



Nevada Site Specific Advisory Board (NSSAB)

Full Board Meeting

**National Atomic Testing Museum, Frank Rogers Auditorium
755 East Flamingo Road, Las Vegas, NV
5:00 p.m. – April 17, 2013**

Members Present: Jason Abel, Kathleen Bienenstein (Chair), Thomas Fisher, Donna Hruska (Vice-Chair), Janice Keiserman, Barry Li Marzi, Michael Moore, Edward Rosemark, William Sears, Jack Sypolt, James Weeks

Members Absent: Matthew Clapp, Arthur Goldsmith, Cheryl Kastelic

Liaisons Present: Andrew "Butch" Borasky (Nye County Commission), Mike Cipra (National Park Service [NPS]), Ralph Keyes (Esmeralda County Commission), John Klenke (Nye County Nuclear Waste Repository Project Office [NWRPO]), Tim Murphy (State of Nevada Division of Environmental Protection [NDEP]), Scott Wade (Department of Energy [DOE])

Liaisons Absent: Marcy Brown (West Career and Technical Academy [WCTA]), Phil Klevorick (Clark County), Mike Lemich (White Pine County Commission), Charlie Myers (Elko County Commission), Kevin Phillips (Lincoln County Commission)

DOE: Robert Boehlecke, Linda Cohn, Kathryn Knapp, Tiffany Lantow, Kelly Snyder (Deputy Designated Federal Officer)

Facilitator: Barb Ulmer (Navarro-Intera [N-I])

Scribe: Rochelle LaGrow (N-I)

Others Present: Chris Andres (NDEP), Irene Farnham (N-I), Mark Israelitt (Henderson, NV), Cash Jaszczak (Nye County), Pat Matthews (N-I), Steve Mergenmeier (N-I), Irene Navis (Clark County), Carol Sohn (Las Vegas, NV), Bruce Wilcox (Las Vegas, NV)

Open Meeting/Agenda Review/Chair's Opening Remarks

Following opening remarks and agenda review, Member Michael Moore moved to approve the agenda as presented. The motion was seconded and passed unanimously.

Public Comment

Irene Navis, on behalf of Clark County, stated that Liaison Phil Klevorick was unable to be present; however, he did have several questions to pose to the Board involving the Record of Decision (ROD) for the Site-Wide Environmental Impact Statement (SWEIS), the availability of comments provided on the final SWEIS to the public, and the distribution of the Greater-Than-Class-C Environmental Impact Statement.

Liaison Updates

Esmeralda County Commission (*Ralph Keyes*)

Nothing to report.

Nye County Commission (*Butch Borasky*)

Nothing to report.

Nye County Nuclear Waste Repository Project Office (*John Klenke*)

Liaison John Klenke reported that Nye County is working on developing an aquifer test on the east side of Amargosa Valley. The project is designed to characterize the hydraulic relationship between the carbonate and valley fill aquifers by conducting an aquifer test across the Gravity Fault. Nye County has three monitoring wells located in the vicinity, and is drilling two new wells in May 2013 for the proposed aquifer test, which is tentatively scheduled for July 2013. Interested parties are welcome to view the program by contacting the Nye County NWRPO.

State of Nevada Division of Environmental Protection (*Tim Murphy*)

Nothing new to report.

U.S. National Park Service (*Mike Cipra*)

Liaison Mike Cipra reported that the NPS's primary concern is groundwater contamination and they continue to focus their attention on the studies of the Underground Test Area (UGTA) Activity. The NPS is also concerned about new water drawdown associated with sites identified in the SWEIS, particularly Devils Hole, and requests that the SWEIS ROD and any future planning take these sites into consideration. Liaison Cipra extended an invitation to participate in the Devils Hole Workshop on May 1-2, 2013.

West Career and Technical Academy

Vice-Chair Donna Hruska provided the WCTA update. She reported Liaison Marcy Brown had presented a dry run of her briefing to the Membership Committee. Upon finalizing the presentation, Liaison Brown approached WCTA teachers and was informed that she would be unable to utilize class time for her presentation. She plans to do a voice-over and have the presentation available to WCTA students via teacher websites. The Membership Committee to discuss a path forward for the student liaison position.

