

Doug Selby

From: David L. Mendenhall
Sent: Thursday, July 14, 2005 6:44 AM
To: John Bettencourt
Subject: Fw: revised report

Will you print this out this morning?

Sent from my BlackBerry Wireless Handheld

-----Original Message-----

From: Bruce.Johnson3@CH2M.com <Bruce.Johnson3@CH2M.com>
To: dpivetti@hdrinc.com <dpivetti@hdrinc.com>
CC: dmendenhall@lasvegasnevada.gov <dmendenhall@lasvegasnevada.gov>
Sent: Wed Jul 13 19:04:33 2005
Subject: FW: revised report



Yr by Yr Complaints
(2)chart....

Dave, based on your input this afternoon, I added my two cents worth to your revisions to place more positive emphasis on the improvements that have been made and the benefits that have been realized and a lesser emphasis on the off-site odor impacts and the measures that might be needed for more stringent odor control if needed. I also tried to make it more concise and to the point. Hope this helps. I will be in San Diego tomorrow, but you can reach me by cell phone if you have any questions. My cell number is 702-499-3806

From: David L. Mendenhall [mailto:DMendenhall@LasVegasNevada.GOV]
Sent: Wednesday, July 13, 2005 4:14 PM
To: Dpivetti (E-mail); Johnson, Bruce/LAS
Subject: FW: revised report

Looks good especially if that is what he wanted. I changed the title.

-----Original Message-----

From: Pivetti, Dave [mailto:Dave.Pivetti@hdrinc.com]
Sent: Wednesday, July 13, 2005 3:25 PM
To: Bruce.Johnson3@CH2M.com; Jay.Witherspoon@CH2M.com
Cc: David L. Mendenhall
Subject: revised report

ok, here is the report that I have heavily edited after talking to Dick, I think you will get the idea. Please feel free to talk more about what we have done and what we can do, without talking about costs and zero odors. Also see attachments. I have to go get on a plane now. Will finish tomorrow.

City of Las Vegas WPCF - Assessment of Odor Control Improvements

TO: David Mendenhall
FROM: Bruce Johnson, P.E.
Jay Witherspoon
DATE: July 13, 2005

Introduction

Since as early as 1991 the City of Las Vegas has embarked on an ongoing and successful campaign to reduce odors at the Water Pollution Control Facility. When the plant was first constructed on the fringes of town in 1957, no one could have conceived of the encroaching growth that has now occurred. The first major effort to eliminate odors was the elimination of the sludge drying beds and the construction of a mechanical dewatering facility in 1991. In about 1993 the County Health District established a "hot line" for neighboring residents to register their odor complaints. In 1993 a maximum of 1433 odor complaints were recorded. In response to these complaints the City continued to complete numerous projects at the WPCF for odor control (a list of projects is attached hereto). As a result of these projects the odor complaints have been eliminated (see chart of complaints, attached). There have been no recorded complaints in three years. In all, the City has spent about \$50 million to achieve this level of odor reduction.

1997 Recent Odor Control Improvements

A major component of the recent WPCF expansion has been the evaluation and construction of odor control improvements. Odor evaluations have included the following:

- Air Sampling
- Computer simulations to estimate emissions from treatment processes
- Air dispersion modeling to determine off-site impacts
- Hydraulic and water/air quality modeling of the interceptor system to calculate hydrogen sulfide loads into the WPCF
- Evaluation of odor control technologies
- Development of an over-all odor control strategy

Based on these evaluations, a number of odor control improvements have been constructed. These include:

- Lining digesters to reduce fugitive emissions from the digesters

- Enclosing and venting grit bins
- Covering eight trickling filters with low profile aluminum dome covers
- Installing seven multistage packed bed chemical scrubbers
- Installing soil biofilters for the headworks building, dewatering building, and Plant 5 and 6
- Replacing the old open flame waste gas burners with more efficient enclosed waste gas flares.

In addition, operational improvements, such as using ferric chloride at the head of the plant and controlling the number of hours emission units are allowed to operate each year, have made significant improvements in the control of odors.

Potential of Future Off-Site Odors

Although off-site odors have been reduced by 95-99% and odor complaints have virtually been eliminated, it does not mean there will be no off-site odors from the WPCF. When the odor control improvement program was initiated, it was determined that it would be prohibitively expensive to install the controls necessary to prevent every chance of an off-site odor. In addition, the golf course with its high berms and a vegetative barrier separating it from the WPCF, provided an additional barrier to odors reaching residential receptors. If the golf course is converted to a housing development and the vegetated berms are removed, it is likely that residents will, on occasion, detect odors from the WPCF based on the following:

- Computer modeling, using historical records of wind speeds and directions and emission estimates of existing facilities with odor controls, indicates that at the West fence line of the WPCF there could be between 20 and 50 events per year that may produce noticeable odors.
- If the existing berms and vegetation at the West fence line will be removed and houses built immediately adjacent to the property line there will almost certainly be an increase in the reception of odors in the new development.
- The removal of the golf course could also have some impact on the residents beyond the new development. The golf course, with all its vegetation and irrigation, helps to dilute trace odors from the WPCF. If the golf course is removed and replaced with streets, tile roofs, concrete structures and desert landscaping there may be an impact at DIME 3 and odor complaints from that area could increase.

Eliminating All Odors at the Property Line

If it should become necessary to provide a higher level of odor control, there are technologies available to do so. There are a number of wastewater treatment plants that are surrounded by residential development that have had to use the highest level of odor

control. However, it is very costly. Typical approaches, in addition to what is currently provided at the WPCF, might include:

- Covering all open basins that contain wastewater that is exposed to the atmosphere and treating the air above the liquid.
- Liquid phase chemical treatment to reduce the concentration of hydrogen sulfide coming into the plant
- Using three stage chemical scrubbers to better target and remove odorous compounds
- Adding carbon scrubbers to remove the chemical smells that come from chemical scrubbers
- Using trucks that are completely sealed and/or using odor reducing chemical in trucks that are hauling sludge to the landfill

Further Study

Further studies are recommended to more rigorously evaluate the potential of off-site odors. These studies include the following:

- More extensive odor emission sampling to better define the effectiveness on the plant's existing odor abatement equipment and to characterize ambient odor levels at the property line
- Additional air dispersion modeling at lower odor thresholds to evaluate how odors might be dispersed without the surrounding buffer zones and to determine off site impacts with a higher level of control at the WPCF
- Evaluation of the effectiveness of additional odor control that could be added to the existing odor control treatment trains
- Development of detailed cost for additional odor control