Overview

The type of waste management unit to be used to store a specific waste type should be selected based on several factors including the following:

- Quantity - some waste streams may be generated in relatively small quantities (e.g., less than 55-gallons) per generation event; whereas, others may be generated in large quantities (e.g., pipeline hydrotest fluids).
- Frequency - some waste streams may be generated frequently (e.g., daily or with each well that is drilled); whereas, other waste streams may be generated infrequently (e.g., tank cleanout sludge generated only once every few years);
- Composition - some waste streams will be solids, some will be liquids and some will be sludges containing free liquids (i.e., liquids that will separate from the solids by gravity);
- Classification- some waste streams will be essentially inert and not pose a risk to health or the environment (e.g., solid concrete or cement) and others will be more hazardous;
- Time – some waste streams may have disposal/recycle options that are readily available; whereas, other waste streams may need to be stored for a longer period of time while appropriate disposal/recycle facilities are being constructed or identified.

Storage Unit Types

Several types of waste storage units will be available and one or more of these types should be appropriate for each of the waste streams expected to be managed. The actual storage unit type used depends on various factors including waste quantity to be managed, the composition and characteristics of the waste, and the amount of time that storage is required. In general, the storage units selected should be designed and operated to properly contain the wastes and to limit the potential that material will be released to the environment.

The following sections identify the principal types of storage units expected to be used and provide general operating issues for each type of unit. In the future, if additional information is obtained or other types of storage units are identified as being appropriate, this section will be revised accordingly.

Section 7.1 Waste Storage Considerations	Topic 7.1.1 Waste Storage in Containers

Overview

Many of the waste streams generated during the various Project phases are expected to be managed in containers. For the purpose of this discussion, containers includes 5-gallon pails, 55-gallon drums, portable "tote tanks", roll-off bins and similar devices that have relatively small capacities (up to 1 cubic meter or approximately 260 gallons) and that may be moved form place to place full (i.e., the container provides a means of storage and/or transport).

If a specific waste stream is generated infrequently and in small quantities (e.g., vehicle oil filters in the vehicle maintenance shop), then it may be appropriate to have a designated drum available in the shop. When full, these types of containers could be moved to a central storage location for additional storage or to be emptied into a larger container.

For wastes that are generated in larger quantities, it may be appropriate to have a central storage area consisting of multiple drums, roll-off bins and the like.

Common Requirements

The following good management practices for containers should be followed, where practicable:

- Wastes should be stored in containers that are in good condition (i.e., no severe rusting or apparent structural defects).
- Wastes should be stored in containers that are compatible with the waste (i.e., the waste will not react with the container and impair its ability to contain the waste).
- Waste containers should be kept closed (e.g., bungs in drums, covers or tarps over roll-off bins, etc.) at all times unless waste is being added to or removed from the container.
- When space allows, areas should be designated to segregate full waste containers and empty containers.
- When possible, waste containers shall be stored in single layers (not stacked).
- Containers holding wastes should be inspected weekly for damage or leaks and a written record kept of the inspection, when appropriate.
- When possible, avoid storing containers of hazardous wastes on-site for more than 90 days.
- Avoid mixing different types of waste in the same container if such mixing involves incompatible materials or makes it more difficult to dispose/recycle the waste.
- The void spaces in containers holding smaller liquid-containing items (e.g., Lab Packs) must be filled with an absorbent material that will absorb and not react with liquids, if released from their primary containers. Containers sent for landfill disposal should be filled with absorbent, as necessary, so that they are at least 90 percent full.

- When possible, containers should be stored in a manner that limits the ability of spilled material to migrate downward and laterally. If earthen structures are used, they should have a suitable bottom (e.g., laterite or other relatively impermeable material or synthetic liner) and berms to provide secondary containment. Non-earthen devices can include concrete or metal catch pans or pre-manufactured secondary containment units. The base material should be designed to support, and not be damaged by, the weight of the containers, when full, and that of any equipment or vehicles that may be used to load/unload the containers.
- Containers holding waste should be protected from the weather (e.g., rain and wind) to help maintain the integrity of the container and reduce the potential for a spill. Such protection could include storage buildings, roofed areas, tarps, and plastic drum covers to keep water off the tops of the drums.
- Containers storing wastes should be labeled to provide information that facilitates the safe and proper management of the waste such as the:
  a. Name of the waste stream;
  b. Composition and physical state (e.g., solid, liquid, sludge) of the waste;
  c. Hazardous properties of the waste (e.g.,. "Corrosive");
  d. Name of the activity, process, and/or location that generated the waste; and
  e. Date the first waste entered the container.

Overview

Some of the waste streams generated during the various Project phases are expected to be managed in tanks larger than one cubic meter in volume. For the purpose of this discussion, the term tank refers to stationary aboveground storage tanks (ASTs), underground storage tanks (USTs), and portable or mobile aboveground storage devices that are mobilized to the site, used in a stationary location, and later moved after they are emptied (e.g., portable "poly tanks", "Baker tanks", and "frac-tank truck trailers").