U.S. Department of Energy (*Scott Wade*)

Liaison Scott Wade reported on the FY 2014 Environmental Management (EM) President's proposed budget, that begins the process toward a final budget with Congress. Since the beginning of FY 2013, Nevada EM planned its budget in anticipation of sequestration, which will result in reduced impacts for the remainder of the fiscal year. Any long-term activities impacted by reduced funding will be managed by adjusting the EM baseline and schedules.

Liaison Wade noted that a NSSAB member reappointment package is currently being reviewed by EM Headquarters. Liaison Wade stated that the issuance of the final Greater-Than-Class-C EIS is planned for release this summer 2013, and the Board will be kept apprised of its status.

Ms. Linda Cohn, SWEIS Document Manager, stated that the ROD has been drafted and will follow the preferred alternative identified in the final SWEIS distributed in February 2013. The ROD is currently undergoing DOE Headquarters (HQ) review with plans to have the final ROD released in May 2013. Ms. Cohn reported that comments were received on the final SWEIS and will be included in an appendix of the ROD; however comments submitted for the final SWEIS that were already received on the draft will not be readdressed. Ms. Cohn stated that the final SWEIS will serve as a guiding document for DOE activities for the next ten years.

Liaison Wade reported on the Consolidated Edison Uranium Solidification Project (CEUSP) or Uranium 233 (U-233) waste. The CEUSP waste went through a robust waste profile review process by the Waste Acceptance Review Panel. DOE will continue to work with NDEP regarding the disposition. No transportation route has been selected at this time.

Corrective Action Alternatives (CAAs) Recommendation for Corrective Action Unit (CAU) 105 (Work Plan Item #1) (Tiffany Lantow, DOE)

- **NSSAB Work Plan Item 1**
 - Provide a recommendation to DOE on which CAA (closure in place or clean closure) should be selected by DOE for CAU 105, Area 2 Yucca Flat Atmospheric Test Sites (Soils Activity)
- **What are the Issues?**
 - Surface soils at the Nevada National Security Site (NNSS) and the Nevada Test and Training Range (operated by the U.S. Air Force) were contaminated by:
 - Historical atmospheric nuclear weapons tests
 - Nuclear weapon safety experiments
 - Nuclear weapon storage-transportation tests
 - Evaluation tests for peaceful uses of nuclear explosives
- **Addressing the Issues**
 - The Soils Activity is responsible for:
 - Characterizing and/or remediating surface soil contamination
 - Ensuring appropriate controls (i.e., signage/postings, barriers, etc.) are in place at the sites with remaining contamination
 - Conducting long-term monitoring of sites
 - NDEP provides oversight under the Federal Facility Agreement and Consent Order (FFACO)
- **Key Terminology**
 - Corrective Action Site (CAS): a site where a potential release of contaminants has been identified
 - CAU: Grouping of CASs that are similar in remediation technique, type of contaminants, or proximity to each other (grouped to create efficiencies)
- **Principles of Soils Strategy**
 - Build upon Soils Risk-Based Corrective Action Evaluation Process, which is a strategy approved by NDEP to plan, implement, and complete environmental corrective actions (CAs) (compares measurements of radiological and chemical contaminant levels to risk-based action levels)

- CAs must be considered when site conditions exceed a final action level
- **CAAs**
 - CAAs identified in the FFACO:
 - Closure in place with use restrictions (URs), as necessary
 - Clean closure (removal of contaminants, no URs)
 - No further action
 - CAAs evaluated based on general standards and remedy selection decision factors defined by the U.S. Environmental Protection Agency
- **CAAs General Standards**
 - All CAAs must meet the four general standards in order to be selected for evaluation using the remedy selection decision factors:
 - Protection of human health and the environment
 - Compliance with environmental cleanup standards
 - Control the source(s) of release
 - Comply with applicable federal, state, and local standards for waste management
- **CAAs Remedy Selection Decision Factors**
 - Only CAAs that meet the general standards are scored on the remedy selection decision factors:
 - Short-term reliability and effectiveness
 - Reduction of toxicity, mobility, and/or volume
 - Long-term reliability and effectiveness
 - Feasibility
 - Cost
- **Soils CAU/CAS Summary**
 - 31 Total CAUs comprised of 129 CASs
 - 45 Closed CASs: 23 Closure in Place; 2 Clean Closure; 20 No Further Action
- **CAU 105 Overview**
 - Six aboveground tests from 1952-1957
 - Three physical test locations: T2 Site (*Whitney, Badger, How, and Turk*) in east; Shasta Site in south; Diablo Site in north
 - Buried Trenches
 - Site investigations to be completed in Spring 2013
- **CAU 105 Field Activities**
 - Sampling and radiological dose measurements initiated October 2012 through March 2013
 - Preliminary results received
 - Expect final investigation results in May 2013 (results are not expected to change)
- **CAU 105 Preliminary Results**
 - All sites are below the radiological action level
 - No decision is needed
 - Three areas exceeded the chemical action level for lead and require CAs: buried trenches [approximately 10 acres] contain surface and subsurface lead debris, and two areas contain surface and subsurface lead debris
 - Shasta Site: approximately two acres with lead debris and associated contaminated soils (area is subject to historic preservations)
 - Six buried trenches and one open trench (approximately 10 acres) contain surface and subsurface lead debris
 - Site T-2: 40-50 surface and subsurface lead bricks used for test shielding

