Glenn Springs Holdings, Inc.
A subsidiary of Occidental Petroleum

MEMO

TO: Peter Ludzia **DATE:** January 30, 2007

FROM: David Steele **COPY:**

SUBJECT: Remedial Recommendation
Pottstown Earthen Lagoons

This memorandum describes a recommended remedial option for the disposition of PVC sludge from the unlined earthen lagoons at the Occidental Chemical Corporation site in Lower Pottsgrove Township, Montgomery County, Pennsylvania. Although a formal feasibility analysis has not been written on this option to date, we believe it will be useful to provide to you this preview. Glenn Springs Holdings believes that this option is implementable in the short term, is protective of Human Health and the Environment, and will provide both short term and long term effectiveness in addressing risks identified by USEPA in the Human Health Risk Assessment. As noted below, GSH projects that, if EPA supports the implementation of this remedy and if field construction activities begin in May 2007, the sludge can be completely removed by the end of October 2007 and the residual soil and groundwater issues can be investigated and potentially resolved by the end of 2007. An early conclusion to the remediation of OU2 would satisfy community concerns about the status of site activities and facilitate conversion of this property to a constructive use, which is an important goal for the municipality. To that end, GSH is requesting a meeting with EPA to discuss how to select and implement this option to achieve the goal of completion this year.

1.0 Background

Four inactive unlined Earthen Lagoons were constructed by Firestone Tire and Rubber (FTR; and also operated by Firestone Chemicals and Plastics) to settle solids from wastewater from the PVC manufacturing process. This practice continued until 1974 when the Pennsylvania Department of Environmental Protection (PADEP, then PADER) concluded that the lagoons did not meet the new waste impoundment regulations and ordered FTR to discontinue their use. Since that time, the extant sludge has remained within the lagoons. A total of about 30,000 cubic yards of sludge remains in the two outer cells of the lagoons, consisting primarily of PVC sludge (75-96%) with minor amounts of soil and vegetative material mixed in it at various locations. The material is polymerized vinyl chloride, with some additives, having variable concentrations of vinyl chloride, trichloroethene and phthalates (plasticizers). Some of the PVC sludge reveals elevated levels of leachable VCM and TCE. Dioxins and dibenzofurans are present at low concentrations in at least some of the sludge.

A Record of Decision (ROD) was issued for the Site on June 30, 1993. The selected remedial action for the earthen lagoons described in the ROD included:

- excavation of PVC, coal fines layer and contaminated soil at the earthen lagoons;

- on-Site drying of PVC to eliminate hazardous characteristic,
- landfilling of coal fines layer and contaminated soils, and
- restoration of the earthen lagoon area to original grade.

A number of different attempts to effectively dry the material on site, resulted in problems with operation, treatment of air emissions or processing rate. Following these efforts, EPA identified the need for a Focused Feasibility Study to be conducted to determine how to accomplish remediation.

2.0 Status of Remedial Option Evaluation

Three general options are being evaluated by the FFS. Although there are some variations within each of these, a general picture of feasibility is emerging. Preliminary findings are presented below.

2.1 On Site Closure

This option is believed to be technically feasible, but must address siting requirements for a secure disposal facility. The current location of the lagoons is within a floodplain, and thus would require isolation from flooding (e.g. via the placement of a levee). As an alternative, the material could be relocated to an upland position (as a Corrective Action Management Unit) on site and outside of the floodplain. On site closure (especially in the upland location) is technically feasible and protective of human health and the environment and likely to be the lowest cost option. However it is likely to have the lowest community acceptance and would impact reuse of the property.

2.2 Recycling

Although this option is the remedy that was selected in the ROD, the ROD requires the removal of the hazardous characteristic, where present (not all of the sludge fails the TCLP criterion for vinyl chloride). EPA maintains that in order to waive the requirement to remove the characteristic, it needs to verify a number of considerations pertaining to the recycling process, the end-product produced, and end uses or exposures to the constituents of concern. Questions include whether the material will replace similar performing material without adding contaminants to products where not needed, whether the recycling facility complies with applicable permitting, whether worker protection measures will be in place, and whether the constituents of concern are immobilized in the final product and how the facility tests the final products to ensure that they are safe. The technical and regulatory feasibility of this option is still being evaluated. EPA, as noted above, has indicated some skepticism about whether the recycling of the sludge is acceptable and that a local environmental group is opposed to this option.

