluate natural attenuation. Plume stability will be indicated when the extent of the contamination plume appears to be stable or declining, and there is a clear trend with the indicator information which coincides with the location of the contaminant plume. More information regarding the topic can be found on the internet at: <http://www.tceq.state.tx.us/assets/public/remediation/rpr/documents/natattn.pdf>

#### Future land use:

In Texas, sites where contamination is not removed to levels that are below residential PCL's, an institutional control (IC), such as a restrictive covenant, deed notice, Voluntary Cleanup Program completion certificate, or an ordinance / zoning law must be utilized.

#### Utility Corridor Evaluation:

In Texas, if contamination migration is possible, the expected locations of the migration are investigated. Utility corridors are field screened, using methods similar to the ones used in Missouri, however in Texas vapor concentrations must not exceed 25% of the lower explosive

limit (LEL) for any volatile constituent. If concentrations are found at exceeding levels, additional investigation is needed.

Remedial Technique:

Texas has developed a Remedial Technology Screening form. The Remedial Technology Screening form is beneficial because it allows project managers to evaluate the effectiveness of remedial technology based on individual site characterizations.

Conclusion:

Information gained at meetings such as the recent Peer Match in Texas is beneficial to the department as we continue to evaluate the processes we use in our efforts to protect human health and the environment in our State. The department, our staff, and our programs benefit greatly from meetings such as this. We appreciate the opportunities afforded by ASTSWMO in making the Texas peer match possible.