- **CAU 105 Next Steps**
 - Discuss CAAs and NSSAB recommendation with NDEP in June 2013
 - Develop Corrective Action Decision Document (CADD) in Summer 2013–
 - CADD presents the CAAs and identifies the selected alternative
- **NSSAB Involvement**
 - DOE requests that NSSAB provide a recommendation on selection of CAA for the three sites identified in the following slides by May 15, 2013 Full Board Meeting
 - Possible CAAs: Closure in Place with URs or Clean Closure
- **CAA Evaluation – Shasta Site**
 - Clean Closure (~\$125K)
 - Pros:
 - Reduces toxicity and mobility by removing hazard
 - Long-term reliability and effectiveness
 - Eliminates long-term monitoring and maintenance costs
 - Cons:
 - Higher effort and cost
 - Moderate risk to workers
 - Disregards the historic significance of the sites
 - Mitigating the Historical Preservation Act would require significant documentation
 - Closure in Place (~\$40K)
 - Pros:
 - Feasible and cost effective
 - Minimal environmental risk
 - Preserves the historic nature of the site
 - Cons:
 - Will not reduce toxicity and mobility
 - Controls exposure but does not remove hazard
 - Will require long-term monitoring and maintenance costs
- **CAA Evaluation – Buried Trenches**
 - Clean Closure (~\$500K)
 - Pros:
 - Reduces toxicity and mobility by removing hazard
 - Long-term reliability and effectiveness
 - Eliminates long-term monitoring and maintenance costs
 - Cons:
 - Large effort and occupational risk during excavation
 - Unknown physical, radiological, and chemical hazards
 - High cost associated with excavation, waste packaging, and disposal
 - Closure in Place (~\$40K)
 - Pros:
 - Feasible and cost effective
 - Minimal environmental risk
 - Consistent with other similar sites
 - Cons:
 - Will not reduce toxicity and mobility

- Controls exposure by engineered barriers and administrative controls but does not remove hazard
 - Will require long-term monitoring and maintenance costs
- **CAA Evaluation – T2 Site (lead bricks)**
 - Clean Closure (~\$35K)
 - Pros:
 - Reduces toxicity and mobility by removing hazard
 - Long-term reliability and effectiveness
 - Eliminates long-term monitoring and maintenance costs
 - Cons:
 - Moderate short-term cost
 - Minimal risk to workers
 - Closure in Place (~\$40K)
 - Pros:
 - Feasible and cost effective
 - Minimal environmental risk
 - Cons:
 - Will not reduce toxicity and mobility
 - Controls exposure but does not remove hazard
 - Will require long-term monitoring and maintenance costs

In response to Board questions/comments, the following clarifications were provided:

- Shasta Site is unique as it is pristine and has historical significance for the NNSS that may be used for educational purposes in the future.
- Main concern at the Shasta Site is lead, as leaving the lead in place has future contamination potential. An option is to remove the lead and document the removal, which would retain the historic value of the site while removing the hazard.
- The risk at the Shasta Site is not significant and could be managed with appropriate URs. There is no radioactivity over the established action levels; the risk may result if the lead erodes from the debris and someone comes in contact with the contaminated soil.
- At the Buried Trenches site, there are seven trenches (one open trench and six buried trenches).
- The debris in the buried trenches is shallow (less than ten feet).
- Based on the open trench, there is some indication of the type of debris that could be found within the buried trenches,. DOE anticipates that the debris is all nuclear test related.
- The buried trenches have unknown hazards because DOE is unable to collect dose measurements beneath grade.
- It is unlikely that the debris in the trenches would affect the water table.
- All closures are contingent upon the sites remaining on Federal land.
- The T-2 Site contains 40-50 lead bricks within an area approximately 18-20 feet.