Typically, tanks may be used for large quantity waste liquid waste streams such as drilling fluids, oily water and the like. Because of potential concerns for gravity settling, tanks are not typically used for solids or sludges that contain a high concentration of solids unless the tanks are equipped with circulation or blending devices to keep the solids in suspension.

All USTs and all ASTs larger than one cubic meter will need to be designed, fabricated, tested and installed to appropriate engineering and construction standards for the material to be stored. These tanks, if used, will undergo the same review and approval process as the rest of the Project facilities.

Common Requirements

The following good management practices for tanks should be followed, where practicable:

- Wastes should be stored in tanks that are in good condition (i.e., no severe rusting or apparent structural defects).
- Wastes should be stored in tanks that are compatible with the waste (i.e., the waste will not react with the container and impair its ability to contain the waste).
- Waste tanks should be kept closed (e.g., lids and manways closed) at all times unless waste is being added to or removed from the container.
- Containers holding wastes should be inspected daily for damage or leaks and a written record kept of the inspection, when appropriate.
- When possible, avoid storing hazardous wastes in tanks for more than 90 days.
- Avoid mixing different types of waste in the same tank if such mixing involves incompatible materials or makes it more difficult to dispose/recycle the waste.
- When possible, tanks should be located in a manner that limits the ability of spilled material to migrate downward and laterally. If earthen structures are used, they should have a suitable bottom (e.g., laterite or other relatively impermeable material or synthetic liner) and berms to provide secondary containment. Non-earthen devices can include concrete or metal catch pans or pre-manufactured secondary containment units. The base material should be designed to support, and not be damaged by, the weight of the tanks, when full,

and that of any equipment or vehicles that may be used to load/unload the tanks.

- Tanks holding volatile organic materials must be managed to limit the potential for a flammable or explosive vapor mixture in the top of the tank.
- Tanks must be designed and operated to withstand the pressure exerted by the stored waste, taking into account factors such as temperature fluctuations.
- Metal tanks that are in contact with the soil in locations where corrosion could occur to an extent that the integrity of the tank is compromised should be provided with a means to reduce the potential for corrosion (e.g., coatings, cathodic protection, synthetic liners under tank, etc.).
- Tanks holding waste should be protected from the weather (e.g., rain and wind) to help maintain the integrity of the tank and reduce the potential for a spill. Such protection could include storage buildings, roofed areas, tarps, and coatings (e.g., paint or epoxy).
- Tanks storing wastes should be labeled to provide information that facilitates the safe and proper management of the waste such as the:
  a. Name of the waste stream;
  b. Composition and physical state (e.g., solid, liquid, sludge) of the waste;
  c. Hazardous properties of the waste (e.g.,. "Corrosive");
  d. Name of the activity, process, and/or location that generated the waste; and
  e. Date the first waste entered the tank.

Section 7.1 Waste Storage Considerations	Topic 7.1.3 Waste Storage on Bulk Pads

Overview

It may be appropriate to manage some waste streams on bulk pads including high-volume, low toxicity waste streams that do not contain free liquids (e.g., oil-contaminated soil). Although bulk pads are often easy to construct and operate, they may not be appropriate for some types of waste streams such as waste streams that contain a significant amount of liquid, waste streams that are easily wind-blown, wastes that are odorous, wastes that are incompatible with water (rain), wastes that attract scavengers or vectors, or waste streams that could be harmful to people or animals if they were to come in contact with the waste.

Common Requirements

The following good management practices should be followed, where practicable:

- Bulk pads should be designed and operated in a manner that limits the ability of the waste being stored from migrating downward and laterally off the pad. If earthen structures are used, they should have a suitable bottom (e.g., laterite or other relatively impermeable material or synthetic liner) and berms to provide secondary containment in case liquid separates from the waste or rain falls on the waste. Similarly, the bulk pads should be located where water will not run onto the pad. Non-earthen devices can include curbed concrete pads or large metal "pans". The base material should be designed to support, and not be damaged by, the weight of the waste or by the equipment or vehicles that may be used to load/unload or move the waste on the pad.
- The bulk pad should be constructed to limit the potential for waste constituents or leachate from migrating into the pad.
- When appropriate, wastes stored on bulk pads should be protected from rain and wind (e.g., tarps, indoor/roofed or semi-walled pads, etc.).
- Signs should be posted near the bulk pad that provide information that facilitates the safe and proper management of the waste such as the:
  a. Name of the waste stream;
  b. Hazardous properties of the waste (e.g., "Corrosive");
  c. Name of the activity, process, and/or location that generated the waste; and
  d. Date the first was placed on the bulk pad.
- The base of the pad should be kept in good condition (i.e., no severe cracks).
- Avoid mixing different types of waste if such mixing involves incompatible materials or makes it more difficult to dispose/recycle the waste.

- When appropriate for the waste being managed, bulk pads should be constructed with a slight slope or other method to drain liquids toward a collection sump.