2.3 Off Site Disposal

For the disposal of the sludge as waste in the US, the RCRA waste regulations would need to be applied. Due to the leachable VCM content of much of the sludge exceeding RCRA limits, much of the sludge would be classified as D043 hazardous waste. In addition, RCRA has set Universal Treatment Standards for certain other compounds (when present) prior to disposal of waste in a US RCRA disposal facility. The upshot of this requirement is that the sludge would have to be thermally treated (incinerated) to address the treatment standard for bis(2-ethylhexyl) phthalate. The feed rate of PVC material to thermal treatment units is expected to be very slow due to the need to mix with non chlorinated materials to control HCl emissions, and could be

limited to a couple hundred tons per month, requiring more than five years to complete. It would also be extremely expensive.

In September, 2006 GSH issued a request for determination of acceptability of the sludge (with information on previous testing of the material) to a number of domestic and Canadian facilities. The response from Canadian facilities (one in Ontario and two in Quebec) indicated that the material may be acceptable for disposal there, subject to further evaluations and some conditions as provided by the individual permits or authorizations for the facilities. Canadian waste regulations are developed primarily at the provincial level. This option was then investigated in further detail in October through December, 2006, resulting in a focus on one facility as described below.

3.0 Feasibility of Off Site Disposal Horizon Environnement

3.1 Sludge Characteristic Review and Testing

An initial response from one facility, Horizon Environnement in Grandes-Piles, Quebec, indicated the likely acceptance of the PVC sludge based on the existing data provided by GSH in September. In order to further assess acceptability, Horizon directed GSH to collect a representative sample of the sludge for its analysis and comparison with Quebec waste classification parameters. Horizon requested that the sample be representative of the total amount of the material and a method for collection was developed as communicated to EPA in the correspondence of October 5 (attached). This sample was collected on October 23, 2006 and provided to Horizon. Due to the large volume of material, Horizon requested a second round of sampling to verify the classification of the sludge. This sample was collected on December 11, 2006 and a series of five to eleven replicate analyses were performed at Bodycote, a Quebec licensed laboratory on behalf of Horizon.

3.2 Regulatory Classification of PVC Sludge for Waste Disposal in Quebec

Quebec has several waste classifications (contaminated soils, non hazardous waste, special waste and hazardous waste). Table 1 provides a comparison of the results from the October analysis with the Provincial criteria for non-hazardous, special and hazardous waste classifications (the sludge is not a 'contaminated soil' by its nature). The analytical results identified that the PVC sludge is not a solid waste (failing a lead criterion), but is also not a hazardous waste (failing none of the hazardous waste criteria). Horizon has concluded that the sludge is therefore classified as a special waste, being intermediate between the other two classifications. Horizon has informed GSH that the second round of analyses (data are in the process of compilation) has confirmed that the sludge would not be classified as hazardous waste in Quebec.

3.3 Disposal Facility and Approval Process

The regulations of the Province of Quebec allow special wastes to be placed in a landfill approved for special wastes. The Certificate of Authorization issued by the Ministry of the Environment of Quebec to Horizon Environnement, as amended in 1996 and 1998, allows the acceptance of contaminated soils and special wastes into the landfill cells, which are maximum security cells. A 'maximum security cell' is defined by the Certificate and in the regulations as a landfill cell qualified to receive hazardous waste and having a double liner system with leachate collection and other controls. During a GSH commissioned audit of the facility in early December, 2006, the disposal operation at the active face of the landfill appeared to be conducted in accordance with good management practice.

Horizon Environnement has issued a commercial offer to Oxy for the disposal of the material, which is contingent upon completion of regulatory approvals as described below. The formal regulatory approval process for disposal of the sludge in Quebec begins with the preparation of a Notification of Intent to Export Hazardous Waste Material from USA to Canada. This takes approximately 60 days to process. As soon as OxyChem provides proof of submittal (not completion) of the export agreement, Horizon will prepare and submit a Notice of Import to Environment Canada. This agreement takes 6 to 8 weeks to process. Environment Canada will consult with the Ministry of the Environment of Québec regarding the conformity of the disposal of this material to the Certificate of Authorization for the Horizon Facility. It is at this time that the Waste Profile is submitted to the Quebec Ministry. It should be noted that a draft version of the Waste Profile has already been informally reviewed and it appeared to be acceptable. This final step of the process takes one to three weeks.