Board members had open discussion regarding the presentation and evaluated the pros and cons of clean closure and closure in place for each of the three sites:

- Shasta Site – Member Edward Rosemark moved to accept Closure in Place as the NSSAB recommendation. The Board felt that it is important to preserve the historic significance of the site. The motion was seconded and passed by the majority (Closure in Place – 10 votes, Clean Closure – 1 vote).

- Buried Trenches – Member Rosemark moved to accept Closure in Place as the NSSAB recommendation. The motion was seconded and passed by the majority (Closure in Place and cover the one open trench – 9 votes, Closure in Place – 1 vote, Clean Closure – 1 vote).
- T-2 Site (Lead Bricks) – Member Thomas Fisher moved to accept Clean Closure as the NSSAB recommendation. The motion was seconded and passed by the majority (Clean Closure – 8 votes, Closure in Place – 3 votes).

The NSSAB Office will prepare a draft recommendation letter and distribute for final review and vote at the May 15, 2013 NSSAB Full Board meeting.

NNSS Integrated Groundwater Sampling Plan (*Kathryn Knapp, DOE*)

- **NSSAB Work Plan Item 8**
 - *NNSS Integrated Groundwater Sampling Plan* – Review the key parameters of the NSSAB Integrated Groundwater Sampling Plan and determine if the NSSAB supports the parameters. Additionally and from a community perspective, provide recommendations for how the proposed concept of an integrated groundwater sampling plan could be enhanced.
 - DOE is seeking NSSAB recommendations on five specific questions related to three parameters
 - NSSAB recommendations needed by May 15, 2013
- **What is the UGTA Activity?**
 - 828 underground nuclear tests were conducted at the NNSS from 1951 to 1992 (depths ranged from ~90 to 4,800 feet below the ground surface)
 - UGTA evaluates the historic testing impacts on groundwater resources and studies the extent of contaminant migration
 - Five CAUs make up the UGTA Activity; CAUs are determined by location and geologic conditions
 - Regulatory standard is the Safe Drinking Water Act – primary contaminant of concern is tritium and respective compliance level is 20,000 picocuries/liter (pCi/L)
- **Understanding Groundwater...an Iterative and Collaborative Approach**
 - Integrating Routine Radiological Environmental Monitoring Program (RREMP) and Community Environmental Monitoring Program (CEMP) groundwater sampling and UGTA data into a sampling plan.
 - A comprehensive, consistent, and unified NNSS Integrated Groundwater Sampling Plan for collecting and analyzing groundwater samples
- **NNSS Integrated Groundwater Sampling Plan Well Types**

| Well Type | Definition | Purpose |
|------------------|---|--|
| Characterization | Used for system characterization or model evaluation | <ul style="list-style-type: none"> • Identify groundwater flow paths and contaminant migration • Travel time estimates • Model evaluation |
| Source/Plume | Located within, near, and/or immediately down gradient of test cavity and/or detectable tritium | <ul style="list-style-type: none"> • Characterize source term • Monitor natural attenuation • Identify potential contaminants of concern (COCs) |

| | | |
|-----------------|---|--|
| Early Detection | Located down gradient of an underground test and tritium has yet to be detected | <ul style="list-style-type: none"> • Detect plume front |
| Distal | Outside the early detection boundary but on government land | <ul style="list-style-type: none"> • Verify COCs (i.e., currently tritium) do not exceed the maximum contaminant level (MCL). The MCL is based on 4 millirem. • May support the regulatory boundary. |
| Point of Use | Used as private or public water supply source | <ul style="list-style-type: none"> • Verify COCs do not exceed the MCL. |

- **NNSS Integrated Groundwater Sampling Plan Proposed Sampling Criteria**

| Well Type | Analytes & Detection Limits | Frequency |
|------------------|--|-----------------|
| Characterization | Wet chemistry, Anions, Total Metals, Dissolved Metals, Stable Isotopes, U/Sr/S Isotopes, Tritium, Gamma Emitters, DOC Carbon-14, Chlorine-36, Strontium-90, Technetium-99, Iodine-129, Plutonium – the detection limit is dependent on where the well is located | 2 year interval |
| Source/Plume | Tritium, Gamma Emitters, Carbon-14, Chlorine-36, Strontium-90, Technetium-99, Iodine-129, Plutonium – the detection limit is dependent on where the plume is located | 5 year interval |
| Early Detection | Low-level Tritium (1 to 10 pCi/L) | 2 year interval |
| Distal | Tritium \geq 300 pCi/L | 5 year interval |
| Point of Use | Tritium \geq 300 pCi/L | 5 year interval |

- **Key Parameters for NSSAB Consideration**

- DOE is asking the NSSAB to comment on three of the proposed key parameters that will be part of the new integrated sampling plan
- DOE is asking the NSSAB to focus its recommendation on the Distal and Point of Use Wells only

- **Parameter #1**

- Parameter #1- the new integrated sampling plan will identify wells selected for monitoring contaminant transport from underground nuclear tests from all DOE monitoring sources
- Question 1: Does the NSSAB support eliminating sampling of upgradient wells?
 - CEMP samples wells upgradient of the NNSS groundwater flow system and outside of the water shed
 - Wells and water supply systems within CEMP monitoring network show no evidence of tritium contamination related to underground testing

- **Parameter #2**

- Parameter #2 - the new integrated sampling plan will identify COCs to be analyzed, as well as the detection levels, and sampling frequency based on well type
- Question 2: Does the NSSAB support reducing the list of radionuclides to be analyzed to only tritium?
 - UGTA forecasts tritium as radionuclide first detected

- RREMP database results from 2000-present – no confirmed presence of tritium or other radionuclides in Distal or Point of Use Wells
- Integrating the sampling completed by RREMP, CEMP, and UGTA, would cause no reduction in radionuclides analyzed but would put the focus on those wells where radionuclides are more likely to be present
 - Source/Plume Wells analyzed for extended suite of radionuclides
 - These wells are upgradient of Distal and Point of Use Wells
 - If results of these wells indicate need to expand beyond tritium, analysis will be modified as appropriate.
- Question 3: Does the NSSAB support increasing the laboratory detection level for tritium?
 - Satisfies regulatory requirements – minimum detection level required is 1,000 pCi/L
 - Standard methodology more reliable
 - Standard methodology standard industry practice
 - Cost savings
 - By integrating RREMP and CEMP into UGTA, sampling for low-level tritium in wells at the edge of the plume
 - Early Detection Wells analyzed for lower levels of tritium
 - These wells are upgradient of Distal and Point of Use Wells
 - If results of these wells indicate need to detect lower levels of tritium, analysis will be modified as appropriate
- Question 4: Does the NSSAB support reducing the frequency of sampling?
 - RREMP allows for reduction of sampling after establishing a baseline consisting of four replicates
 - By integrating RREMP and CEMP with UGTA, DOE can better focus on wells that provide information to refine the models and plume detection
 - Early Detection Wells sampled on a two year interval
 - These wells are upgradient of Distal and Point of Use Wells
 - If results of these wells indicate need to sample downgradient more often, sampling frequency will be modified as appropriate
- **Parameter #3**
 - Parameter #3- the new integrated sampling plan will allow for well types to change as UGTA progresses
 - Question 5: Does the NSSAB support DOE changing the well status to reclassify as inactive?
 - Upon model completion and results from sampling both indicate that it is unlikely for presence of radionuclides, well may be reclassified as inactive
 - Under RREMP – reduction of sampling after establishing a baseline consisting of four replicates
 - DOE wants to focus on sampling that is science based, concentrating on areas of potential contaminant transport – effective and efficient use of resources

In response to Board questions/comments, the following clarifications were provided:

- There is still fallout from other nuclear tests worldwide; it is important to distinguish between that fallout and tritium migration off the site from NNSS legacy nuclear tests.