3.4 Superfund Regulatory Requirements

There are two orders in place directing remedial action activities at the site that must be addressed in the course of selecting and implementing this remedial option for the lagoons. The Unilateral Administrative Order of 1994 directed Occidental Chemical Corporation to perform remedial activities as specified in the 1993 Record of Decision. The UAO incorporates the ROD requirement to dry the PVC sludge to remove hazardous characteristic and recycle the PVC material. The disposal of the material as waste in a permitted Canadian facility differs from this requirement, so some method must be found to address the use of the new option as meeting the obligations under the UAO, and the ROD by its reference in the UAO.

The 2005 Administrative Order on Consent requires the performance of the FFS. This would likely be a simple matter of completing the FFS report, which could be quickly accomplished (end of March?) if a simple format of assessment is acceptable to EPA.

3.5 Stakeholder Considerations

GSH has been engaged in site decommissioning activities intended to prepare the site for a future productive use since shut down of the facility in 2005. Currently these activities include the demolition of structures of the PVC plant; eventually the tire plant will also be demolished and the area of these structures graded. As that work proceeds, GSH is continuing to address environmental obligations under CERCLA. During this process, GSH has been in close communication with Lower Pottsgrove Township to advise the municipality of its plans and activities. The township has communicated a strong desire to see the work completed and the property ready for redevelopment. The property represents one of the largest areas of the township that could be developed and is situated on an interchange on the main highway in the area and is therefore important to the future of the community.

3.6 Site Operations at Pottstown

The removal of sludge from the lagoons should be a relatively simple process of excavation into the two outer cells of the lagoons to depth and laterally moving through the area of the cells. The total excavation to depth will effectively mix wetter and drier materials as they are excavated. In some cases where the material is still too wet to load in trucks for transportation, a small amount of Portland cement will be added to absorb free water and stiffen the PVC sludge. This addition would be made within the lagoon perimeter as material is excavated, to avoid the need for mixing facilities exterior to the lagoons. A weighing station and decontamination pad would be established in the adjacent area where the radiant heating pilot was performed. Certain interior

roadway improvements would be needed to facilitate the traffic from this operation, but are expected to be easily completed in advance of the removal activities.

Several trucking companies have been contacted about shipment of the excavated sludge, and this has identified the availability of trucks for the shipment to Quebec as a potential limiting factor. It is likely that more than one trucking company will be contracted to supply sufficient capacity to complete the job in the desired time frame. A total of 1500+ truckloads are calculated to be necessary to transport the total volume of the sludge currently stored in the lagoons. The trucks will travel approximately 600 miles from Pottstown to the disposal facility. Based on anticipated truck availability, it is estimated that the removal and shipping of the sludge will take a period of 4+ months to complete. Thus, if removal begins in May, operations should be completed by the end of October.

3.7 Schedule

The regulatory issues noted above must be resolved with USEPA Region 3 Superfund administration to proceed with this work. If appropriate and acceptable instruments are identified by the end of March, 2007, this should allow the completion of necessary reports and documentation in the next 30 days. As noted above, if field operations can begin in May, the sludge should be removed by the end of October. Subsequent site grading and other closure activities might be finished by the close of construction season in November, with regulatory closure on the lagoons in early 2008. This schedule would likely coincide with the completion of demolition activities at the property.

4.0 Recommendation

The off site disposal of the lagoon sludge in the Horizon Environnement facility in Grandes Piles, Quebec is the remedial option that could be most rapidly and effectively implemented with the likely result of completion by the end of 2007. If Oxy can complete action on the lagoons in 2007, it will expedite the ultimate remediation of the property and will facilitate the eventual reuse of the property, which is a key concern of the local community, specifically the Lower Pottstown Township authorities. The other options are likely to take a minimum of an additional one to two years following the existing FFS process. If the proposed option is determined to be appropriate, its success will rely on finding a method to approve the specific desired remedy without unintended consequences, and to implement the remedy instead of following an extensive process of reports, evaluations, reviews, revisions, comment, etc. Oxy and EPA will need to address successful termination of the AOC for the FFS, and resolution of the UAO for remedial action on the lagoons. Some method will be needed to address the ROD requirements for the lagoons as well.