- It is possible to distinguish between NNSS created tritium and other test fallout by first detecting tritium and then testing groundwater for other analytes.
- There is no naturally occurring tritium; it is a result from nuclear testing.
- If there are any data oddities in well testing, an investigation would be initiated by DOE.
- If a well is marked as inactive, it is not closed. If a well is reclassified as inactive and then proved beneficial for sampling at a future date, DOE would be able to reutilize well.
- The NNSS Integrated Sampling Plan is designed to shift resources to more important focus areas.
- Well types may be changed as the UGTA Activity progresses.
- Initially, it is more cost effective to limit the suite of analytes tested, since tritium is the first indicator of potential groundwater contamination.
- If an investigation is triggered, the suite of analytes tested would be expanded accordingly.
- DOE assumes that the life of wells established within the baseline is 50 years. If the well is still beneficial to DOE after 50 years but is beyond repair, a new well would be drilled in its place.

NSSAB Path Forward

- Question 1: Does the NSSAB support eliminating sampling of upgradient wells?
Member Moore moved to recommend increasing the time between sampling, but not support totally eliminating sampling of upgradient wells. Continued sampling is recommended until DOE can discern the impact and potential exposure to groundwater from atmospheric fallout and recharge, even for wells that are upgradient from the source of contamination on the NNSS. The motion was seconded and passed by the majority (8 – 3).
- Question 2: Does the NSSAB support reducing the list of radionuclides to be analyzed to only tritium?
Member Rosemark moved to support reducing the list of radionuclides to be analyzed to only tritium. The motion was seconded and passed unanimously.
- Question 3: Does the NSSAB support increasing the laboratory detection level for tritium?
Member Jack Sypolt moved to support increasing the laboratory detection level for tritium. The motion was seconded and passed unanimously.
- Question 4: Does the NSSAB support reducing the frequency of sampling?
Member Fisher moved to support reducing the frequency of sampling. The motion was seconded and passed unanimously.
- Question 5: Does the NSSAB support DOE changing the well status to reclassify as inactive?
Member Rosemark moved to recommend that the sampling frequency be reduced, but not support DOE changing the well status to reclassify as inactive. Valuable sampling data may still be acquired from these wells in the future and should remain available to sample. The motion was seconded and passed by the majority (8 – 2).
- Additional NSSAB recommendations on how DOE can present the new plan to the public:
 - Host mini-open houses
 - Be proactive and forthcoming with the message
 - Emphasize that by integrating RREMP, CEMP, and UGTA efforts, the outcome is more cost effective and saves tax payer dollars, while providing valuable sampling data
 - Overlay a water flow map with well sites map to show the relationship

- Include major highways and streets on the maps so the public will have a better understanding of where they live in relation to the wells being discussed
- Ensure the full message is provided to the communities most affected; but also in communities that sampling frequency is reduced/discontinued
- Provide three-dimensional models

The NSSAB Office will prepare a draft recommendation letter and distribute for final review and vote at the May 15, 2013 NSSAB Full Board meeting.

Other NSSAB Business (*Kathy Bienenstein*)

- EM SSAB Chairs' conference call – February 19, 2013
 - Budget update from HQ regarding impending sequestration
 - At the HQ level, Oak Ridge disposition of U-233 is a high priority
 - Greater-Than-Class-C EIS not ready for release
 - DOE responded to the EM SSAB recommendation that DOE place more emphasis and priority on evaluating recycling technologies
- EM SSAB National Chairs' Meeting – April 25, 2013
 - NSSAB Members and Liaisons invited to participate via webinar
- UGTA Technical Information Exchange – April 30, 2013
 - NSSAB Members and Liaisons invited to attend this private meeting hosted by DOE at the National Atomic Testing Museum
- Devils Hole Workshop – May 1-3, 2013
 - Donna Hruska, Arthur Goldsmith, Edward Rosemark, and Jack Sypolt to attend
 - Workshop will highlight UGTA activities
 - NSSAB participants will update Board at May 15, 2013 Full Board Meeting

The next Full Board meeting will be held on Wednesday, May 15, 2013, at 5 p.m. at the National Atomic Testing Museum. A pre-meeting session will start at 4 p.m. by NDEP on its role and responsibilities within the EM Program at the NNSS.

Board members appreciated the opportunity to provide valuable input. When developing recommendations, it was noted that completing discussion while subject matter experts are available for questions is beneficial, rather than waiting for the next meeting or discussing via email.

Member Moore moved the meeting be adjourned. The motion was seconded and passed unanimously.

Meeting adjourned at 8:42 p.m.